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China's competition and the export price strategies of developed countries

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Abstract

This paper analyzes the impact of Chinese competition on developed countries export prices, with a focus on Italy. After a theoretical discussion of the channels affecting export prices in presence of competitors from low income countries, we estimate the pricing behavior of two major manufacturing sectors, consumer goods and machinery, distinguishing destination markets according to their income level. Results show that export competition from China has affected Italian price strategies over the period 2000-08, in an idiosyncratic way according to the income level of importers, sector and technology level of products exported. Contrary to what observed for other high-income countries, we find that Italy has followed a very specific strategy to face Chinese competition. Instead of changing "between sector", moving up to the technology ladder, Italy has kept its specialization in traditional sectors and has upgraded the quality of its low-tech and labor-intensive products, when in direct competition with Chinese ones. For higher technology products, on the other hand, it has adjusted prices downward to reduce Chinese competitive pressure, especially in segments where it does not hold a comparative advantage, while it has fostered differentiation only for some niche products within the sectors with higher specialization.

Keywords: China, export price competition, Italy
JEL classification: F-10; F-14

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1. Introduction

The entry of China in the world market triggered a large literature on its likely effects. After the WTO accession in 2001, many studies focused on the possible consequences of the opening up of China in the international markets for developing countries, particularly in Asia (Lall and Albadelejo, 2004; Feenstra and Wei, 2010). More recent analyses, stimulated by the growing literature on China's export sophistication (Rodrik, 2006), have started to look at the competitive effect of China on developed countries as well, either by measuring the extent to which export similarity represents a threat to existing export structures (Schott, 2008; Fontagné et al., 2008) or which countries have reduced their market shares as a consequence of China's growth (Cheptea et al., 2010; Husted and Nishioka, 2010). Most of these studies argue that, despite an ongoing process of export upgrading, Chinese competition is still mainly due to cheaper cost of factors and relatively low quality of production, reflected in lower prices of exported products.

A highly debated issue is that China's rise in the world economy has influenced the global terms of trade, lowering the prices in the manufacturing sector, in line with the so-called 'fallacy of composition' hypothesis (Faini, 1990). This hypothesis is based on the view that, as developing countries enter international markets they might face insufficient and/or highly elastic demand and start a 'race to the bottom' driving prices of exports downward (Mayer, 2003). This trend is supported by the findings of Kaplinsky and Santos-Paulino (2006). Using EU imports (at the 8-digit HS from Eurostat) in order to test for recent trends in unit values, they show that prices of manufactures are likely to decrease more in those sectors in which China is a relevant exporter.

Fu et al. (2012) extend this analysis to other groups of countries has been made by. Using data on the unit value of exports at a disaggregated level for EU, US and Japan's imports, they show that over the last twenty years Chinese price and supply competition has influenced not only the export prices of low- and middle-income countries in sectors at different levels of technology, but also the prices of high-income countries in low-technology sectors. Recently, a series of analyses based on firms' level data has tested specifically how developed countries have reacted to the Chinese competitive pressure. Bloom et al. (2011) use data on European firms over the period 1996-2007 and find that EU firms tackled China's competition (measured through China's import shares in the host markets) upgrading their production. The upgrading was measured by significant increases in key indicators such as TFP, adoption of information technology and their R&D performance. However, Bloom et al (2011) also find that firms in sectors most affected by Chinese import competition have experienced reductions in export prices, employment and

profitability. Along similar lines, two works on Belgian firms find that competition from China in the domestic (Mion and Zhu, 2011) and in foreign markets (Abraham and Van Hove, 2010) has contributed to an increase in skilled workers and differentiation by widening the number of varieties exported. Lastly, and most relevant for this paper, Martin and Méjean (2011) have measured the effect of competition from lower income countries on a sample of French firms over the period 1995-2005. They find that the increase of market shares of low-income countries has an impact on the prices of French exports, which they estimate to have increased by about 2 percentage points, the largest share of which is due to competition from China only.

In what follows, we look at the impact of China on the export prices of Italy using data on unit values of exports finely disaggregated by host markets and sectors. Within an international context where large economies export more at the extensive margin and at highest unit prices (Hummels and Klenow, 2005), Italy represents a case of interest, given its persistent specialization in so-called traditional sectors (Di Maio and Tamagni, 2008). This has resulted in a rising similarity between the export structures of Italy and major emerging economies, a factor that – despite recent research did not find evidence of "adverse export elasticity" compared to other main manufacturing exporters (Felettigh and Federico, 2010) – can account for market shares losses over the last years (Cheptea et al., 2010).

The main objective of the paper is understanding whether in sectors with the highest competitive pressure from China, developed countries (Italy, in particular) have undertaken a competition based on prices and reduced markups or if they have upgraded the quality content of their export for any given couple of markets (including low- middle- and high-income ones) and sectors. On the one hand, our findings can complement, adopting a macro framework and considering foreign rather than domestic prices, those by Bugamelli et al. (2010), who show that the competitive pressure by Chinese exports in the domestic market has contributed to a decrease in output prices of Italian firms. On the other hand, the paper can also support the view that Italy has upgraded its exports, especially in traditional sectors, to protect its market shares from international competition (Lanza and Quintieri, 2007). To our knowledge, so far, there is no direct evidence that this has occurred as a consequence of increasing competition from lower income countries. While our study focuses on Italy, the reasoning can be extended to other manufacturing producers from developed countries.

The paper is structured as follows: section 2 sketches the theoretical underpinnings and the empirical strategy. Section 3 reports the results by main sectors and by destination markets. Section 4 concludes.

2. Data, model and empirical analysis

2.1 Theoretical background

We start from a very simple assumption about consumers' preferences, i.e. that consumers can buy different varieties of the same good from different countries. The Dixit-Stiglitz formulation assumes that the elasticity of substitution (a_x) among varieties of products *x* traded internationally is positive, meaning that for each product imports are differentiated among countries of supply (as in Armington, 1969).

For our model we take into account a category of goods *x* (one of the 6-digit products) for which consumers preferences are represented by a two-tier utility function. At the upper tier is a standard Cobb-Douglas function which determines the allocation of consumer's expenditures between a homogeneous good *g* and the differentiated varieties *x*:

$$U^j = U\left(u_1^j, \ldots, u_x^j, \ldots, u_N^j, \ldots u_g^j, \ldots, u_G^j\right); \qquad x=1,\ldots,N,\ g=N+1,..,G \qquad (1)$$

Where the subutility index of the homogeneous good depends on the quantity consumed, while the subutility function deriving from the consumption of the differentiated goods can be represented as follows:

$$u_x^j = \left[\int_{x \in X} \left(\theta_x^{\gamma_x^j} q_x\right)^{\frac{\alpha_x}{1-\alpha_x}} d_x\right]^{\frac{\alpha_x - 1}{\alpha_x}}; \qquad \alpha_x > 1\ ;\ \gamma_x^j > 0 \qquad (2)$$

Where *X* is the set of available varieties in the importer country *j*; *q* is the quantity consumed and θ the quality; γ is country *j* intensity of preference for quality; a_x is the elasticity of substitution among varieties of *x*, which in this case is assumed to be different for each product exported by any country *i*.

Following Hallack (2006), the key feature of such a relation is that the quality parameter θ enters as a "utility shifter". In addition, the parameter γ is designed in a way to capture the effects of income on the demand for quality. In line with the Linder Hypothesis, Hallack shows that countries with a highest level of income tend to spend more on the consumption of the high quality varieties. In what follows, we will assume that the preference for quality of the consumers are non-homotetic with respect to per capita income (y_{pc}) and that richer countries will spend more for higher quality varieties.

Turning to the supply side, assuming that prices reflect heterogeneous levels of quality among firms, the "shock" caused by a lower income country's competition depends on the level of specialization of competitors.

Recent literature has modelled the impact of a low-income country on firms behaviour in the domestic market (Bernard et al., 2006; Bloom et al., 2010). Bloom et al. (2010), in particular, assuming that an economy is endowed with low (L) and high (H) skilled labor producing generic and differentiated goods, show that the entry of a low income country in the home market will free up "trapped" resources by pushing skilled workers to move to more innovative productions. Based on the assumption that the resources to produce and innovate are substitute, the entry of countries with different factor endowments will reduce the opportunity cost of skilled workers employed in the production of the generic goods, now displaced by Chinese exports. Similar assumptions have been suggested by Bernard et al. (2006), who use factor endowments theories to emphasize that the entry of a low income country push local firms to move towards more skill and capital intensive activities within industries.

These models, useful benchmarks for our analysis, confine themselves to the impact on the domestic market. More in line with our aim is the work by Martin and Mèjean (2011), who assume that firms from the north are endowed with different quality levels (middle and high) and are able to set their export prices. Prices equal marginal costs plus a mark-up, depending on the costs of competitors and on market size. The exogenous shock given by the entry of southern competitors is modelled as an asymmetric impact given that it affects mainly low and mid quality producers, reducing their margins and pushing them to exit the market. This, in turn, results in an increase in the relative export prices of Northern firms. Northern firms reduce their prices to offset the shock, and this adjustment is stronger for medium quality producers than for high quality ones. This translated into a loss of market shares both between north and south firms (largest shares going to southern firms) and within northern firms (market shares are redistributed to high quality ones). This effect suggests that the impact of stronger competition from southern economies translates in an improvement in the mean quality levels of the rich country's exports.

2.2 The Model

The aim of our empirical analysis is that of determining Italy's export prices. To do this, in line with the theoretical literature, we assume that the entry into

global markets of a big southern country such as China will have a strong impact on the supply side, affecting global prices through the increase in the volumes of traded goods, the changes in their quality and the low export price due to their costs advantages.

We determine the prices of internationally traded goods drawing in particular on supply factors, along the lines of Fu et al. (2012), letting the supply function be:

$$S_x = f(p_x;\ p_x^e; Z_x) \tag{3}$$

where S is the total supply of product x, p is its price, p^e the expected price and Z a vector of exogenous variables affecting supply.

We assume expected prices p^e to be dependent on the lagged levels of p as well as on prices of other competitors, considering that firms respond to a price change of their rivals to maintain their market shares.

Total supply of product x includes the supply from Italy, China and the rest of the world. If different varieties of the same product x are direct substitute, an increase of China's export will shift the supply curve upward, triggering a reduction of market prices.

Considering both demand and supply factors in equilibrium and accounting for the impact of China and other competitors, the price of Italian exports in a reduced-form single-equation model can be expressed as:

$$p = f(p_{t-k}; y;\ y_{pc}; d; llock; er; q; p^{ch}; p^{oecd}; share^{ch}; share^{oecd}) \tag{4}$$

where the price (p) of export is function of its k lagged values[1], absolute and per capita levels of income (y and y_pc), bilateral distance (d) and geographical remoteness ($llock$) of the importers, the nominal exchange rate (er) of the exporter with each trade partner and the corresponding volume of trade (q) for any given couple of product/market/year. Two ad-hoc variables are included to account for the possible impact of China on the price function: (1) the corresponding price of China's export (p^{ch}); and (2) the market share ($share^{ch}$) of China to control for the supply "shock". Similarly, we introduce prices and market shares (p^{oecd} and $share^{oecd}$) computed for high income OECD countries net of Italy as a control for testing the reaction of Italian prices to direct and indirect competitive effects from countries at a similar stage of development.

[1] The length of the lags is meant to vary according to the autocorrelation function.

The literature on prices determinants shows consistent results across standard explanatory variables. So, for instance, prices tend to decrease with the size of the importer's market (Baldwin and Harrigan, 2011) and with an increase in the volume of exports (Ito, 2011), while they increase in markets with higher levels of per capita income (Schott, 2008; Bekkers et al., 2012[2]) and in more distant ones (Manova and Zhang, 2009).

With respect to the variables representing the China's competitive effect, their signs depend upon the likely impact on the exporter price strategy. Other things equal, a positive sign of Chinese price and/or a negative sign of the share of Chinese exports represent a direct competitive pressure on Italian export prices, pushing them downward. On the other hand, a positive and significant sign of the share of China exports and/or a negative sign of Chinese price indicates that, when the competitive pressure increases, Italian companies react by rising up their prices, a strategy that suggests an increase in the average quality of their exports, as previously found in the literature. Considering the high heterogeneity at either the market and the sectoral level, we expect such outcomes to vary according to the level of disaggregation adopted. On the other hand, following the line of reasoning of Bloom et al. (2010; 2011), according to whom rising competition from lower income countries decrease the profitability to produce low value added products, we do not expect similar results when competition is coming from other developed countries, given that it does not reduce the profitability of producing traditional goods relative to more advanced ones.

2.3 Data and Methodology

Given that the theory described above does not suggest any specific functional form, for estimation purposes, we adopt the following:

$$p_{j,x,t} = p_{j,x,t-k} + y_{j,t} + y_{pc_{j,t}} + d_{i,j} + llock_j + er_{i,j,t} + q_{j,x,t} + p^{ch}_{j,x,t} + share^{ch}_{j,x,t} + p^{oecd}_{j,x,t} + share^{oecd}_{j,x,t} + \delta_t + \varepsilon_{i,j,x,t} \quad (5)$$

In order to account for several sources of misspecification in (5) due to the possible presence of autocorrelation, endogeneity and heteroskedasticity within panels, we adopt the Arellano-Bover/Blundell-Bond system GMM approach. The system GMM approach allows for greater efficiency in the choice of instruments in a panel with large N and small T, increasing the overall performance of the estimator *vìs-a-vìs* alternative approaches including instrumental variables or the Arellano-Bond "difference GMM" (Wooldridge, 2010). As price strategies of international competitors are often intertwined, and it is therefore difficult to

[2] Bekkers et al. (2012) find also that there is an inverse relationship between unit values and income inequality, a result suggesting that prices of goods consumed by all income groups tend to reduce with higher inequality.

discern the direction of causality (Fu et al., 2012), we treat variables representing prices (including the lagged level of Italy's prices) as endogenous using their lags as instruments. Other independent variables are considered strictly exogenous and used as instruments. As a standard test for the strict exogeneity of the instruments for a system GMM we report results of the Hansen J test for overidentifying restrictions (Wooldridge, 2010). Additionally, the Arellano-Bond test for autocorrelation to the residual is reported to detect second order autocorrelation (AR(2)) of the residuals. Tests' statistics, reported at the end of the table, show that in general the choice of instrument is valid and there is no second order autocorrelation in the residuals.

Finally, as suggested by Roodman (2006), we include time dummies (δ_t) in our final specification so to avoid contemporaneous correlation among individuals across time, an assumption that is not taken into account in the autocorrelation test.

Data on international prices are not easily available and they are often proxied by data on unit values. Unit values are computed as the ratio between the value and the quantity of goods traded and are considered closer proxies of export prices the more disaggregated the data used to compute them. Analyses based on unit values tend to assume a direct relation between the price of exports and the quality of products, although this relationship might be influenced by other relevant factors such as exchange rate movements, trade related policies and vertical fragmentation of production (Schott, 2008).

This paper uses data on unit values from the Trade Unit Value Database published by CEPII (Berthou and Emlinger, 2011), covering the period 2000-08 for each product classified at the six digit level of the harmonized system (HS) for a large number of countries. In our view, the advantages of working on such time coverage are twofold: on the one side this allows to catch the rise of Chinese exports as a consequence of full entry in the WTO in 2001; while on the other prevent data to be affected by the distortive effects of the global financial crisis of 2008 on export strategies of developed countries.

Data on the corresponding trade volumes come from BACI (Gaulier and Zignano, 2010) and information on geographic variables is from CEPII (Mayer and Zignano, 2011). Data on other independent variables, including GDPs and exchange rates, are from the World Bank's World Development Indicators and Penn World Tables. Table 1 reports the descriptive statistics of all the variables.

Table 1 here

In order to compare products and markets subject to direct competition, our database has been built by including all the products at the six digits level contemporaneously exported by Italy and China to the same market.

3. Empirical Analysis

The large number of sectors and markets covered by the dataset allows us to perform a very detailed and innovative analysis. We focus on the manufacturing sector, which covers around 82% of the observations of the dataset, and that includes goods classified at different levels of technology. Figure 1 reports the distribution of products included in our dataset according to their technology level and shows that the largest share of products for which China and Italy compete in the international markets incorporates low levels of technology or is characterized by high intensity of labor. Such products are mostly concentrated in the group of consumer goods (SITC-8). On the other hand, only the 22% of products belongs to the group including high technology goods, the largest portion of which is included in the group of machinery & transport equipment (SITC-7).

Figure 1 here

In line with this analysis, we run model (5) for the two main groups of the manufacturing sector according to the Standard International Trade Classification (SITC) revision 3, i.e. the one including machinery and transport equipment (SITC-7) and the miscellaneous manufacturing articles (SITC-8), which includes the consumer goods.

We grouped destination markets according to their income levels following the World Bank classification, and estimate our model (i) on the group of high income countries belonging to the OECD; and (ii) for a group including middle income countries (the middle lower and the middle up income groups). Observing the geographical distributions of the products exported it is possible to notice how these two groups represent together more than 80% of total observations (Figure 2).

Figure 2 here

3.1 Results for the group of consumer goods by income levels of importers

The first set of results looks specifically at the impact of Chinese competition in the group including consumer goods (SITC-8). In order to get to more detailed conclusions, in what follows we present our results according to the income level of the importers distinguishing between high income OECD and middle income markets. In addition, for each group of importers we further disaggregate data according to their technology level and their sector, in order to understand whether our results are consistent at more detailed levels of analysis or whether there are some specific patterns in the adjustment strategies of Italian prices to Chinese export competition.

3.1.1 Consumer goods in high-income OECD markets

Table 2 below reports the results of the estimation of model (5) for exports directed to high-income OECD countries in the group including consumer goods, grouped by their levels of technology.

Considering first signs and significance of the control variables used, table 2 shows that Italian export prices to other OECD countries are largely influenced by their past levels and that they tend to increase in larger markets. The sign of the per capita income level is positive and significant for the whole group, indicating that an increase of income translates in higher export prices, but has a negative sign in more technology intensive sectors. In line with our expectations, we find that in general prices increase when markets are not easily accessible (landlocked) and tend to reduce in more distant ones, this being probably due the fact that unit values are reported CIF rather than FOB. The coefficient of the Italian exchange rate is negative and significant in most of the cases, indicating that depreciation contributes to a reduction in export prices, despite the group includes EU members that share the same currency with Italy. In line with existing evidence (Ito, 2011), we find a consistent negative relation between the quantity exported and the price.

Table 2 here

Turning to the variables of interest, prices of main competitors from other high income OECD countries tend to move in the same direction of Italian prices, with no relevant distinctions due to the level of technology of products, suggesting that the prices of Italian exports in consumer goods and in richer markets tends to be responsive to that of other developed countries exporting similar goods. However, it is possible to observe that the coefficient of price adjustment is significantly lower than one, this suggesting the existence of

some degrees of differentiation among similar products exported to the same markets. In addition, we find that only products belonging to low and medium technology sectors are affected by price competition from China, though in both cases with a smaller coefficient compared to the OECD equivalent.

In order to better specify such overall results, we have run model (5) for all the products grouped according to each two-digits division of the SITC revision 3 classification. Results, reported in table A1 in the appendix, confirm that price competition from other developed countries is spread over all the divisions. Chinese price movements affect Italy's strategies in the groups including footwear and more sophisticated products such as the ones included in SITC-87 and 88. Other products, including those belonging to the traditional specialization in the furniture or the apparel are not directly affected by China's export prices.

When we look at the reaction of Italian export prices to an increase of China's market shares – a variable representing the external shock described in paragraph 2.1 – we find more heterogeneous, and perhaps more interesting, results. Looking at the more aggregated picture, we notice that a stronger market pressure from other OECD countries has determined a downward pressure on Italy's price strategies. On the other hand, in line with some existing literature (Schott, 2008; Bernard et al., 2006; Martin and Mejean, 2011), the impressive rise of China's market shares in this group of products and countries seems to have pushed Italian firms to reallocate their exports towards more sophisticated products to escape from low cost competition, as documented by the positive sign of the coefficient. Looking at the results by technology content from table 2, it is interesting to notice that the coefficient reporting Chinese market shares keeps its positive sign only for labor intensive and low technology products (thought being significant only for the latter group) and turns negative (but not significant) for medium and high technology groups of sectors.

Again, a more detailed picture is provided when results are reported by each division, as showed in table A1. Such results demonstrate that an increase of China's market competition translates in the reallocation of Italy's exports towards higher quality in the groups including prefabricated buildings (81) and photographic apparatus and optical goods (88). On the other hand, the same table shows that China's rapid increase in the exports of consumer goods to OECD markets has put a downward pressure on Italian prices in some divisions, ranging from travel goods (SITC-83) and footwear (85), two labor intensive divisions which include quality differentiated goods, to more sophisticated products included in the professional and scientific apparatus

division (87) up to the highly heterogeneous group of miscellaneous manufacturing (89), a group including both products at high intensity of low skill labor (such as the production of toys), at medium technology (articles of plastic n.e.c.) as well as at higher quality (such as the jewelries). These results suggest that firms feel threatened by the increase of market shares of competitors, and not to lose their shares adjust their prices (Warmedinger, 2004). However, in our specific context, we can also assume that in such divisions the supply side shock has led lower tech firms to reduce their markups or to exit the market, while at the same time higher quality producers have not been able to increase or keep their market shares stable, thus lowering the average quality of Italy's exports.

Finally, it is interesting to notice that we did not find evidence of an impact of China by market competition on export price strategies for the products included in two of the traditional divisions of the made in Italy, including the furniture (SITC-82) and, most notably, the apparel (84). Considering that for these two divisions we did not find either evidence of an impact from Chinese prices, we could interpret this as a lack of direct competition between the products exported by the two countries, possibly due to the fact that competition for such divisions is on different segments of the market, given higher average quality differentials.

3.1.2 Consumer goods in middle income markets

The results considering middle-income countries as destination markets are reported in table 3. Controls are in line with those observed in table 2, with the exception of the coefficient of the nominal exchange rate, now being not significant in all the specifications.

Table 3 here

Similarly to results reported in table 2, there is a significant price competition from other OECD countries spread across all the groups, the coefficient being particularly strong in the case of labor intensive goods, whereas a 1% increase (or decrease) in their prices translates in an increase (decrease) of 0.7% in the price of the corresponding product exported by Italy. Further disaggregation of the data show on the other hand that Italy's price strategies are affected by the Chinese prices in a more extensive way compared to the previous case. While results of table 3 show that China's price competition affects the sector as a whole (first column) and the groups including low- and high- technology products, more detailed results from table A2 in appendix, show that – with the exception of goods belonging to the apparel (SITC-84) and the precision instruments (88) – all the other divisions

are equally affected by China's export prices. On this respect, it is interesting to notice how this price competition is always less relevant if compared to the coefficient of other OECD countries', except for the group including miscellaneous manufacturing goods, where the effect of a movement in Chinese prices has a stronger influence on Italian exports.

On the other hand, the increasing market competition from China seems to contribute significantly to a reduction of Italy's export prices in both labor intensive and high- technology sectors (the same results, with similar magnitudes, being observed for the OECD market share coefficient). In addition, table A2 shows that such competition affects a number of divisions, including the apparel (SITC-84), professional apparatus (87) and miscellaneous products (89). Only in one division, that of prefabricated buildings (81), we find a push towards quality upgrading as a consequence of competitive pressure by Chinese exports.

3.1.3 Robustness check: A quantile analysis on the distribution of Italian unit values

Our previous results have showed what is the average effect of our variables of interests (among the others) on the behavior of Italy's export prices. However, if we look at the distribution of the dependent variable we find a wide dispersion given that products are exported at either very low and very high values (see figure 3). In addition, if we compare the distribution of Italian export prices with the Chinese one, we can see that the former is more skewed towards higher prices, while the latter is more dense in correspondence of lower unit values. In substance, as also illustrated in figure 3, the average gap between Italian and Chinese export prices tends to increase with an increase in the absolute values, possibly indicating that varieties shipped at higher prices from Italy are those with larger vertical differentiation and the smaller degree of competition from the same kind of product shipped from China.

Figure 3 here

In order to overcome a possible estimation bias, we run our model employing a quantile regression approach, which allows us to estimates the effect of covariates on the shape of the conditional distribution of our dependent variable. More specifically, we use the quantile regression approach to examine the effects by simultaneously minimizing the sum of the squared deviation of the dependent variable series from the respective mean of the deciles of the series (Wooldridge, 2010). The basic research question we would like to explore with such an approach is whether the extent of Chinese

competition through prices and market shares that we have observed in table 2 is uniformly distributed or if it is mostly concentrated on the lower deciles of the distribution of Italy's export prices, i.e. those where the gap between the same variety exported is lower.

The general form for the quantile regression can be written as follows:

$$Quant(y_{it}|X_{it}) = \beta_\theta X_{it} + \varepsilon_{it} \quad (6)$$

Where X_{it} is the vector of exogenous variables affecting the distribution of the dependent variable, and β is the vector of parameters to be estimated corresponding to the θ^{th} conditional decile of p. Following such general approach and introducing fixed effects to control for specific factors not included in the model, we re-estimate equation (5) adopting the following specification:

$$p_{j,x,t} = y_{j,t} + y_{pc_{j,t}} + d_{i,j} + llock_j + er_{i,j,t} + q_{j,x,t} + p^{ch}_{j,x,t} + share^{ch}_{j,x,t} + p^{oecd}_{j,x,t} + share^{oecd}_{j,x,t} + \gamma_j + \rho_s + \delta_t + \varepsilon_{i,j,x,t} \quad (7)$$

Where γ_j, ρ_s, and δ_t represent respectively the country, sector[3] and time fixed effects[4].

In what follows, for the sack of simplicity we describe only the results for our variables of interest[5]. To do this, figure 4 plots the slope of the coefficients of such variables for all the deciles along with their associate confidence intervals for the group including consumer goods in the OECD markets. The horizontal line represents the coefficient derived by the adoption of an OLS.

Results are straightforward as they show that Chinese competition, either through prices and market shares, has a stronger intensity for the range of prices at the bottom 4 deciles of the distribution and tend to become marginal for the others. We find, in particular, that there is a stronger push to upgrade exports when Chinese market competition affects products exported at lower unit values. If we disaggregate by technology levels (as reported in figures A1-A3 in the appendix), in line with results provided in table 2, we find that this partial effect is very strong for low technology products and, to a lesser extent, to labor intensive ones, whereas the shape of the line looks totally different in the case of higher technology goods. In the latter cases, market competition from China has a little or even negative impact on lower priced items, which is

[3] Due to computational restrictions, we add sectoral fixed at the 2-digit level of the SITC classification trather than at the 6-digit level.

[4] According to Wooldridge (2010), although quantile regression analysis with the introduction of fixed effects are feasible, their introduction in panels with large N and small T may bring the estimate to suffer from the incidental parameter problem.

[5] Full tables of results, not included in the paper for reasons of space, are available upon request.

nonetheless much closer to the impact recorded by the OLS coefficient. Interestingly enough, we find also that the shape of the coefficients turns opposite from the OECD countries, meaning that competition with countries at similar levels of income it is more likely to affect high priced varieties.

Figure 4 here

3.2 Results for the machinery & transport equipment group by income levels of importers

The machinery and equipment sector has experienced an interesting performance over the last few decades. However, it has not yet received adequate attention, compared to more traditional consumer goods, despite its increasing role in Italy's specialization as well as its largest shares in terms of value added and employment in the country. A recent analysis based on aggregated data shows that, in this group, Italy specializes in high-quality products keeping its exported volumes high within the divisions including industrial machineries and electronics, while it specializes in lower quality products to keep the volumes high in the division including instrumental machineries (Cossio et al., 2008). Additional evidence from Ricotta et al. (2008) shows that in sub-sectors where Italy has higher comparative advantages it has recorded an outstanding performance in terms of quality of its export measured by their unit values at the 6-digit level of the HS classification. These divisions are machineries for specialized industries, industrial machinery and other transport equipment. On the other hand, Italy keeps some niche-markets but it is overall under specialized in other sectors such as office machines, telecommunications and electrical machines, all divisions where China's comparative advantage has rapidly increased over the last decade. However, generalization is difficult, given that the machinery group is quite heterogeneous and includes goods at different technological level as well as those characterized by trade in parts and components.

Table 4 shows the results for the estimation of Italian prices for exports when destination markets are OECD countries. Once again, most of the controls enter the regression with the expected sign. This is the case of the lagged values of prices and the size of the market – both leading to an increase in the unit values of export – or of the Italian real exchange rate, whose depreciation puts a downward pressure on export prices in all the divisions within the machinery group. Conversely, a not well-defined trend emerges from the observation of the coefficients on per capita income, the distance and the lack of an access to the sea, whose coefficients vary across the different grouping structures.

Table 4 here

Looking at our variables of interest, we find that the unit prices of Chinese and OECD exports move in the same direction than Italian ones for both the sector as a whole (first column of table 3), the three technology levels[6] and for most of the two-digits divisions included in the sector (with the exception of products included in the metalworking, electrical machineries and the other transport equipment).

More interestingly, we find that the rapid increase in China's export shares in many of the divisions of the machinery and equipment group in the OECD markets has determined a competitive effect on Italy's export prices for high technology products (table 3) and for products included in the case of very specific sectors such as power machines, specialized machineries and metalworking as well as more heterogeneous ones as the electronics, a result in line with the findings by Abraham and Van Hove (2011) who find a strong competitive effect on market shares from China in a number of similar sectors for a sample including intra-OECD trade. At the same time, we find that market competition from other developed countries has pushed Italian prices down only in the group including transport equipment.

These results however do not account for the large share of intra-industry trade and the role of intermediate goods. China's rising role within global production chains has been largely debated in the literature. Some have objected for instance that the growing importance of the country within this more sophisticated sector, now the largest in relative terms for Chinese exports, has been characterized by high shares of processing trade often generated by foreign invested firms, whose role in the country's more sophisticated sector exports is substantial (Koopman et al., 2008). In order to account for this debate, we further specify our model by classifying products according to the Broad Economic Categories (BEC), a classification which considers the main end use of the products distinguishing among consumption, investment, intermediary and primary goods. More specifically, we construct two main groups, the first including investment goods, those used in gross capital formation, and the second intermediate ones, which in turn includes parts and accessories and processing goods. The main objective of this further analysis is to check whether the competition on prices and on quality is more relevant for one of the two groups.

[6] According to UNCTAD's classification, in the sector including machineries and transport equipment there are no divisions including labor-intensive products.

Results for the group of OECD markets disaggregated according to their end use show that price and market competition from China hits Italy's price strategies in different divisions among the two groups of products (see table 5 for a summary of the main results), sometimes in a complementary way.

As capital goods are concerned, we find that those belonging to the divisions including general industrial machineries, office machines and telecommunications are subject to a contemporaneous pressure by both Chinese prices and market shares. These groups, which include mostly high-tech products, are exactly those where – as suggested in the first part of the paragraph – Italy is under specialized and China is rapidly catching-up, though its specialization is still in medium-quality products (Ricotta et al., 2008). On the other hand, we find that in the division including other transport equipment products, the pressure from China's market shares has led to an upgrade of exports, this result being strengthened by the negative and significant sign of the Chinese price variable. The fact that Chinese and Italian prices move in opposite directions could indicate that there is a large differentiation between products belonging to the same headings. Considering now the intermediate goods, we find a wider price competition, targeting most of the divisions not affected in the previous case. More interestingly, however, we find also that intermediate products included in the office machines, motor vehicles and, once again, other transport equipment groups have reacted to a stronger presence of Chinese companies on the OECD markets with an upgrading, presumably moving to a more value-added segment in other to not lose further market shares.

Table 5 here

Finally, we re-estimated the model when middle-income countries are the destination markets. Table 6 summarizes the results for the groups including intermediate and investment goods. Comparison is again interesting and shows that the divisions affected by China's competition are different compared to the previous case and that the same divisions are affected in a similar way almost independently of the end use of products. Electronics products in particular are affected by China's price and market competition in both the typologies of end use, while office machine products are not affected by China's price and are found to upgrade as a consequence of a rise in China's market shares irrespectively from their final use

Table 6 here

4. Conclusions

This paper has analyzed the impact of Chinese competition on Italy's export price strategies for a number of sectors within manufacturing over the period 2000-2008. More specifically, we have tested direct price competition and indirect impact arising from an increase of China's market shares at a detailed product and importer level.

Our results show that Italy's export prices are in general affected by Chinese price competition, though for some products and/or country's groups to a lesser extent than for price competition by other OECD countries. We find also that the supply shock, represented by an increase of Chinese exports, has a differing impact on export prices according to the technology level and the sector. More specifically, for low technology and labor intensive products included in the consumer goods the influence of China on Italy's export prices is marginal and seems to stimulate an overall quality upgrading, especially in high-income destination markets. In such cases, however, additional results from quantile regression analysis show that Chinese export competition seems to push an upgrading only for those products shipped at relatively lower prices, i.e. those most likely to be affected by Chinese direct competition.

Conversely, in the machinery and transport equipment group of products, China's competition has generally resulted in a reduction of price margins, especially for products where Italy holds a lower specialization. When we look at the different impact on capital and intermediate goods, we find that there is a stronger pressure on products belonging to the former group, while in the latter China's competition seems to induce an upgrading, especially in richer markets. In other words, firms seem to follow a strategy that could be interpreted as a search for niche specialization in the trade of more sophisticated inputs.

In line with other studies' findings, this paper shows that developed countries react in a variety of ways to the competitive pressure of lower income countries such as China. However, contrary to what observed for other high-income countries (Bloom et al., 2011; Mion and Zhu, 2011; Martin and Méjean, 2011), we find that Italy has followed a very specific strategy to face Chinese competition. Instead of changing sector of specialization moving up to the technology ladder, Italy has kept its specialization in traditional sectors and has upgraded the quality of its low-tech and labor-intensive products, when in direct competition with Chinese ones. For higher technology products, on the other hand, it has adjusted prices downward to reduce Chinese competitive pressure, especially in segments where it does not hold a comparative advantage, while it has fostered differentiation only for some niche products within the sectors with higher specialization.

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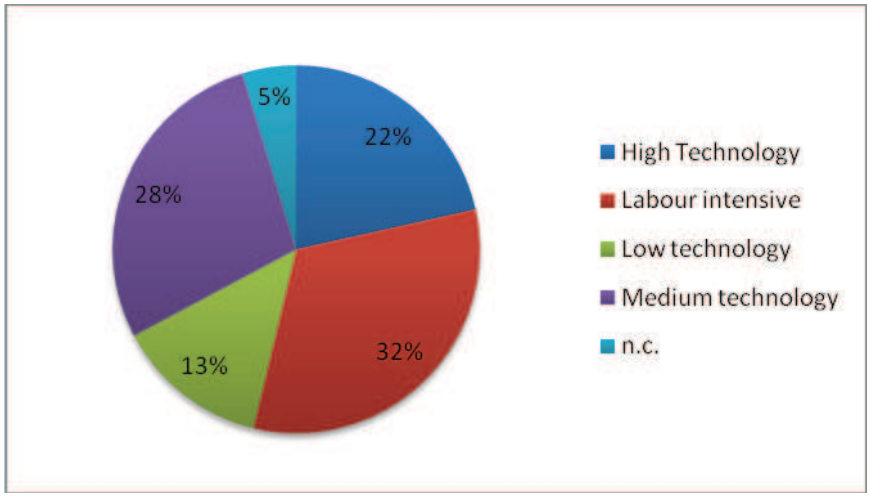
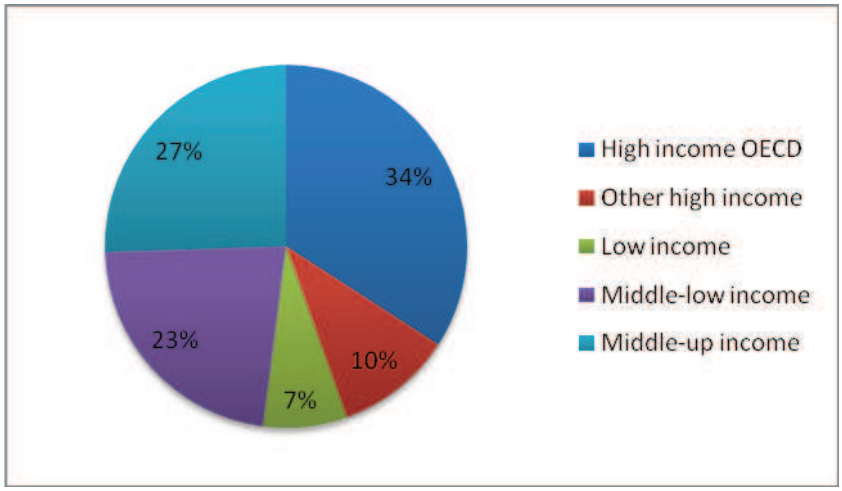
Figure 1. Distribution of observation by technology intensity



Source: Author's elaboration

Note: The classification of the products by technology sector is based on UNCTAD

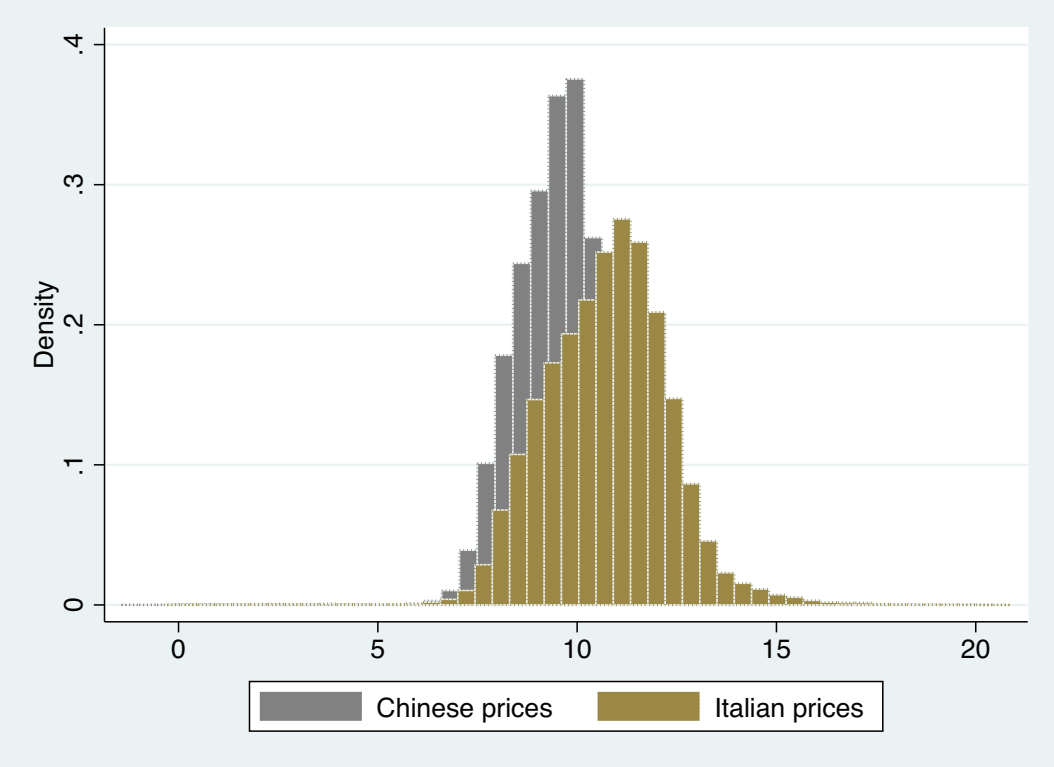
Figure 2. Distribution of observation by income level of importers



Source: Author's elaboration

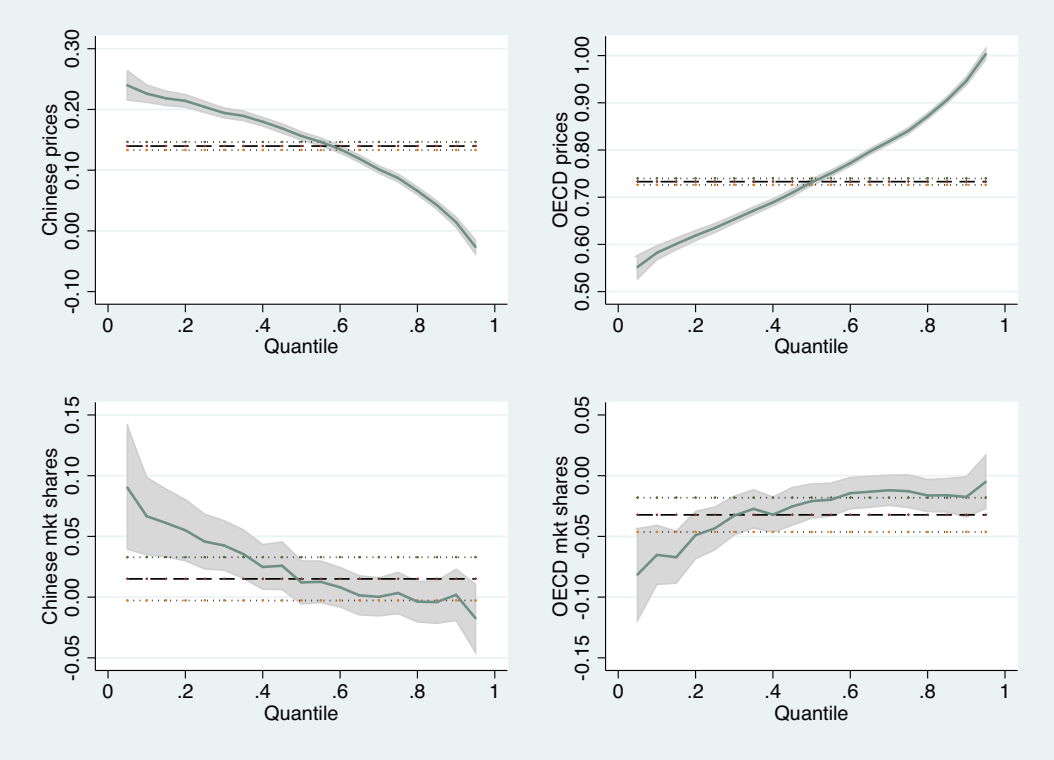
Note: The classification of the importers by income level is based on the World Bank

Figure 3. Distribution of Italian and Chinese prices (unit values, in log)



Source: Author's elaboration using STATA software

Figure 4. Quantile regression output* for selected variables - High income OECD markets and consumer goods



*The output has been produced by using the STATA command "grqreg" (Azevedo, 2011)

Table 1. Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
P	966465	9.443448	1.761038	-4.400063	24.32009
Y	956826	25.83087	1.840811	19.35621	30.2961
Y_PC	956826	9.112012	1.365326	4.5307	11.45707
D	966465	7.941857	1.015651	6.199175	9.829418
LLOCK	966465	0.1152147	0.3192811	0	1
ER	958686	0.4644582	0.5108776	1.06E-10	3.643876
Q	966056	2.295419	2.904757	-9.4151	15.50586
CH_UV	966465	8.457006	1.550969	-4.206255	24.58582
OECD_UV	966465	10.02214	1.687579	-4.49522	24.67563
SHARE_CH	966465	0.3183953	0.3397572	2.70E-07	1
SHARE_OECD	966465	0.688337	0.3949309	0	1

Table 2. Regressions results for the consumer goods (SITC-8)– High income OECD markets

p	(1) SITC-8	(2) Labor intensive	(3) Low-tech	(4) Medium-tech	(5) High-tech
p_{t-k}	0.468***	0.328***	0.356***	0.470***	0.405***
	(0.0192)	(0.0162)	(0.0298)	(0.0224)	(0.0271)
y	0.00467	0.0825**	0.0479***	0.0568***	0.0710***
	(0.0154)	(0.0331)	(0.0138)	(0.0103)	(0.0170)
y_pc	0.0479***	0.00999	-0.0430	-0.0882***	-0.0607*
	(0.0155)	(0.0606)	(0.0477)	(0.0278)	(0.0337)
d	-0.0313***	0.0310	-0.0330	-0.0342*	-0.0779***
	(0.00751)	(0.0484)	(0.0293)	(0.0184)	(0.0215)
llock	-0.00601	0.102***	0.0997	-0.0465	0.0710*
	(0.0240)	(0.0324)	(0.0620)	(0.0321)	(0.0410)
er	-0.0403***	-0.0880**	-0.196***	0.0368	-0.0619*
	(0.0132)	(0.0373)	(0.0498)	(0.0269)	(0.0348)
q	-0.0236	-0.0547	-0.0993***	-0.0950***	-0.119***
	(0.0152)	(0.0435)	(0.00933)	(0.00686)	(0.0142)
p_ch	0.0166	0.134	0.0645**	0.173***	0.0152
	(0.0151)	(0.0912)	(0.0324)	(0.0229)	(0.0244)
p_oecd	0.357***	0.381***	0.180***	0.282***	0.254***
	(0.0167)	(0.0183)	(0.0289)	(0.0221)	(0.0296)
share_ch	0.0865***	0.0985	0.109***	-0.00740	-0.0548
	(0.0166)	(0.270)	(0.0316)	(0.0247)	(0.0368)
share_oecd	-0.0176**	0.348	-0.0232	-0.0254	0.000711
	(0.00855)	(0.332)	(0.0232)	(0.0174)	(0.0238)
Constant	-1.581***	-1.749**	3.843***	0.860*	1.600**
	(0.370)	(0.780)	(0.785)	(0.464)	(0.733)
Observations	36,236	27,207	1,634	2,515	8,122
hansenp	0.109	8.24e-08	0.0525	0.108	0.0913
ar2p	0.246	0.0531	0.246	0.905	0.553

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3. Regressions results for the consumer goods (SITC-8) and selected divisions – Middle income markets, 2000/08

p	(1) SITC-8	(2) Labor- intensive	(3) Low tech	(4) Medium-tech	(5) High-tech
p_{t-k}	0.336***	0.248***	0.264***	0.357***	0.362***
	(0.0107)	(0.0209)	(0.0330)	(0.0279)	(0.0260)
y	0.0271***	0.0156**	0.00718	0.0564***	0.0898***
	(0.0104)	(0.00757)	(0.0137)	(0.00823)	(0.0119)
y_pc	-0.0266	-0.00537	0.121***	0.0297	-0.0150
	(0.0274)	(0.0151)	(0.0377)	(0.0217)	(0.0217)
d	0.00255	-0.00750	-0.0266	-0.0355**	-0.0184*
	(0.0124)	(0.00600)	(0.0215)	(0.0144)	(0.0105)
llock	0.0367*	-0.0120	0.130***	0.00861	0.0421
	(0.0200)	(0.0153)	(0.0486)	(0.0303)	(0.0269)
er	0.00342	0.0147	0.0428	-0.00831	0.0340
	(0.0177)	(0.0170)	(0.0447)	(0.0297)	(0.0334)
q	-0.0975***	-0.0796***	-0.127***	-0.116***	-0.139***
	(0.0114)	(0.00861)	(0.0109)	(0.00748)	(0.0120)
p_ch	0.175***	-0.00155	0.0898**	0.0328	0.0915***
	(0.0574)	(0.0215)	(0.0380)	(0.0318)	(0.0203)
p_oecd	0.406***	0.743***	0.245***	0.197***	0.240***
	(0.0109)	(0.0814)	(0.0293)	(0.0272)	(0.0257)
share_ch	-0.177	-0.0522***	0.0762**	-0.0374	-0.0586*
	(0.203)	(0.0139)	(0.0376)	(0.0287)	(0.0320)
share_oecd	0.0770	-0.0239***	0.0198	-0.0431**	-0.0586***
	(0.281)	(0.00848)	(0.0237)	(0.0195)	(0.0211)
Constant	-0.357	-0.931***	3.074***	1.579***	-0.0741
	(0.288)	(0.228)	(0.510)	(0.458)	(0.390)
Observations	52,847	29,397	2,828	3,666	9,001
hansenp	0.0126	0.0511	0.0500	0.260	0.170
ar2p	0.570	0.822	0.266	0.390	0.881

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4. Regressions results for the machinery goods (SITC-7) and selected divisions – High income OECD markets, 2000/08

p	(1) SITC-7	(2) Low-tech	(3) Medium-tech	(4) High-tech
p_{t-k}	0.373***	0.403***	0.364***	0.343***
	(0.0160)	(0.0358)	(0.0152)	(0.0298)
y	0.0480***	0.0322**	0.0548***	0.0500***
	(0.00494)	(0.0152)	(0.00630)	(0.0130)
y_pc	-0.0153	0.0677	-0.0456***	0.0808*
	(0.0133)	(0.0505)	(0.0141)	(0.0413)
d	-0.0140*	0.0615**	-0.0267***	0.0903***
	(0.00741)	(0.0279)	(0.00793)	(0.0219)
llock	-0.00730	0.0585	-0.00186	0.0319
	(0.0131)	(0.0539)	(0.0136)	(0.0429)
er	-0.0285**	-0.0921**	-0.0449***	0.0858**
	(0.0116)	(0.0468)	(0.0118)	(0.0392)
q	-0.0848***	-0.0648***	-0.0883***	-0.0844***
	(0.00363)	(0.00970)	(0.00482)	(0.00686)
p_ch	0.127***	0.0534*	0.125***	0.137***
	(0.00863)	(0.0317)	(0.0118)	(0.0160)
p_oecd	0.245***	0.336***	0.179***	0.401***
	(0.0115)	(0.0394)	(0.0123)	(0.0218)
share_ch	-0.0117	0.00109	-0.0194	-0.0658*
	(0.0113)	(0.0355)	(0.0119)	(0.0337)
share_oecd	0.00157	0.00407	0.00421	-0.0224
	(0.00882)	(0.0252)	(0.00906)	(0.0260)
Constant	1.148***	0.313	2.164***	-1.582***
	(0.215)	(0.691)	(0.266)	(0.576)
Observations	42,756	2,786	34,896	7,600
hansenp	0.0313	0.395	0.0823	0.127
ar2p	0.703	0.292	0.219	0.374

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5. Summary of selected results for the machinery & equipment goods (SITC-7) and by end use– High income OECD markets

	Investment goods	**Intermediate goods**
Price competition from China	Power (71); Specialized (72); Industrial (74); Office (75); Telecommunications (76)	Metalworking (73); Office (75); Telecommunications (76); Electrical (77); Road vehicles (78); Other transport eq. (79)
Competitive pressure by China reduces prices	Industrial (74); Office (75); Telecommunications (76); Road vehicles (78)	Metalworking (73); Electronics (77);
Competitive pressure by China pushes to upgrade	Other transport eq. (79)	Office mach. (75); Road vehicles (78); Other transport eq. (79)

Note: the table includes only those divisions where the variable "SHARE_CH" reported a significant coefficient

Table 6. Summary of selected results for the machinery & equipment goods (SITC-7) and by end use– Middle income markets

	Mach. and transport eq. - Investment goods	**Mach. and transport eq. - Intermediate goods**
Price competition from China	Metalworking (73); Industrial (74); Telecommunications (76); Electrical (77); Road vehicles (78)	Metalworking (73); Telecommunications (76); Electrical (77); Road vehicles (78)
Competitive pressure by China reduces prices	Power (71); Metalworking (73); Electronics (77).	Telecommunications (76); Electronics (77); Motor vehicles (78)
Competitive pressure by China pushes to upgrade	Office mach. (75)	Office (75); Transport (79)

Note: the table includes only those divisions where the variable "SHARE_CH" reported a significant coefficient

APPENDIX

Table A1. Regressions results for the two-digit divisions consumer goods (SITC-8)– High income OECD markets

p	(1) SITC-81	(2) SITC-82	(3) SITC-83	(4) SITC-84	(5) SITC-85	(6) SITC-87	(7) SITC-88	(8) SITC-89
p_{t-k}	0.318***	0.332***	0.375***	0.224***	0.463***	0.248***	0.325***	0.419***
	(0.0296)	(0.0396)	(0.0276)	(0.0678)	(0.0247)	(0.0298)	(0.0323)	(0.0195)
y	0.0514***	0.0668***	0.167***	0.0963***	0.0715***	0.201***	0.0591***	0.0709***
	(0.0147)	(0.0130)	(0.0252)	(0.0212)	(0.0107)	(0.0221)	(0.0192)	(0.0124)
y_pc	-0.0368	-0.0781*	-0.193***	0.0818**	-0.0725***	-0.125**	0.0516	-0.0138
	(0.0496)	(0.0428)	(0.0638)	(0.0336)	(0.0325)	(0.0535)	(0.0583)	(0.0249)
d	-0.0209	0.0858***	0.190***	-0.0220	0.0143	-0.0518*	-0.0676*	-0.0248*
	(0.0309)	(0.0231)	(0.0396)	(0.0341)	(0.0198)	(0.0315)	(0.0351)	(0.0131)
llock	0.0554	0.197***	0.384***	0.0925**	0.144***	0.208***	0.0127	0.0245
	(0.0687)	(0.0503)	(0.0690)	(0.0459)	(0.0360)	(0.0556)	(0.0754)	(0.0238)
er	-0.166***	0.0279	-0.0625	-0.128***	-0.110***	-0.148***	0.0527	-0.00203
	(0.0515)	(0.0353)	(0.0551)	(0.0370)	(0.0303)	(0.0480)	(0.0605)	(0.0209)
q	-0.111***	-0.108***	-0.0956***	-0.0746***	-0.0594***	-0.187***	-0.148***	-0.103***
	(0.0102)	(0.00972)	(0.0152)	(0.00767)	(0.00618)	(0.0120)	(0.0166)	(0.0112)
p_ch	0.0621*	0.0450	0.0842	0.0238	0.0527**	0.0477**	0.0785**	0.0344
	(0.0325)	(0.0429)	(0.0686)	(0.0278)	(0.0254)	(0.0229)	(0.0338)	(0.0218)
p_oecd	0.190***	0.0681**	0.274***	0.386***	0.375***	0.149***	0.404***	0.328***
	(0.0331)	(0.0282)	(0.0419)	(0.0286)	(0.0235)	(0.0341)	(0.0373)	(0.0219)
share_ch	0.121***	-0.00808	-0.197***	-0.0309	-0.0496**	-0.204***	0.117***	-0.0518**
	(0.0332)	(0.0247)	(0.0479)	(0.198)	(0.0245)	(0.0357)	(0.0445)	(0.0222)
share_oecd	-0.0126	-0.0287*	-0.0575*	0.362	-0.0527***	-0.0171	0.0197	-0.0174
	(0.0229)	(0.0155)	(0.0297)	(0.387)	(0.0185)	(0.0245)	(0.0319)	(0.0137)
Constant	3.895***	4.139***	-0.420	-2.317**	0.232	2.831***	0.282	-0.186
	(0.827)	(0.682)	(0.839)	(0.954)	(0.511)	(0.994)	(0.944)	(0.409)
Observations	1,747	2,775	1,545	15,150	1,862	6,772	4,166	13,450
hansenp	0.0878	0.564	0.221	0.241	0.101	0.334	0.169	0.0816
ar2p	0.771	0.274	0.421	0.0262	0.178	0.0883	0.0230	0.455

Standard errors in parentheses

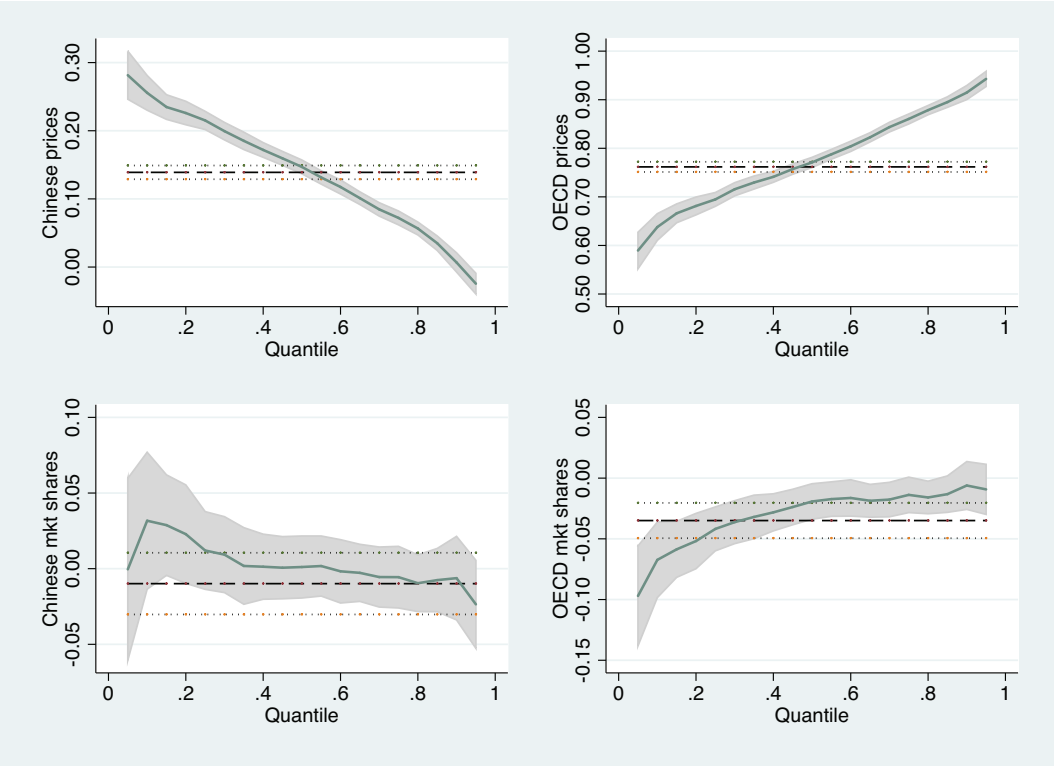
*** p<0.01, ** p<0.05, * p<0.1

Table A2. Regressions results for the two-digit divisions consumer goods (SITC-8)– Middle income markets

p	(1) SITC-81	(2) SITC-82	(3) SITC-83	(4) SITC-84	(5) SITC-85	(6) SITC-87	(7) SITC88	(8) SITC-89
p_{t-k}	0.255***	0.306***	0.256***	0.211***	0.339***	0.324***	0.464***	0.244***
	(0.0327)	(0.0295)	(0.0299)	(0.0275)	(0.0287)	(0.0287)	(0.0364)	(0.0190)
y	0.00427	0.0459***	0.0724***	0.0124	0.0443***	0.111***	0.0396***	0.0942***
	(0.0136)	(0.00859)	(0.0164)	(0.00767)	(0.00946)	(0.0135)	(0.0199)	(0.0123)
y_pc	0.137***	0.0840***	0.0751**	-0.00499	-0.0460*	0.000274	-0.101**	-0.104**
	(0.0355)	(0.0271)	(0.0379)	(0.0177)	(0.0249)	(0.0236)	(0.0424)	(0.0491)
d	-0.0213	-0.0458***	0.0202	-0.0351***	-0.0497***	-0.0181	-0.0368*	0.0169
	(0.0214)	(0.0140)	(0.0257)	(0.0109)	(0.0143)	(0.0126)	(0.0193)	(0.0141)
llock	0.129***	-0.0702**	-0.110**	-0.0156	0.0764**	0.0362	0.0652	0.000128
	(0.0481)	(0.0325)	(0.0465)	(0.0191)	(0.0369)	(0.0311)	(0.0515)	(0.0280)
er	0.0283	-0.0142	0.0157	0.0178	0.0223	0.0326	-0.0276	0.0170
	(0.0446)	(0.0316)	(0.0512)	(0.0232)	(0.0388)	(0.0385)	(0.0684)	(0.0243)
q	-0.127***	-0.100***	-0.148***	-0.0846***	-0.0895***	-0.152***	-0.0670***	-0.152***
	(0.0104)	(0.00925)	(0.0142)	(0.00630)	(0.00837)	(0.0114)	(0.0247)	(0.0131)
p_ch	0.0768**	0.0771***	0.107***	-0.0258	0.115***	0.0951***	0.0377	0.397***
	(0.0374)	(0.0285)	(0.0355)	(0.0182)	(0.0238)	(0.0232)	(0.0375)	(0.0933)
p_oecd	0.235***	0.263***	0.528***	0.924***	0.557***	0.191***	0.350***	0.293***
	(0.0280)	(0.0242)	(0.0422)	(0.105)	(0.0318)	(0.0279)	(0.0393)	(0.0184)
share_ch	0.106***	-0.0222	-0.0374	-0.0424**	-0.00669	-0.0679*	-0.0294	-0.501**
	(0.0379)	(0.0299)	(0.0567)	(0.0173)	(0.0292)	(0.0362)	(0.0501)	(0.248)
share_oecd	0.0182	0.00654	-0.00611	-0.0205*	-0.0252	-0.0362	-0.106***	-0.419
	(0.0234)	(0.0175)	(0.0303)	(0.0111)	(0.0216)	(0.0248)	(0.0371)	(0.281)
Constant	3.249***	1.282***	-1.198**	-2.050***	-0.164	0.586	-0.756*	0.108
	(0.497)	(0.349)	(0.551)	(0.412)	(0.409)	(0.447)	(0.448)	(0.440)
Observations	2,997	3,853	2,389	18,514	3,265	6,699	2,302	21,582
hansenp	0.0673	0.197	0.179	0.407	0.515	0.493	0.419	0.148
ar2p	0.157	0.235	0.108	0.847	0.418	0.440	0.557	0.838

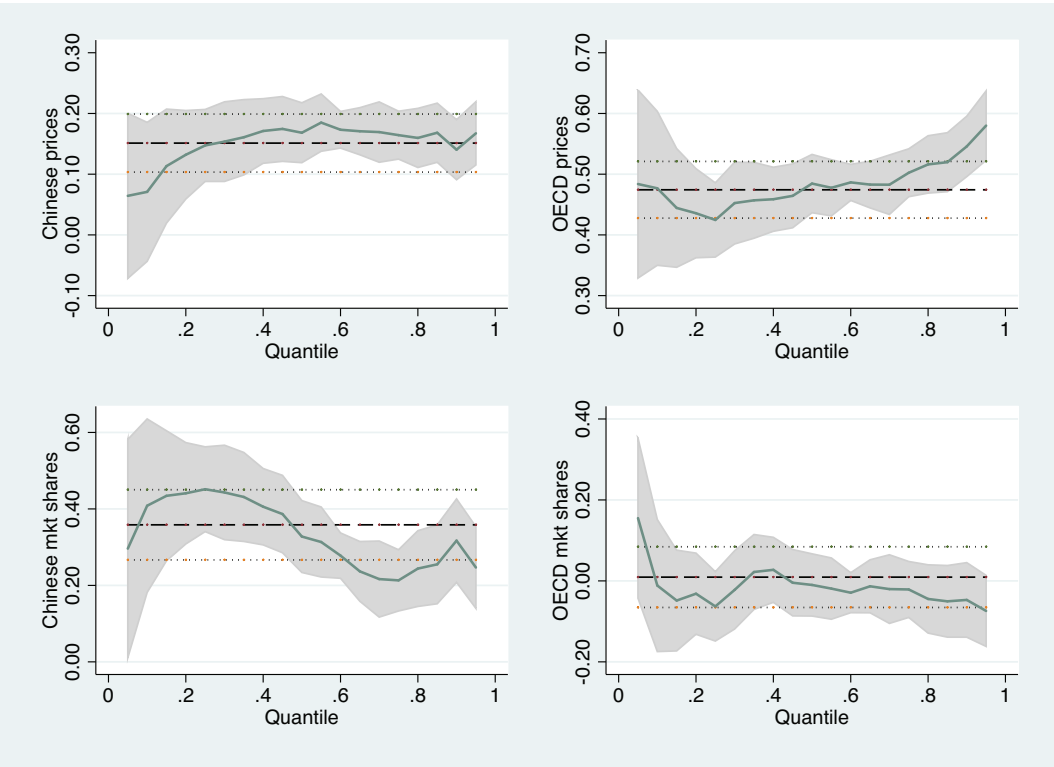
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure A1. Quantile regression output* for selected variables - High income OECD markets and labor intensive consumer goods



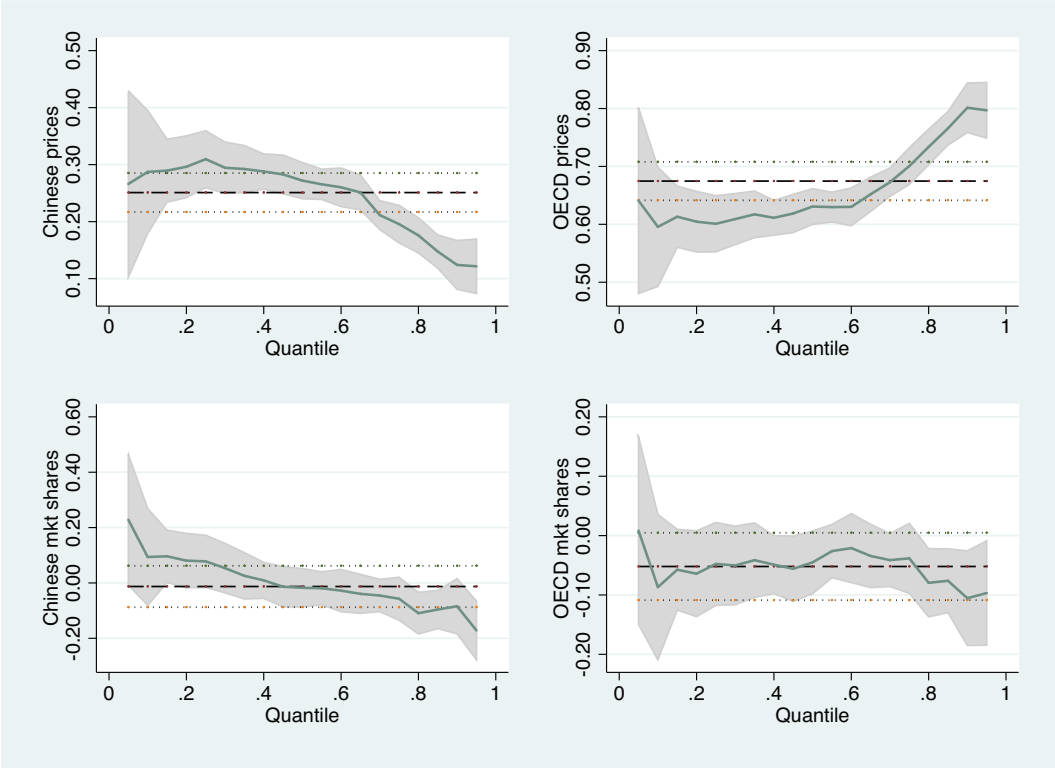
*The output has been produced by using the STATA command "grqreg" (Azevedo, 2011)

Figure A2. Quantile regression output* for selected variables - High income OECD markets and low tech consumer goods



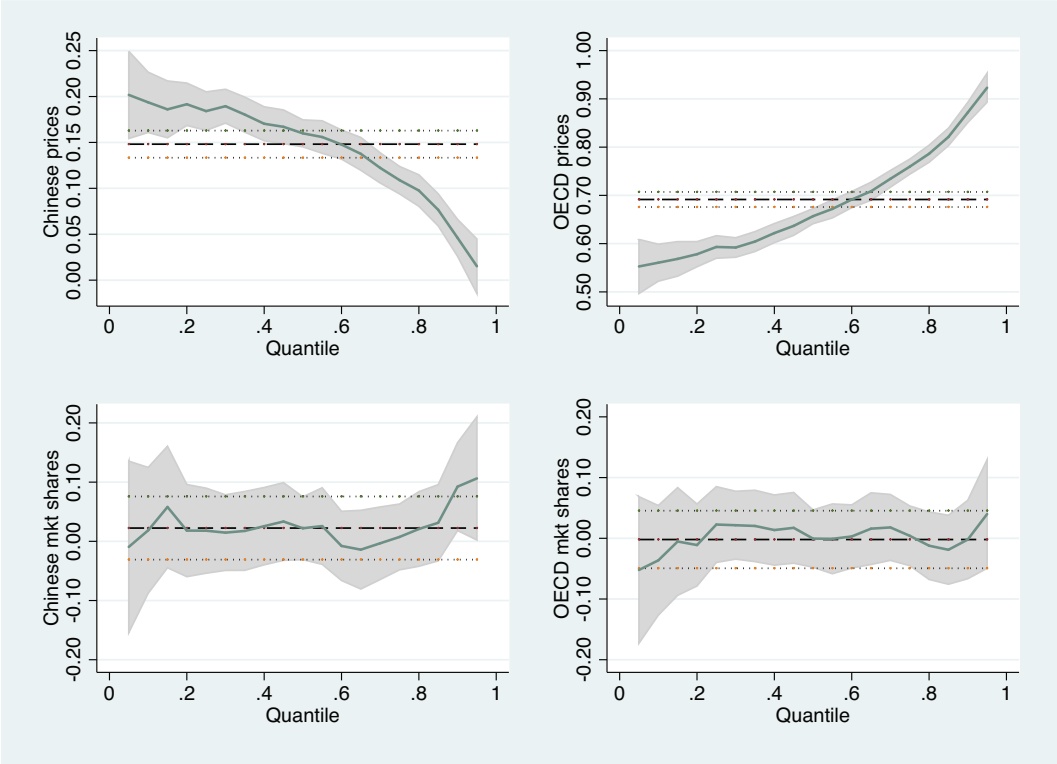
*The output has been produced by using the STATA command "grqreg" (Azevedo, 2011)

Figure A3. Quantile regression output* for selected variables - High income OECD markets and medium tech consumer goods



*The output has been produced by using the STATA command "grqreg" (Azevedo, 2011)

Figure A4. Quantile regression output* for selected variables - High income OECD markets and high tech consumer goods



*The output has been produced by using the STATA command "grqreg" (Azevedo, 2011)