Engagement in Asymmetric Markets: Causes and Consequences

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Abstract

This paper contributes to the emprical debate on firm heterogeneity in international trade dealing with the direction of causality from which the performance premium across destination markets originates. For this purpose, we first investigate the selection of firms into markets with asymmetric income levels exploring which firm level characteristics are associated with this selection. Once we identify movements along different statuses on a year to year basis we investigate the factors that drive these movements. We search for the heterogeneity in post-entry effects of trading with different type of markets by establishing treatment models in line with the learning by exporting hypothesis. Our results indicate self-selection mechanisms and post-entry effects differ from market to market for Turkish manufacturing firms.

Keywords: Exports, Geographical diversification, Self selection, Post entry effects.

JEL Classification Codes: F14, D24.

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1 Introduction

The characteristics of the markets that firms trade with has gained special importance in firm heterogeneity and trade literature. Researchers have developed models on exports with asymmetric countries and asymmetric sunk costs of entry (Helpman et al., 2007; Chaney, 2008). According to these models, self-selection process operates market by market as firms face different obstacles to enter different markets. That is firms with lower productivity levels serve markets with low productivity thresholds (less developed markets) whereas higher productivity firms can export to markets with high productivity thresholds (more developed markets). Alongside with these theoretical models, empirical evidence supports that exporters to more developed economies show ex-ante superior performance compared to less developed country exporters (Pisu, 2008; Serti and Tomasi, 2009; Conti et al., 2010; Silva et al., 2012).

In addition to the pre-entry performance premia across different destinations with different income levels, the post-entry effects of exporting on firm performance by destination has received particular attention in the related literature (De Loecker, 2007; Damijan et al., 2004). Post-entry differentials of exporting by destination markets may emerge since (i) developed countries are endowed with more advanced technology and knowledge accumulation serving such economies is expected to generate more learning effects compared to exporting to less advanced economies (ii) firms face higher competition in more advanced markets forcing them to improve their efficiency. However, evidence on the fact that the effect post-entry mechanisms differ across markets is rare and less conclusive compared to self selection mechanisms into the export markets.

In this paper, we aim to contribute to this strand of literature by not only investigating the firms' self selection into asymmetric markets but also focusing on the post entry effects of firms engagement in those markets with different development levels for Turkey. Particularly, we attest that whether Turkish exporters to more developed countries show ex-ante superior performance compared to less developed economies. Further, we investigate whether there exists heterogeneity in post-entry effects associated with Turkish firms' involvement in different type of export markets. Specifically, we identify the differentials in immediate and future productivity gains upon export entry of firms into asymmetric markets with different income levels.

This paper provides evidence for self selection into asymmetric markets and differentials in post-entry effects arose by involvement in these asymmetric markets exploiting a comprehensive dataset of Turkish manufacturing firms over the period 2003-2011. Turkey is a particularly interesting developing economy to study as during the period in question it has experienced a dramatic export boom as well as undergoing a structural transformation process in terms of its production and

trade patterns along with sectoral and geographical diversification.

In order to carry out our analyses, we first group countries using World Bank's classification according to their gross national income per capita and, distinguish between two mutually exclusive groups of markets: High-income (HI) countries and Medium-Low-income (MLI) countries. We present descriptive evidence on the fact that exporting to HI countries is associated with better performance with respect to that of exporting to MLI countries in Turkish manufacturing industry. Next, we address whether being an HI exporter is correlated with firm's ex-ante superior performance with respect to MLI exporter by comparing the characteristics of firms that start exporting to HI markets with those of always MLI exporters some years before entry. Then, we proceed by estimating dynamic probit models emphasizing the role of sunk costs in selection into different types of destination markets. We also investigate whether firms which increase their share of exports towards HI countries show ex-ante superior performance with respect to those decreasing the regarding share. Finally, we search for the heterogeneity in post-entry effects of trading with different type of markets by establishing treatment models. We combine Propensity Score Matching (PSM) methodology with Difference in Difference (DID) estimators to test whether there are higher productivity gains for firms exporting their products to relatively more advanced economies.

Our contribution to the regarding literature is twofold. First of all, we provide a detailed investigation of heterogeneity in self-selection mechanism as well as post-entry effects associated with firms' involvement in different types of export markets with different income levels. Second, to the best of our knowledge this study is the first attempt to investigate this topic for Turkey. Although positive productivity gains upon export entry is documented for Turkey (Yasar and Rejesus, 2005; Aldan and Gunay, 2008; Maggioni, 2012; Dalgıç et al., 2014), the potential channels through which performance differentials may arise has not been yet established. We fulfill this gap by introducing the information on firm level destination of exports.

The results of the study provide evidence that development stage of destination markets matter in explaining the observed differentials in exporters' performances. Our results indicate self-selection mechanisms and post-entry effects differ from market to market for Turkish manufacturing firms. Specifically, we confirm that firms that are more productive, larger, more capital intensive and paying higher wages self select into more advanced export markets. Even if HI exporters already show ex-ante superior performance with respect to the MLI exporters, they could improve their performance differential after the export entry.

The remainder of this paper is organized as follows. Section 2 gives a brief overview of the literature. Section 3 discusses data and preliminary descriptive evidence. Section 4 presents the results of our empirical investigation. Section 5

concludes.

2 The Literature

General equilibrium models of international trade Melitz (2003) and Bernard et al. (2003) have built the formal theoretical framework of international trade models with heterogeneous firms. These studies demonstrate how the most productive firms self select into export markets. Due to the existence of sunk costs and different productivity levels within the same industry, only the most productive firms could afford to pay the sunk costs and find it profitable to sell in foreign markets. An alternative but not mutually exclusive explanation that points to the superior performance of exporters is that firms can become more efficient after they begin exporting through learning or economies of scale effects (Clerides et al., 1998). Wagner (2007), and Greenaway and Kneller (2007) surveys the ongoing firms heterogeneity literature on exports.

The empirical literature on firm heterogeneity in international trade has recently evolved through further exploring the diversification of firms' activities, both with respect to their geographical and product diversification i.e. country and product extensive margins (see Mayer and Ottoviano, 2007). Accordingly, trade is found to be concentrated in a few firms within an industry which are characterized by a high degree of both product and geographical diversification. The reason behind the fact that a small number of firms are diversified among geographical distances and products, can be attributed to the theoretical view that exporters incur additional costs. Studies of Bernard et al. (2007) for US, Muuls and Pisu (2007) for Belgium, Eaton et al. (2004) for France and Castellani et al. (2010) for Italy support this theoretical view. Furthermore, a diversification premia is found by Andersson et al. (2008) and Castellani et al. (2010) claiming a positive relationship between firm performance and geographical and product diversification.

Along with the number of foreign markets that firms serve the characteristics of these markets gain importance in firm heterogeneity and trade literature. Recently, researchers have attempted to develop models on exports with asymmetric countries and asymmetric sunk costs of entry. Helpman et al. (2007) and Chaney (2008) presents a theoretical model that builds on Melitz's (2003) model and find out that self-selection depends on the market that the firm operates in a gravity sense assuming that market entry costs differ across markets. According to these models, firms with lower productivity levels serve markets with low productivity thresholds (less developed markets) whereas higher productivity firms can export to markets with high productivity thresholds (more developed markets).

Empirical evidence supports that exporters to more developed economies

show ex-ante superior performance compared to less developed country exporters. For instance, investigating Belgian firms Pisu (2008) show that before entering export markets exporters has higher productivity levels than firms exporting to less developed countries. Serti and Tomasi (2009) find empirical evidence for Italian firms' higher productivity levels for high-medium income country exporters compared to European and low -income countries. For Italy, Conti et al. (2010) finds that firms with higher productivity levels and higher skilled labor shares have a higher probability to export to industrial markets outside Europe. Silva et al. (2012) find empirical evidence for Portuguese firms that firms that start serving to developed markets are ex-ante the most productive.

In addition to the pre-entry performance premia across different destinations with different characteristics, the post-entry effects of exporting on firm performance by destination of exports receives particular attention in the related literature. For instance, since developed countries are endowed with more advanced technologies serving such economies is expected to generate more learning effects compared to exporting to less advanced economies. Evidence on the fact that the effect post-entry mechanisms differ across markets is rare and less conclusive compared to self selection mechanisms (Wagner, 2007). Analyzing Slovenian firms, De Loecker (2007) reports higher productivity gains for firms exporting to higher income regions. Similarly, Damijan et al. (2004) report evidence on Slovenian exporters that learning effects can arise only for the firms exporting to more advanced markets.

3 Data and Preliminary Analysis

3.1 Data Description

In this paper, we utilize a recent firm level panel merging two different datasets collected by Turkish State Institute of Statistics (TURKSTAT) and described as follows:

The Annual Industry and Service Statistics is a census of firms with more than 19 employees while it is a representative survey for firms with less than 20 employees. For this study, we select the whole population of private Turkish manufacturing firms with 20 employees or more[1]. In the dataset, firms are classified

[1]Firms with 20 and more than 20 employees account for a large share of Turkish manufacturing industry. For example, they constitute 87% of production in value and 75% of employment in 2009. It shows a similar pattern in the previous and following years. Moreover in the presence of sunk costs since trade activity is mostly performed by large firms our selection does not create biased results.

according to their main activity, as identified by Eurostat's NACE Rev.1.1 standard codes for sectoral classification[2]. The database provides detailed information on a number of structural variables which are mainly seen on a firm's balance sheet such as revenues, value added, labour cost, intermediate inputs cost, tangible and intangible investment costs[3] together with information on industry and geographical location, foreign ownership and the number of employees. We calculate capital stock series of firms applying the perpetual inventory methodology and using the data on investment cost series for machinery and equipment, building and structure, transportation equipment and computer and programming.

The Foreign Trade Statistics consists of the imports and exports at 12-digit GTIP classification the first 8 digits of whom correspond to CN classification whereas the last 4 digits are national. The information on the origin/destination countries of trade flows is also available in the dataset.

Our unbalanced panel covers longitudinal data of XX different firms over the period 2003-2011. The original sample size in the merged dataset was slightly larger but we applied a cleaning procedure which is largely inspired by Hall and Mairesse (1995). We threw out the abnormal observations (zero / negative) for the main variables such as output, intermediate inputs, labor cost etc. Then, we excluded observations where main variables and ratios (e.g. employee, value added per employee, capital per employee) display extraordinary jumps and drops over one year. Finally, we excluded firms in NACE sectors 16 (Manufacture of tobacco products), 23 (Manufacture of coke, refined petroleum products and nuclear fuel), 30 (Manufacture of office, accounting and computing machinery), 37 (Recycling) since they include small number of firms. We end up with a sample of 18,286 firms on average on a yearly basis or 164,580 observations in total.

3.2 Preliminary Analysis

Before proceeding in the evaluation of the firm heterogeneity with respect to the trading partners, we first group traders according to the type of market they trade with. We use World Bank's classification of countries according to their income levels (gross national income per capita), and distinguish between two mutually exclusive groups of countries High-income countries (HI) and Medium-Low-income countries (MLI)[4]. Figure 1 presents the evolution of Turkish private manufacturing

[2]The economic activities that are included in the survey are the ones in the NACE sections from C to K, and from M to O.

[3]All nominal values are deflated using 4-digit NACE price indices with the base year 2003. For capital goods we use an aggregate investment deflator provided by the Ministry of Development. Wages are deflated by consumer price index.

[4]Medium-Low-income countries correspond to non high-income countries, defined by the World Bank as countries with *2007 per-capita gross national incomes lower than $11,456* com-

firms' export orientation towards high and medium-low income destination markets over 2003-2011. One can observe that the share of exports to HI countries in total manufacturing export value declines while the share of exports to MLI increases accordingly. This evidence is in line with the fact that Turkey has witnessed a transition across its destination markets where the EU and EFTA regions lose grounds towards new markets in the Middle East and North Africa (MENA) as well as in Europe and Central Asia.

Insert Figure 1 *here*

We move forward by creating several firm level dummies for identifying the firms' export market orientation as shown in Table 1. First, we make a relatively more conservative classification and define a set of export dummies decomposing the exporting status of firms into exports to only HI countries, only MLI countries, and both type of countries. That is we categorize firms exporting only to the HI regions as only high income exporters; firms exporting only to the MLI regions as only medium-low income exporters and, firms exporting both to the HI and MLI regions as both high and medium-low income exporters. In this way, we are able to identify three mutually exclusive dummies ($Exporter^{Only-HI}$, $Exporter^{Only-MLI}$, $Exporter^{Both}$) one for each kind of exporter.

Next we make use of export shares to further explore how much of its total export volume is concentrated towards each region. In particular, we define firms selling more than 50% of their total exports to HI regions as HI exporters and similarly firms directing more than 50% of their total export volume to MLI regions as MLI exporters. Accordingly, we identify two mutually exclusive dummies ($Exporter^{HI-50}, Exporter^{MLI-50}$) one for each region. indicating the export status of the firms. For example $Exporter^{HI-50}$ takes value 1 if the firm is a HI exporter and 0 otherwise.

Alternatively, taking the advantage of our trade data which also includes product level information, we define another set of dummies as follows. We count the export lines (i.e. product-country pairs) within each firm. Accordingly, if the number of export lines towards HI regions is higher than the number of export lines to MLI regions within a firm, then it is identified to be a HI exporter in terms of its export lines. We define two mutually exclusive dummies ($Exporter^{HI-line}, Exporter^{MLI-line}$) one for each region.

Insert Table 1 *here*

In Table 2, we present the number of exporters in each group as well as total number of exporters in each year. According to first three columns, while the

puted in U.S. dollars using the Atlas conversion factor.

majority of firms trade with more than one group, there are a small number of firms exporting to just one group of countries (see Table 2). Distribution of number of firms in every year according to above mentioned categories is presented in Table 3. While in absolute terms the numbers of HI exporters seem to be stable, the share of HI exporters in total number of exporters decreases throughout the analysis period. For instance, in terms of the category with respect to number of export lines the share of high income exporters declined from 59 percent in 2003 to 38 percent in 2011.

Insert Table 2 here

Insert Table 3 here.

4 Empirical Analyses

4.1 Exporters' premia across destination markets

Previous theoretical analyses based on the gravity model provides a stylized fact showing trade is increasing in GDP of partner countries (XX). Given this theoretical framework empirical research supports the view that exporters to more developed economies show ex-ante superior performance compared to less developed countries (Pisu, 2008; Serti and Tomasi, 2009). Motivated by this stylized fact, in this section, we present descriptive statistics and premia regressions in order to get some insight on the relationship between observed initial heterogeneity of firms and export market orientation.

First, using a number of performance criteria of firms we try to assess whether firm performance differentiates conditional upon the development stage of destination markets. Particularly, we consider total factor productivity (TFP) which we calculate using the Levinsohn and Petrin's (2003) methodology[5], standard labour productivity (LP) defined as value added (gross output net of intermediate inputs) per employee, capital intensity (ratio of the capital stock to the number of employees), wage per employee (WAGE_L), total manufacturing sales (SALES) and number of employees (EMP). Table 4, shows the means of the various performance criteria for firms exporting to destination markets with different income levels. Our findings suggest that firms exporting to both kind of regions outperform others (Table 4). That is both HI and MLI exporters are the most productive, most capital intensive and largest in terms of number of employees and sales, pay

[5]Levinsohn and Petrin (2003) provides a semi- parametric approach for TFP estimation. In this approach, TFP is measured as the residual of labour and capital under Cobb-Douglas technology, employing the firms'usage of intermediate inputs as a proxy variable for unobserved productivity shocks.

the highest wages. This finding is in line with the branch of literature suggesting that firms which are more diversified in terms of country and product margins perform better with respect to the less diversified firms (Chaney, 2007; Helpman et. al, 2007; Wagner, 2007). This might also depend on the differential between the magnitudes of scale of operation for both HI and MLI exporters and the remaining groups. Only MLI exporters are always the worst performers in all criteria. As can be seen in Table 4, HI exporters show superior performance with respect to MLI exporters.

Insert Table 4 here.

Next, we continue assessing exporters' premia with respect to the development stage of destination markets . We estimate the following relationship between the selected firm level performance indicators and our dummies for export market orientation:

$$y_{it} = \beta_0 + \alpha_i + \beta_1 Exporter_{it}^{Only-HI} + \beta_2 Exporter_{it}^{Only-MLI} + \beta_3 Exporter_{it}^{Both} + \delta Controls + \varepsilon_{it}$$

The dependent variable y_{it} measures the logarithm of either firms' total factor productivity (TFP), labour productivity (LP), capital intensity, wage per employee, sales or number of employees where the subscript i denotes individual firms and t indexes year. Dummies for the export market orientation are denoted by $Exporter^{Only-HI}$, $Exporter^{Only-MLI}$ and $Exporter^{Both}$, respectively, dummy variables for a only HI exporters, only MLI exporters and both HI and MLI exporters. The coefficients β_1, β_2 and $\beta_3$in front of the export orientation dummies represents the average trading premia for firms exporting to various regions, with respect to the baseline category of non-exporters. We utilize a series of control variables denoted by the vector of $Controls$ including the logarithm of firm's number of employees[6], foreign ownership dummy, import status dummy indicating whether a firm is an importer or not, two-digit sector dummies, region[7] and year dummies. We also incorporate firm specific time invariant fixed effects as trading status of firm is expected to be highly correlated these effects within the context of firm heterogeneity[8].

[6] We do not control for size in the sales and employment regressions. Moreover, the regresions are robust to the usage of alternative size dummies instead of number of employees.

[7] The region dummies identify the 12 Turkish regions distrubuted according to the NUTS 2 classification.

[8] We also estimate regarding eqution by Ordinary Least Squares (OLS) methodology. Indeed, in terms of our selected performance criteria the coefficients representing the exporters' premia declines significantly in the fixed effects specifications. For the sake of bravity we do not report OLS results, they are available upon request.

The results obtained from fixed effects regressions are presented in Table 5. They confirm previously observed findings from mean values of various performance criteria. We find that firms exporting to both HI and MLI countries have the highest premia. As discussed above, the finding that firms' exporting to both group of countries showing the highest premia may reflect the fact that firm performance is increasing with firm's geographical scope. In addition, firms exporting only to HI countries perform better than firms exporting only to MLI countries. To present a more consistent picture of exporters' premia across destination markets we turn to our other definitions of dummies for export market orientation ($Exporter^{HI-50}, Exporter^{MLI-50}, Exporter^{HI-line}, Exporter^{MLI-line}$). Hence, using these dummies we estimate two more fixed effects regressions with the same controls as above for each performance indicator (Table 5). Results from these regressions confirm that HI exporters' premia are always higher than firms selling to MLI countries. This is an expected result as exporting to more advanced countries which brings about stronger product differentiation and market competition is accompanied by better firm performance.

Insert Table 5 here.

4.2 Evidence on Self-Selection Process

So far, we present descriptive evidence on the fact that exporting to HI countries is associated with better performance with respect to that of exporting to MLI countries in Turkish manufacturing industry. This finding could be attributed to either HI country exporters' showing ex-ante superior performance compared to MLI exporters or post-entry performance differentials among firms exporting towards different types of regions.

We start with addressing the question whether being an HI exporter is correlated with firm's ex-ante superior performance with respect to MLI exporter. Advocates of the self selection hypothesis stress the size of sunk costs in the decision to enter foreign markets through exports. Models on exports with asymmetric countries and asymmetric sunk costs of entry argues that self-selection into different markets arises due to the different sunk costs across different destinations (Helpman et al., 2007; Chaney, 2008). Since markets differ in terms of distance, income, familiarity, legal or institutional structures, exporters come up with different sunk costs across markets. Besides, from a similar point of view of Bernard et al. (2003) suggest that due to the higher competition firms face in developed markets, a stronger firm performance is required for entering these markets. Thus, in the subsequent analyses we allow for differences in sunk costs between different types of export markets.

We first compare the characteristics of firms that start exporting to HI markets with those of always MLI exporters some years before entry. In order to do so we define a HI export starter as a firm which had never exported to a high income country in the previous year (t-1) and start to exporting to HI countries in period t. We have eight cohorts each correspond to a year between 2004 and 2011. We regress firms' characteristics at time $t-\rho$ on a dummy variable indicating if a firm is a HI starter at time t and on a set of controls:

$$y_{it-\rho} = \beta_0 + \alpha_i + \beta_1 Starter_{it}^{only\_HI} + \beta_2 Starter_{it}^{only\_MLI} + \beta_3 Starter_{it}^{Both} + \delta Controls_{t-\rho} + \varepsilon_{it}, \text{ with } 1 \leq \rho \leq 3.$$

where $Starter^{HI}$ is a dummy variable taking value one if the firm is a HI starter and zero if the firm is always an MLI exporter (Table 6). $Controls$ variables include the logarithm of firm's number of employees, foreign ownership dummy, import status dummy indicating whether a firm is an importer or not, two-digit sector dummies, region and year dummies. Alternatively, for robustness we define HI sustainers category as firms which had never exported to a high income country in the previous year (t-1) and start to exporting to HI countries in period t and continue to export to HI markets one period further (t+1) (Table 6). Similar to HI starters we regress firms' characteristics at time $t-\rho$ on HI sustainers at time t and on a set of controls.

As Tables 6A and 6B show firms that start exporting to HI countries are ex ante larger, more productive, more capital intensive and pay higher wages than non-exporters. Due to the self-selection mechanism at work firms that start exporting to MLI countries also show superior performance with respect to never exporters. However, this performance premia for HI starters (sustainers) is larger compared to that of MLI starters in terms of all criteria. For instance, two years before entering the HI export market, HI starters are already approximately 12 percent more productive (in terms of TFP) than always non-exporters while MLI starters are only 7 percent more productive than always non-exporters (Table 6A). The evidence presenting that firms exporting to HI countries exhibit ex-ante performance advantages with respect to those that do not export to high income countries suggest that firms bear higher sunk costs in more developed regions of the world.

Insert Table 6A here.

Insert Table 6B here.

To provide a more clear view of selection processes based on sunk costs we

move on to a dynamic framework and estimate a dynamic panel probit model[9]. Past trade experience of firms is one of the most important determinant of firms' current trade status (Roberts and Tybout 1997; Bernard and Jensen, 2004). To account for sunk costs we include lagged dependent variable i.e. lagged export status of firms and estimate the following random effects panel probit equation:

$$P(y_{it} = 1, x_{it}, y_{it-1}, u_i) = f(\alpha + \rho y_{it-1} + \beta' x_{it} + u_i) \tag{1}$$

In the above dynamic estimation model subscript i and index t denotes the individual firms and years, respectively. The binary variable y_{it} indicates whether the firm is a HI exporter (MLI exporter) or not in one of three subsequent forms i.e. $Exporter^{HI-50}$ ($Exporter^{MLI-50}$) or $Exporter^{HI-line}$ ($Exporter^{MLI-line}$) respectively. x consists of our lagged firm level performance indicators (TFP, wage per employee, capital intensity and number of employees) including the mean of these variables as well as region, sector and year dummies as controls. u_i captures the firm level unobservables where f denotes the cumulative normal distribution and where u_i can be expressed as [10]:

$$u_i = \beta_o + \beta_1 y_{i0} + \beta_2 \bar{x}_i + \epsilon_i \tag{2}$$

The results of the random effects dynamic probit model for HI exporters and MLI exporters are presented in Table 7. The coefficients of the lagged dependent variables indicate that firms face sunk costs of engaging into export markets. Comparing the coefficients of these variables for HI exporters and MLI exporters we show that HI exporters face higher sunk costs than MLI counterparts. To illustrate consistent with our previous findings, estimated coefficient of the lagged dependent variable in the HI exporter equations is larger than that in the MLI exporter equations. Moreover, the initial exporting status coefficients are high in magnitude and statistically significant correcting for the bias introduced by the 'initial condition' problem. We confirm that the more productive, the larger the firms are, the more capital intensive XX more likely they self select into export markets.

Insert Table 7 here.

[9] The dynamic specification also allows us to to consider the potential endogeneity between firms' involvement in export markets and firm performance.

[10] In order to deal with the initial condition bias existing in dynamic limited dependent variable models and the possible correlation between the controls and unobserved heterogeneity we utilize Wooldridge's (2005) methodology which models firm specific effects u_i as a function of the initial condition and other explanatories. Accordingly, the model becomes a random effects probit model.

We further explore whether firms' that increase their share of exports towards HI countries show ex-ante superior performance with respect to the firms that decrease the regarding share. Particularly, we define firms' increasing share of exports towards HI regions as upgrading their status and decreasing this share as worsening. By this way, we end up with eight cohorts of transition from one year to another corresponding to 2003-2004, 2004-2005, 2005-2006, 2006-2007, 2007-2008, 2008-2009, 2009-2010 and 2010-2011. We estimate a probit model over the pooled sample of these cohorts where the categorical dependent variable is a bivariate dummy taking value one if the firm upgrades its status and zero otherwise. The explanatory variables in the probit specification consists of the selected firm characteristics prior to the transition (in t-1 or in t-2) and region, sector and year dummies as controls. Findings from the regarding probit estimations show that the probability of upgrading is positively associated with productivity, size and capital intensity (see Table 8).

Insert Table 8 here.

4.3 Post-Entry

So far we have confirmed that firms that are more productive, larger, more capital intensive and paying higher wages self select into more advanced export markets. However, this finding does not exclude post-entry performance differentials among firms exporting towards different types of regions. That is even if HI exporters already show ex-ante superior performance with respect to the MLI exporters, they could improve their performance differential after the export entry. Such differential may emerge since (i) developed countries are endowed with more advanced technology and knowledge accumulation serving such economies is expected to generate more learning effects compared to exporting to less advanced economies (ii) firms face higher competition in more advanced markets forcing them to improve their efficiency.

In this part of the study we aim to accurately identify the heterogeneity in productivity gains associated with firms' involvement in different type of export markets. We mainly establish average treatment models using matching techniques. Particularly, we apply the propensity score matching (PSM) algorithm together with a differences-in-differences (DID) methodology. While testing for the post-entry mechanisms at work this methodology allows us to control for the self selection process.

Our aim is to estimate the productivity gains associated with export entry separately for HI and MLI countries. We establish four treatment models. In the first and second models, our treatment group consists of firms that do not export at time $t-1$ (non-exporter), start exporting only to the HI countries (MLI countries)

at time t and continue exporting only to the HI countries (MLI countries) at time $t+1$, whereas our control group includes firms that has never exported over the analysis period. Accordingly,we have seven cohorts that each correspond to a year between 2004 and 2010. Note that here we restrict our treated sample to firms that start exporting to only HI or only MLI countries. Although these firms constitute a small share of the sample, this restriction is necessary to accurately to identify the differentials in productivity gains. In the third and fourth models, our treatment group consists of firms that were exporting only to the MLI countries (HI countries) at time $t-1$ and start to export to HI countries (MLI countries) at time t and continue to export both types of markets at time $t+1$. Our control group covers the firms that remain exporting only to the MLI countries (HI countries) over the analysis period. We calculate the average treatment effects on the treated (ATT) firms as follows:

$$ATT = E(Y_{it}(1) - Y_{it}(0)|D_i = 1) = E(Y_{it}(1)|D_i = 1) - E(Y_{it}(0)|D_i = 1) \quad (3)$$

For the first two models, equation (XX) shows the difference between the productivity level after the firm, which is formerly non-exporter ($D_i = 1$), starts exporting only to the HI countries (MLI countries) ($Y_{it}(1)|D_i = 1$) and the potential productivity it would have if it would have never exported to HI countries (MLI countries) ($Y_{it}(0)|D_i = 1$). Similarly, for the third and fourth models, equation (XX) shows the difference between the outcome of the HI starter (MLI starter) that is formerly an exporter to only MLI countries (only HI countries) ($Y_{it}(1)|D_i = 1$) and the potential outcome it would have if it had stayed as an only MLI exporter (only HI exporter) ($Y_{it}(0)|D_i = 1$). The potential outcomes of both models are unknown. Nevertheless, we can calculate the outcome for control groups, which can be defined as $E(Y_{it}(0)|D_i = 0)$. Therefore, there can be a selection bias when ATT is calculated. The bias is defined as[11]

$$B(ATT) = E(Y_{it}(0)|D_i = 1) - E(Y_{it}(0)|D_i = 0) \quad (4)$$

To overcome the possible selection bias problem in our data set, we will apply PSM techniques jointly with difference-in-difference methodology (DID). Combination of matching techniques with DID is likely to improve the quality of non experimental evaluation studies (Blundel and Costa Dias, 2000). In particular, the DID removes effects of common shocks and provides a clear estimate of the treatment effect on the productivity differentials. We define the

[11] Dehajia andWahba (2002) suggest that comparing a treatment group with a non-experimental control group can give biased results because of problems such as self-selection or some systematic judgment by the researcher in selecting treatment units.

PSM-DID estimator as follows where the resulting ATT gives the difference between average treatment effects of treated and non-treated groups in which time-invariant unobservables are eliminated:

$$\Delta^{PSM-DID}ATT = E(Y_{it}(1) - Y_{it}(0)|D_i = 1) - E(Y_{it}(1) - Y_{it}(0)|D_i = 0) \quad (5)$$

In order to find the control units to be matched with the treated units we estimate probit models from which we recover the propensity scores. The dependent variable in the probit specifications is the probability to start to export HI countries (MLI countries) at time t and the vector of covariates consists of the logarithms of TFP (or LP), WAGE_L, EMP, CAPINT as well as year, sector and region dummies. All of the independent variables are in their one period lagged value. We include the lagged values of the covariates since current values of these variables can also be affected by exporting (importing) behavior of the firms[12]. We check whether the matching procedure is effective or not by comparing the means of the explanatory variables in both matched and unmatched samples.

Making use of the propensity scores resulting from the probit estimates, we apply the Kernel matching and in Table 9 we show some tests revealing the quality of the matching. We check whether the means of covariates are significantly different in matched and unmatched samples. Our results show that the matching procedure eliminates the inequality for means of covariates and significant differences disappear in the matched sample. The advantage of kernel matching compared to other matching algorithms is the exploitation of as much information as possible from the control group. This gains special importance in our case as we have low number of firms in all treatment groups described above.

Insert Table 9 here.

The resulting ATTs from the kernel matching explains whether exporting to HI countries (MLI countries) improve the productivity of the firm. Particularly, we compare these productivity improvements and test whether there are higher productivity gains for firms exporting their products to relatively more advanced economies. In Table 10, we present the ATTs that result from kernel matching and comment on the heterogeneity in the effects of exporting to different types of countries on firm productivity. ATTs for the first and second models show the impact of starting to export only to the HI countries (MLI countries) on the productivity of formerly non-exporting firms. Whereas, ATTs for the third and fourth models show the impact of starting to export to HI countries (MLI countries) on the productivity of firms which are formerly exporting only to the MLI

[12] We include the higher powers of certain explanatory variables into the probit specifications in order to satisfy the balancing property of PSM algorithm following Dehajia and Wahba (2002).

countries (HI countries). It is clearly shown that the positive productivity effect is robust over different type of destination markets in terms of both measures of productivity. Note that firms that start exporting only to HI regions get additional productivity gains (compared to their counterparts which start exporting only to MLI countries. That is although starting to export bring about productivity gains in both types of markets we observe higher productivity gains in HI destination markets. For instance, starting to export only to HI countries increases TFP by 53 percentage points immediately, whereas starting to export only to MLI countries has a lower impact of 15 percentage points. In columns 2,3,5 and 6 of Table 10 we assess whether starting to export raises productivity improvements instantaneously or future productivity improvements occur as well. We find that additional productivity gains are realized in future years. Particularly, the benefits from starting to export to HI (MLI) countries significantly improves over time i.e. higher ATTs are obtained for the period t+1 with respect to the period t while in period t+2 we have the largest ATTs in terms of both TFP and LP.

We observe positive and significant productivity gains from starting to export to HI (MLI) countries for the firms which are formerly exporting to only one type of region in Table 10. This finding suggests that there exist positive diversification effects for firms which are already exporters. Still, differentials in productivity gains remain between firms that start to export HI destination markets and firms that start to export MLI destination markets. The evidence clearly suggests higher productivity improvements for starting to export developed regions of the world (e.g. 36 versus 19 percentage points in TFP). Note that due to the low

number of observations ATTs for periods t+1 and t+2 cannot be calculated.

Insert Table 10 *here.*

Next, we employ PSM together with DID methodology in order to overcome the biases that may result from time-invariant unobservables. Table 11 presents the PSM-DID estimates. The outcome of the PSM-DID model represents the difference between the productivity levels of the firms before and after the treatment, that is the difference between the outcomes at time t-1 and t + 1.The PSM-DID estimates support the findings obtained by PSM. One can infer that when the unobserved time-invariant effects are eliminated, TFP significantly rises by 4.1 (3.4) percentage points between *t - 1 and t + 1,* where the firms that are formerly non-exporters and start to export only to HI (MLI) countries. A similar pattern of improvement is evident for LP. On the other hand we observe significant productivity gains for entry into additional type of export markets in columns 3 and 4 of Table 11. Consistent with the results in Table 10 for a firm which is formerly exporting to only one type of country starting to export to HI countries brings about higher productivity gains with respect to starting to export to MLI countries (e.g.

22 versus 13 percentage points in TFP).

Insert Table 11 *here.*

5 Conclusion

This paper provides evidence for self selection into asymmetric markets and differentials in post-entry effects arose by involvement in these asymmetric markets exploiting a comprehensive dataset of Turkish manufacturing firms over the period 2003-2011. The results of the study provide evidence that development stage of destination markets matter in explaining the observed differentials in exporters' performances. Our results indicate self-selection mechanisms and post-entry effects differ from market to market for Turkish manufacturing firms. Specifically, we confirm that firms that are more productive, larger, more capital intensive and paying higher wages self select into more advanced export markets. Even if HI exporters already show ex-ante superior performance with respect to the MLI exporters, they could improve their performance differential after the export entry.

Figures and Tables

Figure 1. Turkish Manufacturing Firms' Export Orientation Towards High and Medium-Low Income Countries

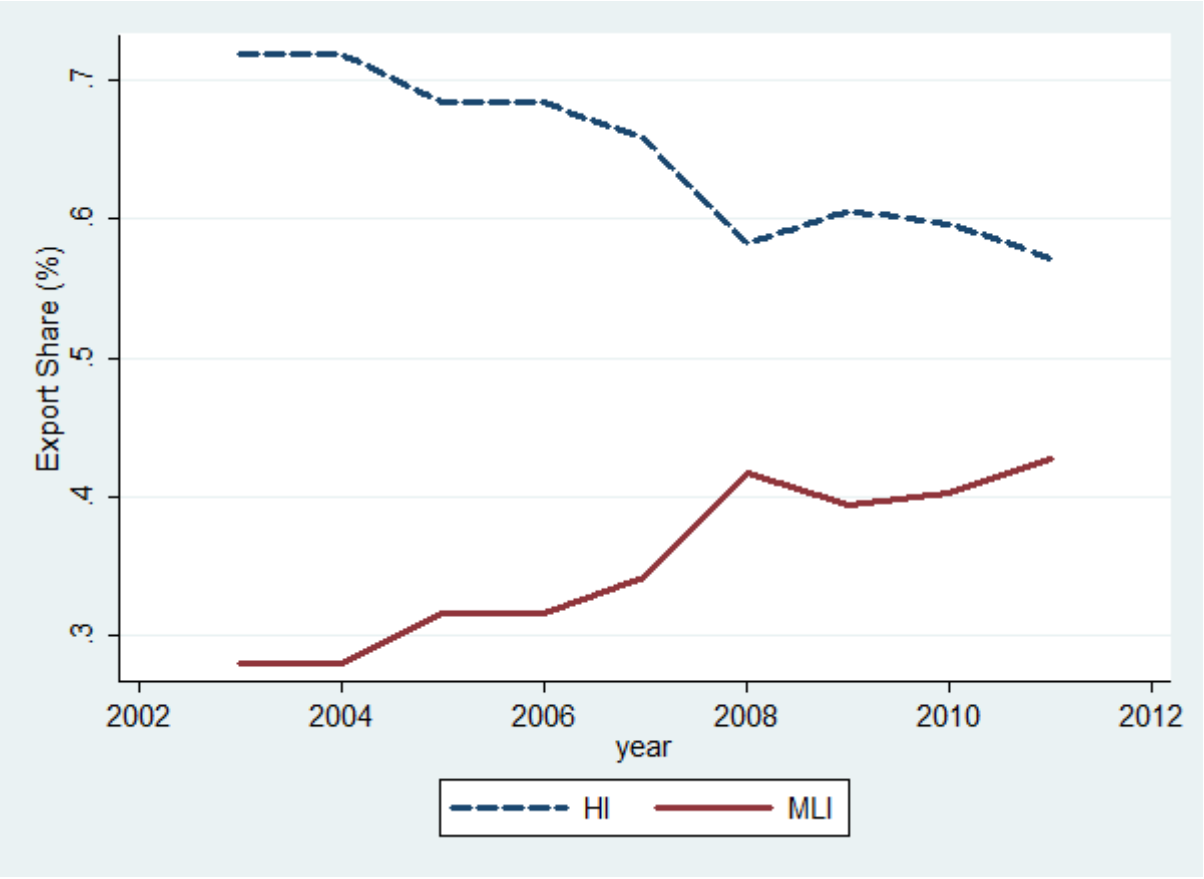

Table 1. Variables Indicating Export Market Orientation

Dummy Variable	Description
$Exporter^{Only\text{-}HI}$	takes value 1 if a firm is exporting only to HI countries
$Exporter^{Only\text{-}MLI}$	takes value 1 if a firm is exporting only to MLI countries
$Exporter^{Both}$	takes value 1 if a firm is exporting to both types of countries
$Exporter^{HI\text{-}50}$	takes value 1 if a firm is exporting over 50 percent of its export value to HI countries
$Exporter^{MLI\text{-}50}$	takes value 1 if a firm is exporting less than 50 percent of its export value to HI countries
$Exporter^{HI\text{-}line}$	takes value 1 if the number of export lines towards HI countries is greater than or equal to that of MLI countries
$Exporter^{MLI\text{-}line}$	takes value 1 if the number of export lines towards HI countries is less than that of MLI countries

Table 2. Number of Exporters w.r.to Export Orientation

Year	$Exporter^{Only\_HI}$	$Exporter^{Only\_MLI}$	$Exporter^{Both}$	$Exporter^{HI\_50}$	$Exporter^{MLI\_50}$	$Exporter^{HI\_line}$	$Exporter^{MLI\_line}$	*Exporters*
2003	2,124	1,041	3,466	4,143	2,488	3,902	2,729	6,631
2004	2,349	1,262	4,057	4,596	3,072	4,351	3,317	7,668
2005	2,568	1,783	4,804	5,127	4,028	4,828	4,327	9,155
2006	2,415	1,955	5,109	5,091	4,388	4,734	4,745	9,479
2007	2,155	1,893	5,023	4,781	4,290	4,359	4,712	9,071
2008	1,952	1,925	5,083	4,460	4,500	4,072	4,888	8,960
2009	1,770	1,820	4,691	3,988	4,293	3,624	4,657	8,281
2010	1,988	2,596	5,675	4,618	5,641	4,110	6,149	10,259
2011	1,953	2,710	5,663	4,435	5,891	3,922	6,404	10,326

Table 3. Distribution of Firms w.r.to Export Orientation

Year	$Exporter^{Only\_HI}$	$Exporter^{Only\_MLI}$	$Exporter^{Both}$	$Exporter^{HI\_50}$	$Exporter^{MLI\_50}$	$Exporter^{HI\_line}$	$Exporter^{MLI\_line}$
2003	32.03	15.70	52.27	62.48	37.52	58.84	41.16
2004	30.63	16.46	52.91	59.94	40.06	56.74	43.26
2005	28.05	19.48	52.47	56.00	44.00	52.74	47.26
2006	25.48	20.62	53.90	53.71	46.29	49.94	50.06
2007	23.76	20.87	55.37	52.71	47.29	48.05	51.95
2008	21.79	21.48	56.73	49.78	50.22	45.45	54.55
2009	21.37	21.98	56.65	48.16	51.84	43.76	56.24
2010	19.38	25.30	55.32	45.01	54.99	40.06	59.94
2011	18.91	26.24	54.84	42.95	57.05	37.98	62.02

Table 4. Firm Performance According to Export Orientation

	TFP	*LP*	*CAPINT*	*EMP*	*SALES*	*WAGE_L*
$Exporter^{Only\_HI}$	7.830	10.078	120165.067	101.070	11859691.778	6836.050
$Exporter^{Only\_MLI}$	7.480	9.961	115793.900	75.271	8757790.222	6483.936
$Exporter^{Both}$	7.918	10.316	159576.500	183.083	32444444.444	8804.195
$Exporter^{HI\_50}$	7.876	10.284	154629.378	151.263	23566666.667	7927.461
$Exporter^{MLI\_50}$	7.684	10.188	136623.767	130.430	21344444.444	7762.987
$Exporter^{HI\_line}$	7.889	10.196	149526.589	157.861	24433333.333	7926.835
$Exporter^{MLI\_line}$	7.654	10.174	138242.378	122.008	20633333.333	7782.734

Table 5. Exporters' Premia Across Destination Markets

	TFP			LP			CAPINT		
$Exporter^{Only\_HI}$	0.0431***			0.0500***			0.0288***		
	(0.00809)			(0.00787)			(0.00690)		
$Exporter^{Only\_MLI}$	0.0481***			0.0510***			0.0136*		
	(0.00888)			(0.00861)			(0.00769)		
$Exporter^{Both}$	0.0924***			0.0989***			0.0289***		
	(0.00873)			(0.00852)			(0.00814)		
$Exporter^{HI\_50}$		0.0584***			0.0652***			0.0222***	
		(0.00791)			(0.00770)			(0.00723)	
$Exporter^{MLI\_50}$		0.0559***			0.0598***			0.0212***	
		(0.00747)			(0.00725)			(0.00668)	
$Exporter^{HI\_line}$			0.0595***			0.0650***			0.0284***
			(0.00776)			(0.00755)			(0.00707)
$Exporter^{MLI\_line}$			0.0548***			0.0598***			0.0250***
			(0.00747)			(0.00724)			(0.00665)
Observations	137062	137062	137062	143507	143507	143507	146840	146840	146840
R-squared	0.026	0.025	0.025	0.047	0.047	0.047	0.276	0.276	0.276

	EMP			*SALES*			*WAGE_L*		
$Exporter^{Only\_HI}$	0.0525***			0.104***			0.0127***		
	(0.00495)			(0.00712)			(0.00293)		
$Exporter^{Only\_MLI}$	0.0385***			0.0952***			0.00717**		
	(0.00476)			(0.00736)			(0.00317)		
$Exporter^{Both}$	0.108***			0.201***			0.0281***		
	(0.00551)			(0.00790)			(0.00321)		
$Exporter^{HI\_50}$		0.0618***			0.132***			0.0163***	
		(0.00450)			(0.00678)			(0.00278)	
$Exporter^{MLI\_50}$		0.0606***			0.117***			0.0126***	
		(0.00466)			(0.00674)			(0.00293)	
$Exporter^{HI\_line}$			0.0625***			0.132***			0.0171***
			(0.00444)			(0.00667)			(0.00282)
$Exporter^{MLI\_line}$			0.0599***			0.117***			0.0119***
			(0.00467)			(0.00670)			(0.00291)
Observations	157844	157844	157844	157508	157508	157508	157844	157844	157844
R-squared	0.081	0.078	0.078	0.146	0.143	0.143	0.118	0.118	0.118

Robust standard errors in parentheses

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

Table 6A. Self Selection into Exporting to Asymmetric Markets-Starters

	TFP			LP			CAPINT		
	t-3	t-2	t-1	t-3	t-2	t-1	t-3	t-2	t-1
Starter$^{Only\_HI}$	0.144***	0.128***	0.124***	0.242***	0.224***	0.222***	0.420***	0.442***	0.444***
	(0.0248)	(0.0206)	(0.0173)	(0.0240)	(0.0200)	(0.0166)	(0.0416)	(0.0360)	(0.0308)
Starter$^{Only\_MLI}$	0.0719***	0.0717***	0.0662***	0.0878***	0.0867***	0.0862***	0.312***	0.354***	0.389***
	(0.0230)	(0.0201)	(0.0167)	(0.0226)	(0.0196)	(0.0162)	(0.0403)	(0.0353)	(0.0301)
Starter^{Both}	0.0750**	0.0748***	0.0695***	0.208***	0.206***	0.170***	0.535***	0.548***	0.623***
	(0.0347)	(0.0299)	(0.0261)	(0.0334)	(0.0290)	(0.0252)	(0.0621)	(0.0512)	(0.0439)
Observations	17210	23375	33327	17636	24150	35067	19010	25946	37248
R-squared	0.747	0.752	0.754	0.139	0.136	0.135	0.115	0.120	0.118

	EMP			*SALES*			*WAGE_L*		
	t-3	t-2	t-1	t-3	t-2	t-1	t-3	t-2	t-1
Starter$^{Only\_HI}$	0.195***	0.183***	0.179***	0.500***	0.486***	0.469***	0.0586***	0.0421***	0.0427***
	(0.0201)	(0.0171)	(0.0142)	(0.0285)	(0.0242)	(0.0208)	(0.0111)	(0.00917)	(0.00756)
Starter$^{Only\_MLI}$	0.0760***	0.0730***	0.0495***	0.354***	0.347***	0.341***	0.0225**	0.0289***	0.0278***
	(0.0173)	(0.0145)	(0.0122)	(0.0267)	(0.0228)	(0.0196)	(0.0101)	(0.00819)	(0.00703)
Starter^{Both}	0.253***	0.237***	0.228***	0.593***	0.585***	0.543***	0.00185	0.0248*	0.0178
	(0.0332)	(0.0278)	(0.0226)	(0.0456)	(0.0382)	(0.0327)	(0.0156)	(0.0136)	(0.0111)
Observations	20160	27881	41108	20136	27845	41012	20160	27881	41108
R-squared	0.123	0.119	0.110	0.272	0.271	0.258	0.145	0.145	0.149

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, *
p<0.1

Table 6B. Self Selection into Exporting to Asymmetric Markets-Sustainers

	TFP			LP			CAPINT		
	t-3	*t-2*	*t-1*	*t-3*	*t-2*	*t-1*	*t-3*	*t-2*	*t-1*
$Sustainer^{Only\_HI}$	0.131***	0.113***	0.107***	0.231***	0.227***	0.202***	0.405***	0.463***	0.495***
	(0.0323)	(0.0394)	(0.0276)	(0.0331)	(0.0272)	(0.0398)	(0.0656)	(0.0559)	(0.0478)
$Sustainer^{Only\_MLI}$	0.0333**	0.0317***	0.0291*	0.111***	0.110***	0.109***	0.324***	0.384***	0.447***
	(0.0160)	(0.0117)	(0.0165)	(0.0359)	(0.0258)	(0.0313)	(0.0674)	(0.0568)	(0.0483)
$Sustainer^{Both}$	0.107*	0.106**	0.0548	0.222***	0.219***	0.199***	0.575***	0.600***	0.643***
	(0.0539)	(0.0441)	(0.0415)	(0.0496)	(0.0413)	(0.0392)	(0.0975)	(0.0749)	(0.0642)
Observations	14804	20218	28921	15207	20953	30561	16506	22654	32589
R-squared	0.744	0.751	0.752	0.115	0.118	0.117	0.107	0.112	0.112

	EMP			*SALES*			*WAGE_L*		
	t-3	*t-2*	*t-1*	*t-3*	*t-2*	*t-1*	*t-3*	*t-2*	*t-1*
$Sustainer^{Only\_HI}$	0.240***	0.202***	0.195***	0.475***	0.464***	0.454***	0.0472***	0.0474***	0.0406***
	(0.0364)	(0.0300)	(0.0248)	(0.0420)	(0.0512)	(0.0364)	(0.0181)	(0.0149)	(0.0129)
$Sustainer^{Only\_MLI}$	0.0545*	0.0636***	0.0521***	0.320***	0.354***	0.395***	0.0115	0.00770	0.0122
	(0.0286)	(0.0229)	(0.0195)	(0.0443)	(0.0356)	(0.0313)	(0.0169)	(0.0136)	(0.0117)
$Sustainer^{Both}$	0.295***	0.289***	0.277***	0.662***	0.653***	0.609***	0.000785	0.0309	0.0195
	(0.0529)	(0.0424)	(0.0343)	(0.0705)	(0.0580)	(0.0494)	(0.0222)	(0.0195)	(0.0168)
Observations	17630	24545	36333	17609	24514	36254	17630	24545	36333
R-squared	0.101	0.100	0.093	0.237	0.238	0.228	0.133	0.136	0.141

Robust standard errors in parentheses

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

Table 7. Dynamic Panel Probit Regressions

	ExporterHI	*ExporterHI_50*	*ExporterHI_line*	*ExporterMLI*	*ExporterMLI_50*	*ExporterMLI_line*
ExporterHI(t-1)	1.250***			0.759***		
	(0.0179)			(0.0143)		
ExporterHI_50(t-1)		1.229***			1.177***	
		(0.0181)			(0.0175)	
ExporterHI_line(t-1)			1.196***			1.108***
			(0.0175)			(0.0178)
TFP(t-1)	0.0898***	0.0397***	0.0349***	0.0754***	0.0419***	0.0481***
	(0.00789)	(0.00920)	(0.00927)	(0.00929)	(0.00932)	(0.00927)
EMP(t-1)	0.0993***	0.0881***	0.0687***	0.202***	0.0731***	0.103***
	(0.00885)	(0.00994)	(0.00992)	(0.0110)	(0.0103)	(0.0104)
CAPINT(t-1)	0.0150***	0.0423***	0.0437***	0.0830***	0.0548***	0.0552***
	(0.00474)	(0.00561)	(0.00565)	(0.00579)	(0.00577)	(0.00576)
WAGE_L(t-1)	0.0886***	0.0356*	0.0509**	0.0563***	0.00604	0.017
	(0.0173)	(0.0198)	(0.0199)	(0.0207)	(0.0200)	(0.0200)
Initial Exporter dummy	0.681***	1.121***	1.149***	1.274***	1.160***	1.243***
	(0.0188)	(0.0265)	(0.0261)	(0.0294)	(0.0289)	(0.0286)
Observations	105035	105035	105035	105035	105035	105035

Standard errors in parentheses

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

Table 8. Probit Estimations for the Probability of Upgrading

	t-1	*t-2*
TFP	0.0477***	0.0464***
	(0.00787)	(0.00866)
EMP	0.0741***	0.0671***
	(0.00637)	(0.00705)
CAPINT	0.0256***	0.0270***
	(0.00432)	(0.00476)
WAGE_L	0.0311**	0.0214*
	(0.0133)	0.0125
Observations	52815	42756

Table 9. Comparison of Treatment and Control Groups: Matched vs. Unmatched

Panel A

Treatment Group: Firms that start exporting only to the HI countries

Control Group: Never-exporters

	Matched Sample			**Unmatched Sample**		
(Lagged values)	Starter	Never-exporter	T-Test for the Mean Differences	Starter	Never-exporter	T-Test for the Mean Differences
TFP	8.1346	8.0401	0.9	8.1299	7.1763	11.51
LP	10.154	10.06	1.69	10.144	9.7217	11.7
WAGE_L	8.6837	8.6622	0.65	8.6904	8.5472	6.92
EMP	4.1204	4.1156	0.09	4.1198	3.7389	12.93
CAPINT	10.663	10.557	1.14	10.597	10.239	6.03
Sample Size	691	15,472		1,044	58,740	

Panel B

Treatment Group: Firms that start exporting only to the MLI countries

Control Group: Never-exporters

	Matched Sample			**Unmatched Sample**		
(Lagged values)	Starter	Never-exporter	T-Test for the Mean Differences	Starter	Never-exporter	T-Test for the Mean Differences
TFP	7.4697	7.3492	1.17	7.4495	7.1763	2.73
LP	9.9757	9.9394	0.7	9.9593	9.7217	6.63
WAGE_L	8.6077	8.5972	0.41	8.6021	8.5472	2.87
EMP	3.8496	3.8137	0.82	3.8434	3.7389	2.53
CAPINT	10.633	10.592	0.4	10.621	10.206	4.96
Sample Size	734	15,308		1,104	58,740	

Panel C

Treatment Group: MLI exporters start to export to HI countries

Control Group: Always MLI exporters

	Matched Sample			Unmatched Sample		
(Lagged values)	Starter	Always MLI-exporter	T-Test for the Mean Differences	Starter	Always MLI-exporter	T-Test for the Mean Differences
TFP	7.7317	7.5546	1.01	7.7241	7.4367	2.92
LP	10.222	10.221	0.02	10.295	9.9566	3.17
WAGE_L	8.7129	8.6237	0.47	8.7006	8.5852	2.55
EMP	4.0893	4.0511	0.9	4.1062	3.6067	5.24
CAPINT	10.814	10.681	1.4	10.799	10.413	3.2
Sample Size	852	110		1,255	1,632	

Panel D

Treatment Group: HI exporters start to export to MLI countries

Control Group: Always HI exporters

	Matched Sample			Unmatched Sample		
(Lagged values)	Starter	Always HI-exporter	T-Test for the Mean Differences	Starter	Always HI-exporter	T-Test for the Mean Differences
TFP	7.9142	7.8749	0.96	7.8925	7.6704	3.09
LP						
WAGE_L	8.7645	8.7383	1.25	8.7645	8.5655	5.29
EMP	4.2876	4.1783	0.91	4.2876	3.8905	5.42
CAPINT	10.828	10.841	-1.26	10.836	10.446	6.42
Sample Size	1,127	201		1,602	1,565	

Table 10. PSM Estimates

	TFP_t	TFP_{t+1}	TFP_{t+2}	LP_t	LP_{t+1}	LP_{t+2}
ATT (Non-Exporter Firms Start to Export Only to HI)	0.533***	0.550***	0.606***	0.305***	0.324***	0.329***
	0.046	0.045	0.061	0.03	0.031	0.034
ATT (Non-Exporter Firms Start to Export Only to MLI)	0.158***	0.195***	0.204***	0.243***	0.257***	0.264***
	0.047	0.05	0.062	0.028	0.027	0.033
ATT (Only MLI Exporter Start to Export to HI)	0.365***			0.302***		
	0.119			0.061		
ATT (Only HI Exporter Start to Export to MLI)	0.192**			0.136**		
	0.094			0.063		

Table 11. PSM-DID Estimates

Average Treatment Effects From PSM-DID Estimates

	ATT Non-Exporter Firms Start to Export Only to HI	**ATT Non-Exporter Firms Start to Export Only to MLI**	**ATT Only MLI Exporter Start to Export to HI**	**ATT Only HI Exporter Start to Export to MLI**
Outcome:				
TFP_{t+1}-TFP_{t-1}	0.041*	0.034*	0.229*	0.133*
	0.023	0.018	0.134	0.076
LP_{t+1}-LP_{t-1}	0.043*	0.038*	0.269*	0.183*
	0.0023	0.021	0.158	0.095

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