EXPORTING SWEATSHOPS? EVIDENCE FROM MYANMAR

Mari Tanaka*

Abstract—This study investigates the impacts of exporting on working conditions in Myanmar by drawing on a new firm survey. For the identification, I use the rapid opening of Myanmar to trade alongside the firm’s proximity to airports and products that have generated variations in access to foreign markets. The results show that exporting has significant positive impacts on working conditions regarding fire safety, health management, and freedom of negotiation; positive insignificant effects on wages; and negative insignificant effects on working hours. I also find that exporting positively affects firm size, management practices, and the likelihood of receiving a labor audit.

I. Introduction

CRITICS of globalization have argued that international competition pressures firms to cut costs and exploit workers in developing countries. Indeed, trade might worsen working conditions if the cost-cutting efforts involved in exporting are harsh on workers, such as neglecting safety conditions and increasing working hours (Hummels, Munch, & Xiang, 2016). However, globalization may improve working conditions in developing countries for various reasons. First, increasing global trade could raise the awareness of consumers in developed countries about the working conditions of producers in developing countries. This may improve their working conditions because anti-sweatshop movements against large retail companies have pressured them to monitor labor conditions at their supplier firms (Harrison & Scorse, 2010).1 In addition, a number of empirical studies of trade suggest that access to foreign markets improves the returns of firms upgrading their quality standards (Atkin, Khandelwal, & Osman, 2017), and this may be achieved by paying higher compensation following efficiency wage theory (Verhoogen, 2008). Furthermore, raising firm size to meet foreign demand may complement fixed-cost investment in working conditions. However, empirical evidence of the causal impact of trade on working conditions in developing country firms remains scarce.

This study investigates how international trade affects working conditions in low-income countries by collecting and analyzing new firm survey data in Myanmar. I collect measures of plant-level working conditions and management practices by carrying out a field survey in Myanmar. This survey comprises three waves (2013–2015) of interviews with plant managers in garment and processed food firms. To understand the level of working conditions, I evaluate whether plant labor practices comply with international labor standards in terms of fire safety, health management, and the presence of workers’ representatives, as well as wages and working hours.

Myanmar offers an interesting case through which to examine the causal effects of trade liberalization. In the mid-2000s, Myanmar was under U.S. and EU trade sanctions that limited the export profitability of manufacturing firms. In the late 2000s, demand for Myanmar apparel products from Japan increased owing to the absence of Japanese sanctions and increasing Japanese demand in Southeast Asia. Then, in 2011, the Myanmar government suddenly initiated democratic and economic reforms, including cutting the previous export tax, which substantially increased the value of apparel exports to Japan. The United States and EU then lifted their trade sanctions in late 2012 and 2013, respectively. Hence, Myanmar quickly transitioned from almost an autarky in the mid-2000s into an open economy by the mid-2010s.

The main empirical strategy used to estimate the causal impact of exporting is based on the fact that the garment plants located far from international airports had less of a chance to attract foreign buyers. When foreign demand rapidly expanded in the early 2010s, firms near airports were more likely to start exporting, while plants away from airports tended to continue trading in the domestic market. Therefore, I use proximity to airports measured in the mid-2000s as an instrumental variable (IV) to predict exporting from 2013 to 2015. The baseline empirical results suggest that exporting has large, positive impacts on nonwage working conditions: exporting improves the measure of working conditions adopted here (an index evaluating fire safety, health care, and freedom of negotiation) by 1.2 standard deviations, which is similar to the difference between local plants and multinational plants operating in Myanmar. The estimated impacts on wages and working hours are positive and negative, respectively, but statistically insignificant. These results are extensively tested for robustness. I also find that airport proximity influenced the within-plant yearly changes in exporting and working conditions in a consistent manner, as in the baseline specification. By examining my
survey samples in the processed food sector, which comprises firms almost entirely selling in the domestic market, I find no evidence that proximity to airports is correlated with working conditions, firm performance, or changes in these variables. Employing two alternative identification strategies using variations in products and sectors provides similar results.

My survey data allow me to investigate possible channels. The first is a channel through which foreign buyers pressure local suppliers to comply with international labor standards. The data show that exporting significantly increases the chance of receiving a labor compliance audit, which foreign buyers typically require before starting to trade. Second, improvements in working conditions may be a by-product of the firm’s effort to improve productivity and quality. Consistent with this view, my results indicate that exporting leads to the adoption of management practices recommended in developed countries. Finally, investment in working conditions may exhibit an increasing return to scale. For example, introducing fire alarms and creating new communication mechanisms with workers are both likely to require some fixed costs. I also find that exporting leads to larger sales and employment. Overall, a decomposition analysis indicates that each of the three channels explains a nonnegligible proportion of the differences in working conditions between exporters and nonexporters.

This study is related to three strands of the literature. The first is a large body of work on the impacts of exporting on firm performance. Recent empirical trade studies have provided ample evidence that better market access facilitates technology adoption and productivity and quality upgrading (Lelievre & Trefler, 2010), technology adoption and productivity and quality upgrading (Lelievre & Trefler, 2010, in Canada; Park et al., 2010, in China; Bustos, 2011, and Brambilla, Lederman, & Porto, 2012, in Argentina; Verhoogen, 2008, in Mexico; and Atkin et al., 2017, in Egypt). Verhoogen (2008) also shows that the Mexican peso crisis led more productive firms to increase exports, raise the wages of white-collar workers, and obtain ISO 9000 certification. However, the impacts on working conditions, especially those on nonwage conditions such as fire safety, health management, negotiation, and working hours, have received little scholarly attention despite increasing focus on such aspects in trade policy debates (Robertson et al., 2009; Brown, 2009). This study contributes to the literature by showing the causal impact of trade on comprehensive measures of working conditions using microdata in a developing country.²

Second, this study is built on sociological and economics studies of social movements that pressure firms in global supply chains to comply with international labor and environmental standards (Vogel, 1995; Elliot & Freeman, 2003; Locke, 2013; Seidman, 2007; Bartley & Child, 2014; Harrison & Scorse, 2010). In particular, Harrison and Scorse (2010) show that U.S. anti-sweatshop campaigns in the 1990s targeting several large U.S. apparel and footwear retail companies led to an increasing wage premium in Indonesia. Their evidence is consistent with a number of studies that have documented companies’ voluntary initiatives to implement international labor and environmental regulations—so-called private voluntary regulation (Locke, 2013; Elliot & Freeman, 2003; Locke, Rissing, & Pal, 2013; Distelhorst & Locke, 2018). However, studies using labor audit data have provided mixed results on whether private voluntary regulation improves labor standards (Locke, 2013; Locke, Qin, & Brause, 2007). A key difference of my study is that I show the overall impact of being included in a global supply chain for a firm in a developing country. Pressure from stakeholders is only one explanation for why inclusion in a global supply chain improves working conditions.

Third, this research provides causal evidence of the impact of exporting on management practices, which remains largely uninvestigated. While some studies have shown that export performance is strongly positively associated with management practices (Bloom et al., 2012, forthcoming), it has been rare to obtain data on management practices in the settings that allow causal identification. In connection with the results on working conditions, Distelhorst, Hainmueller, and Locke (2016) argue that the introduction of lean management led to improvements in working conditions in Nike factories, suggesting the possibility that management practices and working conditions are complements.

The rest of the paper is organized as follows. Section II introduces the data, and section III explains the background in Myanmar that is important for the empirical strategy. Section IV describes my baseline identification strategy and the results, followed by those of alternative identification strategies in section V. Then I summarize the results of the robustness checks in section VI and conclude in section VII.

II. Data

A. Survey Data, 2013–2015

My main data source is the garment plant panel data that I collected in three waves of field surveys conducted in 2013, 2014, and 2015. Given the absence of an enterprise census in Myanmar, at the beginning of the first wave in May 2013, I assembled a population database of garment plants in Yangon and Mandalay, the two major industrial regions in Myanmar, by combining information from industry directories, lists of

---

²As an example of another study of this topic using microdata, Alam, Amin, and Rives (2013) find no systematic differences in occupational injuries to Bangladeshi children in the exporting and nonexporting sectors. However, such evidence may reflect the sector-level differences in injury rates. There is also the study by Edmonds and Pavcnik (2005) of trade and child labor, a topic I omit from this research. Other studies have used cross-country panel data to investigate the relationships between exposure to trade and regulations on labor and environment, particularly to test the race-to-the-bottom hypothesis (Busse, 2004; Edmonds & Pavcnik, 2006; Neumayer & Soysa, 2006; Mosley & Uno, 2007; Greenhill, Mosley, & Prakash, 2009; Flanagan, 2006; Prakash & Potoski, 2006). In developed countries, the study by Hummels et al. (2016) in Denmark shows that higher export demand increases injuries and working hours.
Between June and August 2013, my survey team contacted all 238 garment plants in my population database, and we were granted interviews in 176 plants. During the second season, in May 2014, I repeated the population database construction and found 305 plants. Between June and August 2014, we contacted these plants and were granted 201 interviews. By repeating the same exercise in May 2015, I found 351 plants and interviewed 209 of them. In all years, we asked about employment, export share in sales, owner characteristics, management practices, and workplace conditions for the last fiscal year (April–March). In the same manner, I also surveyed the processed food sector. Of the 316 processed food plants surveyed, only one exported its products. This is presumably because developed countries have stringent imported food security regulations. This feature is used for my robustness checks. In the main analysis, I focus on domestic firms with less than 50% foreign ownership for all the years of observation. In my main analysis in section IV, I further limit the sample to firms established before 2005 and use proximity to airports based on plant address in 2005 as an instrumental variable. After this process, the sample for my main analysis contains 298 plant-year observations of 120 unique plants (of 117 firms).

Survey instruments on working conditions were constructed to measure the level of compliance with international labor standards. To this end, I referred to the International Labor Organization’s labor standards and, more practically, to the detailed auditing manuals of globally recognized initiatives that provide auditing and certification programs on labor compliance for private companies. Labor standards typically have eight major areas: forced labor, child labor, wages, working hours, discrimination, harassment, freedom of association, and occupational health and safety (Smith & Feldman, 2003). Given the sensitivity of some of these topics, I spoke with managers about five areas of compliance: fire safety, occupational health management, freedom of association (termed freedom of negotiation here), wages, and working hours.

Regarding fire safety, I asked, “What kind of equipment do you have for fire safety?” and “Do you practice fire drills?” Typical answers to the first question included marked exit, extinguisher, hose, alarm, and evacuation route map. Such firefighting equipment and training are explicitly advised to be installed and practiced according to the auditing manuals of certification initiatives. Regarding occupational health management, I asked about the existence of a record of injuries, a list of hospitals to go to in case of emergency, and a private contract with a health clinic, as well as the presence of a nurse or a doctor at the plant. The auditing manuals of certification initiatives suggest that auditors check the use of injury records to revise the firm’s injury protocols, training for supervisors regarding how to ensure workers follow the emergency protocols, and qualified staff to be present at the workplace to provide first aid. Questions on freedom of negotiation were asked to measure the communication structure of workers and management regarding workplace issues, following the auditors’ manuals. The survey asked, “Are there workers’ leaders in this plant, and if so were they appointed by this firm and/or by workers?” Where a leader was present, the manager was asked how frequently he or she met with the leader on a regular basis. In addition, I asked whether the plant has a suggestion box, a common way of gathering and keeping records on the grievances. These are also points typically checked by auditors (see appendix A1 for more details).

Working hours were measured by plants’ average weekly working hours, including overtime hours. For hourly wages, I used monthly wages including overtime payments divided by working hours. To minimize the variation caused by the fact that different skill levels are required at different plants, my measure of wages is for an entry-level sewing operator. As for working hours and wages, international standards typically require compliance with local regulations. The Factory Act (1951) in Myanmar requires that working hours should not exceed ten and working days should not exceed six. However, when my survey was conducted, no minimum wage had yet been set in Myanmar.

For fire safety, health management, and freedom of negotiation, no consensus was reached on how to quantify these aspects. For my main empirical analysis, I thus construct scores on a scale from 0 to 1 and find the average within each of the three dimensions (see appendix A for the details). The (overall) working conditions score is the average of these three dimensions. While I use this score for my main analysis, different ways of aggregating the scores do not change the qualitative results (see appendix B). The distributions of the scores in appendix A1 reveal that many of the firms in the sample have few health and safety measures, as well as few negotiation points with workers; however, some firms appear to be practicing high labor standards.

Following the standards outlined in the literature on management and business practices, I measured management practices by using some of the criteria specified in the World Management Survey (Bloom & Van Reenen, 2007) and in the U.S. Census Bureau’s Management and Organizational Practices Survey. Managers were asked eight questions about three dimensions of work: production monitoring, quality control, and machine maintenance. After the interviews, scores were assigned on a scale from 0 to 1 (see appendix A1 for the details). Then I averaged the scores by dimension to construct management scores for production monitoring, quality control, and machine maintenance. The (overall)
management score is the average of the scores across these three dimensions. This measure was checked for its consistency with the World Management Survey in Myanmar in 2014 with which a subset of my survey sample overlaps (see appendix A1 for the details).

B. Survey Data, 2004

The data on garment firms were obtained from the Survey on the Garment Industry in Myanmar (2005 SGIM), which was collected by IDE-JETRO (Kudo, 2008). This survey targeted all Yangon garment firms in 2005 by constructing a list of existing garment firms in mid-2005 based on information from the garment industry association and a local market research company. Surveyors carried out interviews at 142 of the 165 firms found. The survey records information about sales by product categories in 2004, average employment in 2003 and 2004, and other firm and managers’ characteristics. It also contains detailed information on products, as well as the plant addresses, which I use for my identification strategy, as I explain in the following sections.

III. Background

I use Myanmar’s swift shift from a closed economy to market opening for my identification strategies. Myanmar was almost autarkic in the mid-2000s: the estimated share of manufacturing exports in GDP in 2005 was only 2% owing to several institutional factors.\(^5\) Myanmar was under both U.S. import sanctions, which prohibited all imports from the country, and the EU’s tariff sanction, which excluded Myanmar from the set of low-income nations that receive its preferential tariffs. Furthermore, the Myanmar government until 2011 imposed a 10% tax on all earnings from processing trade, which had been the principal means of exporting for manufacturing firms.

The only large economy that did not place any trade sanctions on Myanmar before 2011 was Japan, and it continues to grant a preferential tariff to Myanmar. Coinciding roughly with the start of the Liancourt Rocks disputes in 2005 and continuing through the late 2000s, Japanese demand for apparel shifted from products made in China to those made in Southeast Asia. As shown in figure 1, where apparel exports from Myanmar to Japan are plotted over time, exports of apparel from Myanmar to Japan started from 0 and gradually increased during the late 2000s (from $52 million in 2005 to $180 million in 2010),\(^6\) especially in woven apparel products.

In 2011, the Myanmar government initiated democratization reforms, and during the next two years, many trade barriers were lifted.\(^7\) The process started in October 2010 with the election of Thein Sein, who represented the military party. The new government started a number of political and economic reforms. It reduced the export tax to 2% in 2011 and ended the tax altogether in 2012. The result was a large increase in the exports of apparel to Japan. In 2011, the

\(^5\)Although there is a gradual increase in the value of apparel exports even before 2005 as seen in figure 1, most of this is likely to be exports by foreign direct investment firms. See appendix B3 for more details.

\(^6\)These democratization reforms were unexpected. In 2009, the New York Times reported, “Secretary of State Hillary Rodham Clinton, frustrated over the junta’s intransigence on human and political rights, ordered the policy review. ‘Clearly, the path we have taken in imposing sanctions hasn’t influenced the Burmese junta,’ she said last month” (McDonald, 2009).
The export value of apparel to Japan was $340 million, a 92% increase from the previous year, accounting for the largest share of total exports of apparel from Myanmar. The new government also initiated political reforms that included the release of political prisoners and meetings with Aung San Suu Kyi, the leader of the opposition party who had previously been placed under house arrest by the government. These political changes led the United States to lift its import ban in November 2012. In May 2013, the EU lifted its sanction on preferential tariffs, or Generalized System of Preferences (GSP), allowing most Myanmar products to enter EU countries under the preferential tariffs lower than most-favored-nation (MFN) tariffs. The total value of Myanmar’s apparel exports (in Harmonized System [HS] 61 and 62 codes) increased from around $560 million in 2010 to around $1.68 billion in 2015 (UN Comtrade).

In contrast to the increase in apparel exports, exports of processed food stayed negligible even after 2011. The total value of Myanmar’s processed food exports (excluding live animal and raw food material) was around $75 million in 2010 and $182 million in 2015 (UN Comtrade). This figure presumably reflects foreign countries’ food security policies accompanied by stringent regulations on food imports. As studied by Jongwanich (2009), regulations on food safety standards impose large constraints on food manufacturer exports in developing countries. Indeed, as noted earlier, in my sample of 595 processed food and beverage plants, only one plant exported its products during the surveyed period.

IV. Baseline Empirical Strategy and Results

A. Proximity to Airports in 2004 Affecting Later Exporting

The main empirical equation of interest is

\[ Y_{it} = \alpha + \beta \text{Export}_{it} + \xi X_{it} + \eta_{it} + u_{it}, \]

where \( i \) indexes plants; \( t \) indexes the years from 2013 to 2015; \( Y_{it} \) is one of the plant performance measures in year \( t \); \( \text{Export}_{it} \) is the share of export sales relative to total sales in the preceding fiscal year \( t \); \( X_{it} \) are a set of firm characteristics included as control variables; and \( \eta_{it} \) are the year fixed effects.

There are various reasons to expect that exporting is correlated with the unobserved factor, \( u_{it} \). Therefore, I use IV strategies. As a baseline specification, I use plant proximity to international airports as a source of the predetermined variation in exposure to trade openings. Proximity to airports is likely to affect trade costs for three reasons. First, foreign buyers visit manufacturing plants when they decide from which plants to purchase products. These foreign visitors are often the CEOs or sourcing managers of retail companies, and they typically spend fewer than three days in Yangon. Many of these visitors are unfamiliar with Myanmar, which for many years had limited international trade activity. Although they may have access to ex ante information about local firms through online directories about the names, locations, and phone numbers of garment factories, face-to-face communication through plant visits is important in Myanmar because phone and Internet connections are underdeveloped. In these settings, even an hour of difference in travel time could affect a buyer’s decisions about supplier plants. Supporting this view, during field interviews, some foreign buyers who visited Yangon said that they were less attracted to plants located farther than one hour of travel time from airports. Second, proximity to airports is also important because when trading starts, buyers usually send technical staff to local plants every season to oversee product design changes. As noted in previous studies of flight distance in the United States (Giroud, 2013; Giroud & Mueller, 2015), monitoring by trade partners is easier if the costs of visiting (e.g., flight costs) are low. The buyer is likely to consider this benefit when choosing a plant with which to place a first order. Third, some garment firms ship products by air rather than by sea, particularly during peak season, when final products are needed on short notice. As documented by Hummels and Schaur (2013), some buyers pay a premium for fast delivery by air shipment.

The exclusion restriction for using airport proximity as an IV requires that the instrument affects firm performance only through its exports, conditional on the control variables. This condition is expected to be met for several reasons in this setting in Myanmar. First, the Myanmar economy has long had limited access to foreign trade because of sanctions and the domestic export tax. When plants produced for the domestic market, proximity to international airports gave them no competitive advantage. Second, city congestion in Yangon has increased considerably since the 2011 reforms. Without traffic, the travel distance would have had a weaker impact on the choices of trade partner. Third, it is not likely that airport proximity influenced the degree of import competition in my setting. Myanmar’s imports of apparel are low compared with its exports and population size. In addition, EU and U.S. trade sanctions were related only to Myanmar’s exporting, not its importing. Finally, I control for observable geographical factors that could be correlated with distance to airports as well as firm performance. In particular, the covariates I use are the travel distance to the region’s city center and indicator of being located within industrial zones. Hence, it is unlikely that firms in 2005 chose locations closer to international airports in anticipation of this benefit.

An analysis using 2005 SGIM confirms this prediction. In table 1, I examine the characteristics of garment firms in 2004 to test whether the observable firm characteristics were different by airport proximity controlling for the geographical covariates mentioned above. While the 2004 data do not

---

8In 2014, the total import value of apparel was $136 million (UN Comtrade).

9For instance, airports require large areas of land, and governments often construct them in suburban areas where land is more abundant and relatively cheap compared with city centers. Large plants can be built in the same areas for the same reason. In addition, these areas are likely to be developed by governments as industrial zones, which generally provide superior road and electricity services.
TABLE 1.—FIRM PERFORMANCE IN 2004, BY AIRPORT PROXIMITY

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Near airport</td>
<td>0.024 (0.345)</td>
<td>0.056 (0.349)</td>
<td>0.027 (0.247)</td>
<td>−0.136 (0.214)</td>
<td>−0.081 (0.113)</td>
<td>0.066 (0.110)</td>
<td>−0.051 (0.115)</td>
<td>−0.016 (0.063)</td>
</tr>
<tr>
<td>Observations</td>
<td>117</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>116</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Mean</td>
<td>−0.663</td>
<td>11.07</td>
<td>5.055</td>
<td>4.913</td>
<td>−2.218</td>
<td>0.642</td>
<td>0.0750</td>
<td></td>
</tr>
</tbody>
</table>

This table uses observations of domestic garment firms in the 2005 SGIM. All regressions control for the travel time to the city center and the indicator that takes on the value 1 for being located in an industrial zone. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

share the same measures of working conditions and management as my survey data, I observe the basic firm performance variables. If airport proximity and working conditions are correlated in the absence of trade, I expect to see positive correlations between airport proximity and the aforementioned variables in 2004. Table 1 reports the ordinary least squares (OLS) estimates that regress each of the firm characteristics on airport proximity in 2004. The firm characteristics include total factor productivity (TFP), labor productivity (measured by log of sales per worker), log of employment, log of number of sewing machines, employment growth (measured by the log differences in employment from 2003 to 2004), log of wages defined by hourly wages in USD, existence of a performance-based reward system for workers, and development of a major new product line over 2002 to 2004. TFP is defined as log(value added) − 0.469 × log(labor) − 0.531 × log(capital)—where value added is defined as sales less the cost of fabric, labor is production hours, capital is asset value, and the factor weights are constructed from the labor cost share in value added and assuming a constant return to scale. Airport proximity, denoted by “near airport,” is an indicator of being located within one hour of international airports, which is measured based on the same procedure used in the baseline specification, as explained below. The results show no systematic differences in firm performance and characteristics by airport proximity. Appendix B1 shows similar results for the other variables measured in 2004.

B. Baseline Results with Airport Proximity, 2004

The baseline sample for the airport IV analysis consists of domestically owned plants that operated before 2005 and had nonmissing information on addresses in 2005. I use the plant locations in 2005 to measure the proximity to the nearest airport. Since no measure of travel time can reliably account for traffic congestion in Myanmar, I conducted a traffic survey from May to July 2015 to construct measures of travel time to the airport from each plant. Buyers are most plausibly concerned about the maximum time of travel because missing a return flight (on the way back to the airport) or rescheduling meetings with plant managers (on the way from the airport) is costly. To incorporate this notion, I define travel time in my main specification as an estimate of the upper bound of the one-sided 95% confidence interval of travel time to airports. Appendix A2 explains the details of how the estimates were constructed based on the traffic survey, as well as using Google Maps (2015).

The left panel of figure 2 illustrates the relationship between exporting and travel time to airports by binned scatter plots. The horizontal axis shows the residual values of travel time to airport (measured in hours) after extracting the effects of proximity to the city center and being located in an industrial zone. The values are grouped into twenty equally sized bins, and for each bin, the vertical axis shows the mean value of export share again after extracting the same control
variables. The figure reveals that plants far from airports, in particular those farther than one hour, were less likely to export from 2013 to 2015. This is presumably because buyers only care about visiting plants that are not too far from airports, while various other idiosyncratic factors influence buyers’ decisions in choosing among the rest of the plants. In the baseline analysis, I use a rule of thumb that plants within one hour of the airport are considered to be more accessible for foreign buyers. Appendix B1 provides the results when alternatively using the linear specification of travel time to the airport, finding qualitatively the same conclusions as below.

Column 1 of table 2 shows the result of regressing the export share on airport proximity, “near airport,” indicating the plant being located within one hour of the nearest airport. The regression controls for a dummy variable that indicates whether the plant is in an industrial zone as well as the travel time to the city center. Standard errors are clustered at the firm level. The coefficient of airport proximity is positive and significant, suggesting that plants within one hour of airports are considered to be more accessible for foreign buyers. Appendix B1 provides the results when using the linear specification of travel time to the airport, finding qualitatively the same conclusions as below.

The remaining columns in table 2 report the two-stage least-squares (2SLS) results, using airport proximity as an IV for estimating equation (1). All the regressions include the geographical control variables used in the first-stage results, and standard errors are clustered at the firm level. The estimated coefficient for the overall working conditions score is positive (0.217) and significant at the 1% level (standard error = 0.082). The magnitude of the effect is sizable, as the mean of the working conditions score is 0.249 and the standard deviation is 0.187, implying that the impact of exporting is around 1.16 standard deviations of the score. According to my original survey data covering foreign-owned firms, the size of this effect is comparable to the average difference in working conditions score between domestic firms and multinational firms operating in Myanmar, which is 0.255 (see appendix B3 for details). When I examine the effect on the dimension-wise score, the estimated effects of exporting are all positive and sizable, and statistically significant for fire safety and negotiation scores (see appendix B1 for the results). The estimated coefficient for the log of wages is positive and insignificant (level = 0.082, standard error = 0.112). Column 4 shows the coefficient estimate for more than sixty working hours per week (taking 0 for firms where workers typically work less than or equal to sixty hours per week), a variable proxying for excessive working hours. The estimated coefficient is negative and insignificant. In summary, these results suggest that exporting leads to positive outcomes for workers.

There may be multiple reasons why working conditions regarding safety and negotiation improve through exporting. Although it is difficult to draw conclusive evidence on the pathways, my survey data shed light on some of these mechanisms. One mechanism might be that foreign buyers pressure supplier factories to improve their conditions. In many interviews, managers stated that before a firm can initiate a new trading deal with a foreign buyer, compliance audits must be passed. Labor compliance audits are typically implemented by a third party. Several international initiatives provide standardized sets of auditing, certifying, and consulting services for manufacturing firms and buyers. Auditing staff randomly choose a day to visit supplier firms to check fire safety equipment and health measures, as well as talk with workers. Such audits are deemed to be necessary for a variety of reasons. For example, buyers might be concerned about the risk of being

<table>
<thead>
<tr>
<th>Method</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export Share</td>
<td>0.300***</td>
<td>0.217***</td>
<td>0.082</td>
<td>0.692***</td>
<td>1.430***</td>
<td>0.498</td>
<td>0.958</td>
<td>0.266***</td>
</tr>
<tr>
<td>Near airport</td>
<td>(0.071)</td>
<td>(0.082)</td>
<td>(0.112)</td>
<td>(1.944)</td>
<td>(0.175)</td>
<td>(0.498)</td>
<td>(1.036)</td>
<td>(0.099)</td>
</tr>
<tr>
<td>Observations</td>
<td>298</td>
<td>298</td>
<td>207</td>
<td>272</td>
<td>189</td>
<td>298</td>
<td>99</td>
<td>297</td>
</tr>
<tr>
<td>Number of firms</td>
<td>117</td>
<td>117</td>
<td>116</td>
<td>117</td>
<td>98</td>
<td>117</td>
<td>97</td>
<td>117</td>
</tr>
<tr>
<td>Mean</td>
<td>0.354</td>
<td>0.249</td>
<td>1.251</td>
<td>2.106</td>
<td>0.190</td>
<td>4.973</td>
<td>7.234</td>
<td>0.561</td>
</tr>
<tr>
<td>F-test: IV = 0</td>
<td>17.74</td>
<td>15.22</td>
<td>18.85</td>
<td>13.48</td>
<td>17.74</td>
<td>6.839</td>
<td>17.47</td>
<td>6.839</td>
</tr>
</tbody>
</table>

This table uses plant-year-level observations of domestic garment firms in my survey over 2013 to 2015. Column 1 shows the first-stage regression and columns 2 to 8 show the 2SLS estimates. All regressions control for the travel time to the city center, the indicator that takes on the value 1 for being located in an industrial zone, year fixed effects, and a region dummy. Standard errors are clustered at the firm level and shown in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.
To investigate the right binned phrases in the working condition scores between exporters and non-exporters, variations in the experience of labor audits explain 26% of the differences, and variations in management scores explain another 12%. One caveat to such a decomposition analysis is that the results cannot be interpreted as a causal statement. Still, it is notable that the experience of labor audits, a proxy of foreign buyers’ pressure, explains only a modest proportion, whereas other production-side factors such as firm size and management practices explain a large proportion.

C. Changes in Outcomes from 2013 to 2015 by Proximity to Airports

As an alternative specification, I use the variation in proximity to airports to examine the within-plant changes in exports and outcomes from 2013 to 2015. The trade sanctions of the United States and EU were lifted in November 2012 and May 2013, respectively. As a result, apparel exports to these countries increased unexpectedly and suddenly from 2013. For the same reasons as explained in section IVB, plants located nearer the airport might have been more likely to start exporting to these countries, and if so, working conditions might also have changed. For this analysis, I use the sample of domestic garment plants interviewed from 2013 to 2015, limiting the sample to the plants that started operations before 2011 to eliminate the endogeneity concern arising from the selection of entry into the industry after the trade liberalization in 2011. In this analysis, I use the plant address in 2011 to measure the travel time to the airport.14 The right binned scatter plot in figure 2 reveals that plants near the airport were more likely to start exporting to a new country that it did not export to in the previous year. In the figure, the x- and y-axes are residualized by extracting the effects of the geographical covariates.

One issue is that plants near the airport were already more likely to have exported, in particular to Japan, by the time of the first wave of the survey in 2013, and this might have affected the changes in the outcomes in the later years. To limit such effects, I use the propensity score matching estimator and assume the exogeneity of airport proximity conditional on the observable covariates, including past exports and firm size. More precisely, the propensity score for being located within one hour of the airport is estimated by assuming a logit function of the lagged sales share of exports, the logarithm of lagged employment size, travel time to the city center, a dummy variable for being located in an industrial zone, and a year dummy variable.

Columns 1 to 3 in table 3 show the results for new exports. In column 1, “newly exporting” takes the value of 1 if the

---

13The survey data in the garment sector show that on average, about 6% of workers voluntarily quit their jobs every month, typically without notifying their managers. By contrast, the turnover rate is lower for firms with better working conditions (for the results, see appendix B3).

14Owing to rising Japanese demand in the late 2000s, there may be a concern that firms might have located closer to the airport by 2011 in order to export. However, I confirm that the correlation between the changes in travel time to the airport from 2005 to 2011 and exporting from 2013 to 2015 is negligible and statistically insignificant. For plants that moved after 2011, I use the plant address in 2005 to measure airport proximity. If this information is missing, the plant is excluded from the analysis. Observations...
The results for yearly changes in working conditions, measured as the first differences from the preceding year, are shown in columns 5 to 9. The estimated effect of airport proximity on changes in working conditions scores is positive (0.052) and statistically significant (standard error = 0.022) at the 5% level. The magnitude is large compared with the mean of changes (0.023). The estimated effect on the change in the log of hourly wages is also positive but insignificant, and the effect on working hours above sixty hours per week is negative and insignificant. The results also suggest that plants near the airport were significantly more likely to be subject to a labor or environmental compliance audit for the first time. As alternative specifications, the estimation of linear OLS regressions for changes in the outcomes produces similar results (see appendix B1). In addition, the estimation of a firm fixed-effect model confirms that firms that increased their share of exporting to EU countries or the United States positively and significantly (7.5 percentage points). This is reasonable given that the period was just after the lifting of U.S. and EU trade sanctions. Column 3 shows the estimated average effect on exporting to a new country that it did not export to in the previous year. The results imply that plants within one hour of the airport were significantly more likely to export to a new country than the other plants by about 8.8 percentage points.

The results for yearly changes in working conditions, measured as the first differences from the preceding year, are shown in columns 5 to 9. The estimated effect of airport proximity on changes in working conditions scores is positive (0.052) and statistically significant (standard error = 0.022) at the 5% level. The magnitude is large compared with the mean of changes (0.023). The estimated effect on the change in the log of hourly wages is also positive but insignificant, and the effect on working hours above sixty hours per week is negative and insignificant. The results also suggest that plants near the airport were significantly more likely to be subject to a labor or environmental compliance audit for the first time. As alternative specifications, the estimation of linear OLS regressions for changes in the outcomes produces similar results (see appendix B1). In addition, the estimation of a firm fixed-effect model confirms that firms that increased their share of exporting to EU countries or the United States positively and significantly (7.5 percentage points). This is reasonable given that the period was just after the lifting of U.S. and EU trade sanctions. Column 3 shows the estimated average effect on exporting to a new country that it did not export to in the previous year. The results imply that plants within one hour of the airport were significantly more likely to export to a new country than the other plants by about 8.8 percentage points.

The results for yearly changes in working conditions, measured as the first differences from the preceding year, are shown in columns 5 to 9. The estimated effect of airport proximity on changes in working conditions scores is positive (0.052) and statistically significant (standard error = 0.022) at the 5% level. The magnitude is large compared with the mean of changes (0.023). The estimated effect on the change in the log of hourly wages is also positive but insignificant, and the effect on working hours above sixty hours per week is negative and insignificant. The results also suggest that plants near the airport were significantly more likely to be subject to a labor or environmental compliance audit for the first time. As alternative specifications, the estimation of linear OLS regressions for changes in the outcomes produces similar results (see appendix B1). In addition, the estimation of a firm fixed-effect model confirms that firms that increased their share of exporting to EU countries or the United States positively and significantly (7.5 percentage points). This is reasonable given that the period was just after the lifting of U.S. and EU trade sanctions. Column 3 shows the estimated average effect on exporting to a new country that it did not export to in the previous year. The results imply that plants within one hour of the airport were significantly more likely to export to a new country than the other plants by about 8.8 percentage points.

The results for yearly changes in working conditions, measured as the first differences from the preceding year, are shown in columns 5 to 9. The estimated effect of airport proximity on changes in working conditions scores is positive (0.052) and statistically significant (standard error = 0.022) at the 5% level. The magnitude is large compared with the mean of changes (0.023). The estimated effect on the change in the log of hourly wages is also positive but insignificant, and the effect on working hours above sixty hours per week is negative and insignificant. The results also suggest that plants near the airport were significantly more likely to be subject to a labor or environmental compliance audit for the first time. As alternative specifications, the estimation of linear OLS regressions for changes in the outcomes produces similar results (see appendix B1). In addition, the estimation of a firm fixed-effect model confirms that firms that increased their share of exporting to EU countries or the United States positively and significantly (7.5 percentage points). This is reasonable given that the period was just after the lifting of U.S. and EU trade sanctions. Column 3 shows the estimated average effect on exporting to a new country that it did not export to in the previous year. The results imply that plants within one hour of the airport were significantly more likely to export to a new country than the other plants by about 8.8 percentage points.

The results for yearly changes in working conditions, measured as the first differences from the preceding year, are shown in columns 5 to 9. The estimated effect of airport proximity on changes in working conditions scores is positive (0.052) and statistically significant (standard error = 0.022) at the 5% level. The magnitude is large compared with the mean of changes (0.023). The estimated effect on the change in the log of hourly wages is also positive but insignificant, and the effect on working hours above sixty hours per week is negative and insignificant. The results also suggest that plants near the airport were significantly more likely to be subject to a labor or environmental compliance audit for the first time. As alternative specifications, the estimation of linear OLS regressions for changes in the outcomes produces similar results (see appendix B1). In addition, the estimation of a firm fixed-effect model confirms that firms that increased their share of exporting to EU countries or the United States positively and significantly (7.5 percentage points). This is reasonable given that the period was just after the lifting of U.S. and EU trade sanctions. Column 3 shows the estimated average effect on exporting to a new country that it did not export to in the previous year. The results imply that plants within one hour of the airport were significantly more likely to export to a new country than the other plants by about 8.8 percentage points.
Columns 1 to 3 of table 4 report the results of running a similar specification as in table 2 for processed food plants, in which the difference is that these regressions additionally control for the indicator variable for beverage firms. Columns 4 to 6 replicate the exercise of table 3 for the processed food sector. Overall, the results imply that airport proximity has only an insignificant and negligible effect on working conditions, employment, and management score, as well as on the changes in these outcomes over the three years in the processed food sector. As an alternative specification, I combine the data on garment and processed food plants and reweight the samples by the relative sample size in the location to take into account the differences in plant locations across sectors. The estimated differences in the effects of airport proximity by sector indicate the same qualitative results (see appendix B1).

V. Alternative Empirical Strategies

As additional robustness tests of the main results, I explore the effect of exporting on firm outcomes by using two alternative identification strategies. In summary, even when using different exogenous variations, the main results are consistent with the baseline results.

A. Product Variation before 2005 Influencing Later Exporting

Instead of geographical proximity to airports, I next exploit the types of products that the firms produced before 2005, which affected exporting from 2013 to 2015. After the mid-2000s, Japanese demand for woven apparel products (e.g., shirts and jackets) increased, whereas that for knitted apparel products (e.g., T-shirts, polo shirts, and sweaters) did not. This is evident in figure 1, which plots the values of these two types of apparel exports from Myanmar to Japan. The difference reflects the rule-of-origin requirements for Japanese GSP. Under the preferential tariff regime, Japan allows a product from a beneficiary country to enter the Japanese market with a free tariff rate if the rule-of-origin requirements are met. In general, the requirements set the required conversions for each product in beneficiary countries. In the case of knitted apparel products (HS code 61), the products have to be processed in the beneficiary country from textile yarn (HS 50 to 59) to knitted fabric (HS 60) and from knitted fabric to knitted apparel (HS 61). In the case of woven products (HS 62), products are eligible for GSP if there is a conversion in the beneficiary country from woven fabrics (HS 50 to 59) to woven apparel (HS 62). For this reason, woven garment manufacturers can use low-cost fabric imported from China to export to Japan under GSP, while knitted garment manufacturers cannot. This is a large constraint for the knitted apparel group because the Myanmar textile industry is significantly underdeveloped. Without GSP, Japanese MFN tariff rates on apparel range from 9% to 12%.

The manufacturing process from fabric to apparel is technically similar across woven and knitted products, except that the material, labor, and capital are specific to each type of product. For example, both woven and knitted apparel manufacturing use labor and sewing machines to cut and sew fabric to produce apparel. Sewing is processed in lines of workers, where each worker works with a sewing machine. Supervisors or line managers monitor the lines and address problems at the site or report them to managers. Therefore, the shapes of production functions would be similar for woven and knitted products. However, the material, labor, and capital inputs are specific to woven and knitted apparel manufacturing. By definition, knitted and woven apparel products are distinguished by the types of fabrics they use. Since knitted fabric stretches more than woven fabric, workers need to be trained for dealing with stretching (knitted) or nonstretching (woven) fabric. In addition, the optimal types of needles differ by fabric type, and therefore industrial sewing machines are different for woven and knitted products. These facts make it costly to switch between knitted and woven apparel products and create an analytically useful context for examining how the setting before 2005 affected the trajectories of exporting and firm outcomes thereafter. In total, 48% of firms that mainly produced knitted products before 2005 switched to mainly producing woven products by 2014, while 38% of woven product–producing firms switched to knitted products. This finding suggests that the net change was only 10%, although knitted producers were indeed more likely to switch than woven producers (see appendix B2 for the details).
Reflecting on such a background, in this empirical specification, I use a firm-level measure of the production of woven apparel before 2005 as an IV for exporting from 2013 to 2015. In spirit, using the variations in the rules of origin by knitted and woven apparel as a natural policy experiment is similar to the study by Demidova, Kee, and Krishna (2012) and Kee and Krishna (2008) in Bangladesh. In my setting, for the reasons already described, the production of woven apparel before 2005 is likely to have affected a firm’s exporting to Japan in later years. To construct a measure of woven production before 2005, I combined the SGIM data for products produced before 2005 (see appendix A3 for the details). The samples used for this analysis are domestically owned garment firms that started operations before 2005. A total of 143 such plants (137 firms) were observed at least once between 2013 and 2015; of these, 98 plants were observed every year.

My key identifying assumption for this instrument is that had it not been for foreign demand from 2005 to 2013, there would have been no systematic differences in the outcomes from 2013 to 2015 between firms producing woven products and the others. A potential threat to this identification strategy is the possibility that knitted and woven garment processes differ in terms of their optimal management styles or plant sizes. Another concern is that some firms might have expected the potential of the Japanese market and started to produce woven products before 2005 in readiness for exporting. To address these concerns about the exclusion restriction on the instrument, as before, I examined the characteristics of garment firms in 2004 from 2005 SGIM data to test whether observable firm performance was different for the production of woven or knitted products. In this specific setting of the Myanmar garment sector, the instruments should not be related to the firm performance variables in 2004 if the exclusion restriction is valid. Table 5 reports the OLS estimates that regress each of the performance measures on woven production in 2004. The results suggest no systematic difference by the production of woven apparel (appendix B2 shows the results for more variables).

Column 1 of table 6 shows the results of the OLS estimation of the first-stage equation where export intensity is regressed on the production of woven products before 2005. The standard errors are clustered at the firm level. I include control variables describing the owner’s characteristics that could affect product choice. These indicators include whether the owner is ethnic Chinese or a university graduate, as well as firm age. The result shows that woven production has the expected effects on exporting in the expected direction: woven production before 2005 has a positive effect on export share and export status from 2013 to 2015. The coefficient of woven production is positive and highly significant, implying that the production of woven products before 2005 increased the probability of exporting during 2013 and 2015 by 27 percentage points on average.

The large and significant effect of woven production on exporting could have proceeded through two channels. In the first channel (described above), firms that produced woven products could apply for the Japanese preferential tariff and start exporting to Japan, which improved compliance. In the second channel, after woven product firms started exporting to Japan, they improved management and increased capacity.
By the time Western import sanctions were lifted in 2012 and 2013, these firms were more likely to export to Western countries and have improved compliance. The significant overlap between exporters to the EU/United States and exporters to Japan also supports this hypothesis. Indeed, 13% of the plants in my sample sell to both Japanese and European/U.S. markets, while 16% of the plants sell to European/U.S. markets and 21% sell to Japan.

The rest of table 6 reports the results of the second-stage estimates. The control variables are the same as those used in the first-stage regressions, and standard errors are again clustered at the firm level. The estimated coefficient for working conditions score is positive (0.256) and significant (standard error = 0.084). The magnitude is similar to that of the baseline specification using the airport proximity instrument. The estimated coefficient of the log of hourly wages is also positive and marginally significant. The estimate of excessive working hours is negative and insignificant. The estimated coefficients of receiving a compliance audit, the log of employment, and labor productivity the overall management score are positive and significant except for labor productivity.

To summarize, the estimated coefficients are comparable to the baseline results using the airport proximity IV. As a robustness check, I combine the 2004 data with the data over 2013 to 2015 to examine the changes in some of the outcomes that I observe in both the surveys. The results show that firms producing woven products became statistically significantly larger and more productive and increased their wages compared with the other firms. In addition, by estimating the 2SLS specification with both woven production and airport proximity in 2005 as the instruments for exports, I find that the estimated coefficients are similar to those where only one of the instruments is used. The results of the overidentifying restriction tests using both instruments (Hansen J statistics) suggest that the null hypothesis that the instruments are exogenous is not rejected for each of the main outcome variables. Appendix B2 shows the details of these results.

### B. Changes from 2013 to 2015 in the Apparel and Processed Food Sectors

I estimate an alternative difference-in-differences specification that exploits the differences in industries’ exporting trends from 2013 to 2015. While apparel exports to EU countries and the United States increased sharply from 2013 to 2015, exports of processed food remained negligible even after 2011. This is presumably because of the stringent food security policies in developed countries. Therefore, by using the processed food sector as a control group, I can evaluate the impacts of these increases in exporting to the United States and the EU.

For this analysis, I use the sample of domestic garment and processed food plants interviewed from 2013 to 2015, limiting the sample to the plants that started operations before 2011 to eliminate the endogeneity concern arising from the selection of entry into the industry after the trade liberalization in 2011. Since processed food firms tend to be smaller in employment size and more plants are located in the Mandalay region, which may affect the differences in the trend of outcomes, I employ the propensity score matching estimator. The yearly changes in the outcomes from 2013 to 2014 and those from 2014 to 2015 are pooled. Then the propensity score for being in the garment industry is estimated by assuming a logit function. The covariates used to estimate the propensity score are the logarithm of lagged employment size, the four indicator variables for the Mandalay district and four largest industrial zones in Yangon (Hlaing Tharyar, Shwe Pyi Thar, South Dagon, and North Okkalapa), a dummy variable of being located in an industrial zone, and a year indicator. As for the wages and management practice scores, the sample sizes for the measured first differences are too small to estimate in this specification and thus dropped.

Table 7 reports the estimates of the average treatment effects of operating in the garment sector for the changes in outcomes. Columns 1 to 3 show the higher likelihood of garment firms starting exporting as well as starting to export to a new country that they did not export to in the previous year. The estimates imply that the garment plants export to a new country by 7.2 percentage points more than processed food plants do. As shown in column 3, the estimate for overall working conditions is positive (0.073) and statistically significant at the 1% level, suggesting a 44% annual increase in working conditions scores in the garment sector compared with the processed food sector (the average working conditions score in this sample is 0.167). The result for working hours is negative and significant, and the result for employment size is positive and significant. Overall, these results are consistent with the baseline estimates using the IV of airport proximity. Even so, the results in this specification might be influenced by the different levels of labor market tightness in
these industries over time. During the 2013–2015 period, the rapid increase in foreign demand for Myanmar apparel products is likely to have increased demand for garment workers but not for processed food workers. If labor markets are segregated between the two sectors, the results might reflect the effects of increasing the bargaining power of workers in the apparel sector in these periods.

VI. Robustness and Validation

In the following, I explore the robustness of the results and validate further that the results obtained reflect the impact of exporting.

A. Selection Issues through Firm Exits

A potential concern is that firms that could not survive the switch to a more open economy might have exited and their employees might have ended up unemployed or earning less. Among the 126 domestic garment firms observed in the 2005 SGIM data, 57% survived until 2013, where a firm is defined to have survived if it is found in my sampling population database during the 2013–2015 period. There are two types of empirical concerns regarding this issue. The first concern is that the firm survival rate from 2005 to 2013 might have differed by airport proximity or product type before 2005, which would lead to bias in my 2SLS estimates. For example, firms producing woven products that encountered higher Japanese demand might have been more or less able to survive than other firms. However, based on the sample of firms in the 2005 SGIM data, I confirm that survival to 2013 is not systematically correlated with airport proximity or woven production before 2005, implying that the selection issue because of the first concern is unlikely to bias my results.

The second potential concern is that survival rates may differ by other firm characteristics, by which the impacts of exporting on working conditions differ. Irrespective of product type, larger and more productive firms may be more likely to survive as an economy is exposed to international markets. If the treatment effects of increasing foreign market exposure on working conditions differ by firm size, sample selection based on firm size may affect the magnitude of the estimated effects. In my setting, survival is indeed positively correlated with initial firm size, implying that this issue is likely to be present. Therefore, my baseline estimates may be interpreted as the estimates for relatively large firms. That said, reweighting the survived sample by the inverse of the survival probability lowers the estimated effects on the working conditions score (the point estimates are 0.195 and 0.244 and the standard errors are 0.08 and 0.09 for the airport proximity and woven product instruments, respectively) but does not alter the qualitative conclusion. In addition, by applying the treatment effect bounds introduced by Lee (2009), the lower bounds of the effects of the instruments on the working conditions scores (estimated by imputing the missing information based on the most pessimistic assumptions) are still positive. Table B3 in the appendix describes the details of these results.

B. Misreporting Issues

Another potential concern is the possibility of managers' misreporting the working conditions measures. To examine this possibility, the survey teams arranged plant tours after the interviews in 2013. During these tours, they observed and later recorded the presence of marked fire exits, fire hoses, medical boxes, and light levels. In the sample of plants used for the main analysis, in 2013, 88% arranged plant tours, and there were no systematic correlations between the indicator of receiving a factory tour and the performance measures (working conditions scores, export, employment). I conduct three kinds of robustness checks by using these plant tour observations.

First, I find that these observations are highly correlated with the working conditions scores in the expected directions: fire exits and hoses are significantly more likely to be observed in plants in which the managers answered that they exist, while a low light level is negatively correlated with health scores and negotiation scores. Second, increasing exposure to foreign markets might have made near-airport or woven firms become more aware of global labor standard issues and misreport in my survey. In such a case, differences in the extent of misreporting across the IV variations may lead to biases in my estimate. However, based on the data combined with observations in the plant tours, I confirm that near-airport and woven firms are not significantly more likely to misreport than the other firms in terms of fire exits, hoses, and medical boxes. Third, firms might have systematically misreported issues that are harder to be verified by the survey staff, such as practices of fire drills and labor negotiation measures. If the extent of such misreporting was larger for near-airport and woven firms, possibly due to increased exposure to foreign markets, my 2SLS estimates on working conditions scores would be positively biased. To analyze such possibilities, I examine whether the difference between the measures of fire drills and fire exits based on managers' answers is systematically larger for near-airport or woven firms. If near-airport or woven-producing firms were more likely to misreport that they conduct fire drills when they actually do not, the gap (fire drill - fire exit) should be larger for these firms given that the within-plant difference in actual fire drills and exits does not systematically vary across firms. The results indicate that this gap is insignificantly smaller for near-airport and woven plants. I obtain a similar result for health management and negotiation scores compared with fire safety scores. See appendix A1 for these results.

VII. Conclusion

Many developed nations grant preferential tariffs to low-income countries as a means of promoting economic
development. Yet despite their prevalence, there is little evidence that these trade policies benefit workers in beneficiary countries. On the one hand, as often claimed by anti-globalization activists, higher exposure to global trade might put firms under increasing cost-cutting pressure, which might result in undermining working conditions. On the other hand, access to markets in high-income countries may induce firms to upgrade working conditions because of the higher incentive to improve production quality and larger firm size. Trade could also improve working conditions if the global anti-sweatshop movement is sufficiently strong to pressure international companies in global supply chains into imposing high labor standards.

To investigate the causal effects of exporting on working conditions in a low-income country, I collected measures on working conditions and management practices in manufacturing firms in Myanmar through a unique field survey from 2013 to 2015. My baseline empirical results draw on a natural experimental setting in the Myanmar garment sector, where exporting from 2013 to 2015 was affected by firms’ proximity to airports and products before 2011 when trade was limited.

Overall, my baseline empirical results show that exporting to high-income countries positively and substantially affects working conditions: by exporting, the labor standards of Myanmar firms become comparable to those of multinationals operating in Myanmar. The positive effects on working conditions are observed in the areas of fire safety, health management, and worker-firm negotiation, as well as wages. In addition, there is no evidence that exporting leads to excessive working hours. Given this result, it might be puzzling why firms with unfavorable working conditions survive if workers care about working conditions and can freely move across firms. According to my field interviews with garment workers, many of them are not geographically mobile (typically living near their workplaces) and obtain information about other factories only through their friends and relatives. Therefore, although the labor market may be converging to an equilibrium described by compensating differentials, the transition to the steady state is likely to be slow.

Looking at potential channels, I find that exporting induces local firms to be audited for compliance with international labor standards. Many global apparel companies in the United States and Europe demand these audits when they first contract with suppliers in developing countries, presumably because they are often blamed by activist groups for accidents and child labor incidents in their sourcing factories. This pressure by foreign buyers may be coupled with incentives such as better contract deals (prices and order size) offered by these buyers. In addition, this study finds that exporting has a positive effect on firm performance measured by firm size and management practices. Such evidence is consistent with standard trade models where access to larger markets provides firms with a higher incentive to upgrade efficiency and quality. Hence, efficiency wage theory, which suggests that firms provide better working conditions to enhance efficiency, may also explain the results.

While this study limits attention to nonmajority foreign-owned apparel firms, the overall impact of global trade on the working conditions of the industry as a whole could be even larger if I consider the effects through foreign firm entries. The rapid improvements in market access from Myanmar to the EU and United States since 2012 have induced a large increase in the entries of foreign firms in Myanmar. Given that working conditions in foreign firms are no worse than those in domestic firms in every aspect, according to my survey data, this would have an additional effect on the industry’s working conditions, which was overlooked in my estimates.

REFERENCES


Bloom, Nicholas, Kalina Manova, John Van Reenen, Stephen Teng Sun, and Zhihong Yu, “Trade and Management,” this REVIEW (forthcoming).


