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Teresa Molina
University of Hawaii at Manoa and IZA

Mari Tanaka
Hitotsubashi University

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Globalization and Female Empowerment: Evidence from Myanmar*

This paper examines whether globalization promotes female empowerment by improving the jobs available to women. Previous work has documented that exporting causally improved working conditions at predominantly female garment factories in Myanmar. In this study, restricting to garment factory neighborhoods, we find that women living near exporting factories are significantly more likely to be working, have lower tolerance of domestic violence, and are less likely to be victims of domestic violence. Using distance to the international airport as an instrument for proximity to an exporting factory, we find similar results: higher employment rates, lower tolerance of domestic violence, and a decrease in the experience of physical violence.

JEL Classification: J12, F66

Keywords: female empowerment, domestic violence, globalization, trade, Myanmar

Corresponding author:
Teresa Molina
University of Hawaii at Manoa
2424 Maile Way
Saunders Hall 515A
Honolulu, HI 96822
USA

E-mail: tmolina@hawaii.edu

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1 Introduction

Across the globe, large challenges remain for the promotion of women's safety and equality in the household. For example, the WHO (2013) estimates that 30% of ever-partnered women worldwide have experienced domestic violence. Women often have no say in household decisions, and the belief that husbands are justified for beating their wives is not uncommon, especially in poor countries (Jayachandran, 2015). In these contexts, what can improve a woman's status in the household? Economic theories of intrahousehold bargaining highlight the importance of a woman's outside option (Aizer, 2010).

A key component of a woman's outside option is the availability and quality of female labor market opportunities, which have drastically changed over the past few decades. In many developing countries, rapid industrialization and globalization have resulted in the large expansion of low-skilled and disproportionately female manufacturing jobs. In particular, globalization has led to a large increase in jobs at export-oriented firms, which often pay higher wages and provide better working conditions compared to firms that sell domestically, for compliance and efficiency wage reasons (Verhoogen, 2008; Harrison and Scorse, 2010; Tanaka, 2020).

In this paper, we investigate whether these trade-related labor market changes have translated into changes in the status of women within the household, measured by women's participation in household decision-making and their experiences of domestic violence. While some works have documented that improvements in economic opportunities for women lead to improvements in the health of their children, especially girls (Atkin, 2009; Qian, 2008), this study focuses on the well-being of the women themselves.

We examine the unique context of Myanmar, which quickly transitioned from a setting close to autarky to an open economy starting around 2010. Studying Myanmar's garment firms during this rapid trade expansion, Tanaka (2020) documents that exporting led to improvements in factory working conditions, measured by fire safety, healthcare management, freedom of negotiation, and wages. Importantly, these factories rely on primarily female labor: in 2013, 90% of garment factory workers in surveyed factories were women. Against this backdrop, our study focuses on women living in factory neighborhoods in 2015 – newly exposed to exporting factories

– and investigates how their employment, bargaining power, and experiences of domestic violence were affected.

Effects are theoretically ambiguous. On the one hand, economic models of household bargaining predict that an improved female outside option should increase the bargaining power of the woman in a couple and, in turn, reduce the level of domestic violence (Aizer, 2010). On the other hand, there is also evidence to support theories of "male backlash," which predict higher levels of violence in response to improved female bargaining power (Macmillan and Gartner, 1999).[1] For example, Heath (2014) and Luke and Munshi (2011) find a positive relationship between domestic violence and female labor market outcomes for certain sub-groups of women, suggesting that the relationship between female labor market opportunities and domestic violence might be non-linear, or heterogeneous across different socioeconomic groups.

To address this question empirically, we utilize household survey data from the 2015 Demographic and Health Survey (DHS) in Myanmar, which collects information on women's employment, participation in household decision-making, as well as attitudes towards and experiences of domestic violence. We restrict our entire analysis to women living within two kilometers (2 km) of a garment factory in Yangon in order to avoid making comparisons across vastly different environments. Within these factory areas, we compare women who are within 2 km of an exporting factory to those who are not. We first show that these two groups are similar in terms of observable demographic and socioeconomic characteristics. To obtain basic OLS estimates of export factory effects, we compare employment rates, decision-making, and domestic violence measures across these groups. To address concerns about the potential endogeneity of proximity to an exporting factory, we also utilize an instrumental variables strategy, similar to that of Tanaka (2020), who uses distance to the international airport as an instrument. This variable is a strong predictor of whether or not a nearby factory is exporting in 2015, and arguably uncorrelated with female empowerment measures, once we control for distance to the city center and the location of industrial zones.

Both OLS and IV specifications show that women near exporting factories are significantly

[1]Male backlash could occur in the context of a bargaining model (as in Eswaran and Malhotra (2011), for example), but also for psychological reasons, if a man's masculine identity feels threatened (Jewkes, 2002).

more likely to be working. They are also less likely to condone or to have experienced domestic violence. Results on decision-making control are more mixed. Both OLS and IV specifications demonstrate a positive and significant effect on the number of decisions women make jointly with their husbands, though this comes in part from a reduction in the number of decisions women make on their own. Specifically, women are more likely to make joint decisions (and less likely to make solo decisions) about child wellbeing and visits to families and friends, which could be due to their increased participation in the labor market.

Myanmar is unique in how quickly it opened up to trade, but the rest of our setting is similar to many other countries in the developing world, where the early stage of globalization was characterized by growth of manufacturing exports, especially in textiles (The World Bank, 2012). This was due to a shift in the location of production from developed to developing countries, which is documented to have raised female labor force participation in the latter, particularly in Asia and Central America (Wood, 1991; Pearson, 1998; Standing et al., 1999). At the country level, increases in international trade over the years 1995 to 2005 were positively correlated with increases in female (but not male) employment (The World Bank, 2012). In short, the improvements in female outcomes that we document could have also taken place in a number of other developing countries where globalization improved female job opportunities.[2] With that being said, we of course cannot generalize our study's results to countries where globalization took a very different form. For example, it is important to note that the effects of globalization on gender-, health-, or marriage-related outcomes appear to be very different in the developed world. In Norway, Bøler et al. (2015) document larger gender wage gaps in exporting compared to non-exporting firms, and Hummels et al. (2016) show that increased export activity by a firm can be detrimental to the health of its workers. These findings could be attributed to greater rewards to efforts and commitments in exporting firms. However, the effects of exporting in developing countries could be different because labor and safety regulations in these countries tend to be more strictly enforced in exporting firms compared to non-exporting firms (Harrison and Scorse, 2010; Tanaka, 2020).[3]

[2]See Juhn et al. (2013) and Juhn et al. (2014) for evidence from the Mexican context.

[3]In addition, in developed countries, some studies examining the impacts of import competition show negative

This paper expands our knowledge on the relationship between female labor market opportunities and female empowerment. Existing work documents that an increase in the relative number of labor market opportunities for women can affect measures of female empowerment – increasing their participation in household decision-making (Majlesi, 2016) and driving delays in marriage and childbirth (Heath and Mobarak, 2015). We add to this literature in three important ways, by (1) isolating the effect of globalization from the effects of industrial expansions, (2) examining domestic violence as an outcome, and (3) documenting the importance of job quality, not just job quantity.

First, while the studies cited above exploit differential exposure to manufacturing jobs, in general, our paper exploits within-industry variation in exposure to exporting factories. This allows us to identify the effect of trade and globalization separately from the effect of expansions in manufacturing, or industrialization more generally. It is crucial to make this distinction in order to inform calculations of the costs and benefits of globalization,[4] a particularly important issue at a time when anti-globalization sentiment appears to be on the rise (O'Rourke, 2019; Washington Post, 2016).

Second, we provide new evidence on the drivers of domestic violence by documenting that the presence of an exporting factory has a significant negative effect. In developed countries, various drivers of domestic violence have been identified: wages and unemployment (Aizer, 2010; Anderberg et al., 2015; Tur-Prats, 2017), divorce and arrest laws (Brassiolo, 2016; Iyengar, 2009; Stevenson and Wolfers, 2006), unexpected emotional cues (Card and Dahl, 2011), and historical family structures (Tur-Prats, 2014). In developing countries, most work on this topic has either centered on the effects of resource availability (Cools and Kotsadam, 2017; Sekhri and Storeygard, 2014) – with a focus on cash transfers (Angelucci, 2008; Bobonis et al., 2013; Hidrobo et al., 2016; Ramos, 2018; Haushofer et al., 2019) – or a woman's employment status

labor market and marriage outcomes for women. In the United States, import competition has had negative effects on the labor market and health outcomes of men in particular but also has increased single motherhood (Autor et al., 2018; Pierce and Schott, 2016), while in Denmark, the negative long-run income effects appear to be larger for women (Keller and Utar, 2018).

[4]See, for example, the reviews in Goldberg and Pavcnik (2007), Winters and Martuscelli (2014), and Autor et al. (2016).

(Amaral et al., 2015; Chin, 2012; Kotsadam and Villanger, 2020).[5] We contribute to the latter set of studies by providing evidence, from a new setting, that female employment opportunities can reduce domestic violence. Given the mixed nature of the limited existing evidence, our study provides an important addition to a literature where effects are likely context-specific and evidence from a wide variety of settings is needed. More importantly, however, the novel finding that *globalization-driven* labor market opportunities reduce domestic violence expands our knowledge on the benefits of globalization, as discussed above.

Finally, most existing studies on the link between female labor market opportunities and female empowerment exploit labor market shifts that change the *number* of jobs available to women (Majlesi, 2016; Heath and Mobarak, 2015). In this paper, we find suggestive evidence that the quality of jobs, and not just the quantity of jobs, matters as well.[6] Job quality could be important because jobs at safer and better managed factories might encourage women to stay in jobs for the longer term, therefore providing a more stable outside option. In our analysis, the positive effects of exporting factories on female well-being persist when we control for the total number of garment jobs within the 2 km radius. In addition, we show that the effect of exporting factories is partially explained by higher wage levels, better working conditions, and better management quality at these factories. While these results do not necessarily rule out job quantity as a mechanism, they do suggest that job quality improvements also play an important role. Expanding the number of jobs available to women is not the only way in which labor market conditions can improve women's well-being; improving job quality could also be a promising policy lever.

[5]Evidence on the effects of female employment in developing countries is mixed: Chin (2012) finds that female employment decreases domestic violence in India, Amaral et al. (2015) finds the opposite (also in India), and experimental evidence in Kotsadam and Villanger (2020) finds no effects on average in Ethiopia.

[6]In a developed country context Aizer (2010) studies how female-male wage ratios, which could be correlated with the relative quality of working conditions for women and men, affect domestic violence.

2 Data

2.1 DHS Data

Our outcome variables come from the 2015-2016 Myanmar DHS, a nationally representative household survey that collected demographic, socioeconomic, and health-related information from women aged 15 to 49. Employment is one important variable, measured as an indicator for whether a woman is currently working. In addition, of particular relevance to this study are questions related to household decision-making and domestic violence. Specifically, for married or cohabiting women, the survey asks who usually makes various decisions in the household – the female respondent alone, the respondent and husband (or partner) together, the husband alone, or someone else. These questions are asked about various types of decisions: decisions about the respondent's health care, large household purchases, visits to family or relatives, the husband's earnings, and the wellbeing of children. Using the responses to these questions, we create three outcome variables. First, we calculate the number of decisions (out of the 5 decision categories) for which a woman is fully responsible. We also calculate the number of decisions that are made together with her husband, as well as the number of decisions that are made by the husband alone. Women who work are also asked who makes decisions about the woman's earnings. We do not include this decision category in our decision count variables due to the selected nature of the question, though we examine this decision category as an outcome in the appendix.

The second set of outcomes are related to domestic violence attitudes and experiences. All women (both single and married) are asked whether it would be justified for a husband to beat his wife in the following scenarios: if a wife goes out without telling her husband, if she neglects the children, if she argues with her husband, if she refuses to have sex with her husband, if she burns the food, if she refuses to use contraception, or if she is involved in too much social activity. From these questions, we count the total number of situations in which beatings were considered justified.

The remaining questions were drawn from the domestic violence module of the DHS, which was only administered in a randomly selected half of the households, to only one randomly

selected ever-married woman per household.[7] Selected women are asked about their own experience of domestic violence – whether they had ever experienced any violence by their current or most recent husband. The DHS generates separate variables for emotional, (less severe) physical, severe physical, or sexual violence.[8]

All of the variables discussed above are taken from female respondents' survey responses. In addition to interviewing women, however, the DHS also interviewed a random subset of men (all men in the randomly selected half of households that were chosen for the domestic violence module). Men in this sample are asked the same questions about situations in which a man is justified for beating his wife. They are also asked whether it would be justified for a woman to refuse sex if her husband was seeing other women. Married or cohabiting men in this sample are asked decision-making questions almost identical to the ones described above, except that questions about decision-making regarding the woman's wages and the woman's visits to family were excluded.

2.2 Garment Factory Data

The outcome variables from the DHS are matched with the presence and characteristics of nearby garment factories in the Yangon region. To construct a comprehensive database of garment factories in the region in 2015, we combine two data sources. The first source is a list of garment firms in 2015 provided by the Myanmar Garment Manufacturers Association (MGMA) about its member and non-member firms in the garment industry. This list contains information about exporting, employment size, number of factories, foreign ownership, and the address of 298 garment firms in the region.

The second source is a garment plant (factory) survey conducted by an author in 2015. This survey constructed a population database of garment factories in the Yangon region by assembling industry directories, the list from MGMA, firm registration records, and local wholesalers,

[7] The module was only implemented if privacy could be obtained, which was the case for 99% of eligible women.

[8] Emotional violence includes being humiliated, threatened with harm, insulted, or made to feel bad. Physical violence includes being pushed, shaken, slapped, punched with fist, hit by something harmful, or having hair pulled or arm twisted. Severe violence includes being kicked, dragged, strangled, burnt, or threatened with a weapon. Sexual violence includes being physically forced into unwanted sex or sexual acts.

finding 351 factories. The survey contacted all firms in the database and received interviews from 209 factories. The survey asked about hourly wages, working conditions (fire safety, health management, and freedom of negotiation), and management practices, in addition to basic information about the factory (for details, see Tanaka, 2020). In addition, the survey recorded the GIS locations of the factories in the population database, either by factory visits in 2015 or by identifying on the map using the factory address, irrespective of whether the factory responded to the survey.

Combining the two sources, we obtain the baseline database of 374 garment factories in Yangon with complete information on GIS coordinates, exporting, and foreign ownership.[9] For the variables available in both the MGMA list and the survey data (exporting, employment size, and foreign ownership), we use the survey data if it is available, expecting higher accuracy of the data from the survey, and otherwise impute it from the MGMA list.[10] Among these factories, 61% of the factories exported, among which 57% were foreign owned, defined by foreign ownership of the share by more than a half. The average employment size is 357.

In a later part of our analysis, we use more detailed factory characteristics from the survey data to investigate possible pathways. An important set of these variables are measures of working conditions at each factory. The survey was originally designed to measure the level of compliance with international labor standards (of ILO and globally recognized initiatives providing certification services to private companies) on fire safety, occupational heath management, and freedom of association. Therefore, on each topic, the survey asked a few questions about the factory's practices.[11] On fire safety, it asked about the kinds of equipment for fire safety at the factory and whether the factory practices fire drills. On health management, the survey investigated the existence of a record of injuries, a list of hospitals to go in case of emergency, a

[9]Since information on exporting in 2015 is actually missing for 22 factories, we impute it from information on these factories in 2014 provided by the MGMA. Information on employment is also available except for 65 factories. For these 65 factories, using information on employment, exporting, foreign ownership, industrial zone, and townships in the rest of the sample, we predict and impute employment size.

[10]Since the MGMA list is firm level, if multiple factories are identified in the population database, we divide the number of employment equally across all factories. Only 3% of the firms had multiple factories.

[11]These questions were asked to the factory managers. Tanaka (2020) examines possible response biases by exporting status and airport proximity. Using actual observation of a marked fire exit at the factory during the survey, the study find no evidence supporting response biases.

private contract with a health clinic, and the presence of a nurse or a doctor at the factory. The questions regarding freedom of association were asked about the presence of workers' leaders in the factory, and for those factories where the leaders are present, whether they were appointed by the firm and/or by workers, and how frequently the management body meets with them. As in Tanaka (2020), we construct a score on a scale from 0 to 1 for each question according to the level of compliance to the international standards. We average them within each dimension (fire safety, health management, and freedom of association). The overall working conditions score is the average of these three dimensions. We also obtain a measure of hourly wage, constructed by monthly salary divided by working hours (including overtime pay and hours, respectively) for a typical entry level sewing operator at the factory.[12]

From the survey, we also use a measure of management quality. The survey asked about management practices following standard survey instruments on management and business practices, such as the US Management and Organizational Practice Surveys. Managers were asked eight questions about three dimensions of work: production monitoring, quality control, and machine maintenance (for the exact questions, see Tanaka, 2020). We assign a score for each question on a scale of 0 to 1 and construct an overall management practices score in the same way we construct the working conditions score.

2.3 Combined Dataset and Summary Statistics

Using the location information collected for each factory, and the location information provided by the DHS, we match DHS data with the factory database. The DHS provides the latitude and longitude of each cluster in the DHS, randomly displacing the positions of each urban cluster up to maximum of 2 km, therefore introducing some classical measurement error into our distance measures. We use these coordinates to calculate the distance between each DHS cluster and each factory and restrict our sample to DHS clusters located within 2 km of any garment factory.

[12]In the 2015 survey, the salary information is missing for those factories that did not hire an entry level sewing operator during the period. To mitigate sample selection issues, we use another wave of the survey conducted in 2014, which also asked a question about salary and working hours, and take the average of wages in the two years.

We make this restriction in order to ensure that our analysis relies on comparisons across relatively similar groups. As we discuss in section 3, our empirical strategy involves comparing women who live near an exporting factory to women who do not. Comparing across the entire DHS sample would result in the comparison of urban, relatively high-income households to rural households of lower socioeconomic status, likely different in many (unobserved) ways. Comparing within the sub-sample of households who live close to a garment factory in the Yangon region allows us to isolate differences that are plausibly driven by the exporting behavior of nearby factories.

Summary statistics for our sample of interest are reported in the first column of Table 1. For comparison, we also report statistics for the entire Yangon region in column 2 (which is where the majority of garment factories are located), and for the full DHS sample in column 3. Differences between our factory sample and the rest of Yangon are reported in column 4, while differences between our factory sample and the entire remaining DHS sample are reported in column 5.

55% of women in our analysis sample live within 2 km of an exporting factory. Unsurprisingly, this is much higher than the share for the general Yangon sample (32%) and the share for the complete DHS sample (3%). For most of the other variables, women in our sample of interest are very different from the full sample but are fairly representative of the Yangon region. For instance, there are no significant differences in employment rates, decision-making behavior, attitudes towards domestic violence, and experiences of domestic violence between our factory sample and the rest of the Yangon region (column 4). Compared to the full DHS sample, however, women in Yangon make more decisions jointly with their husband, are less tolerant of domestic violence, and are less likely to have experienced domestic violence (all of these differences are statistically significant). Education and wealth levels are significantly higher in the factory sample compared to the full sample and – to a lesser degree – also compared to the Yangon sample.

In Table 1, we also report statistics on marital status. Slightly over half of the factory sample is currently married, about 40% have never been married, while 3% report being divorced or separated. The latter statistic is important because it indicates that the outside option is relevant

Table 1. Summary Statistics

	Mean (SD)			Difference (SE)	
	(1)	(2)	(3)	(4)	(5)
	Within 2km of Factory	Yangon Region	Full Sample	Factory Areas-Rest of Yangon	Factory Areas-Rest of Sample
Lives Within 2km of Exporting Factory	0.55	0.32	0.03	0.55***	0.55***
	(0.50)	(0.47)	(0.16)	(0.02)	(0.00)
Working	0.52	0.53	0.64	-0.03	-0.13***
	(0.50)	(0.50)	(0.48)	(0.03)	(0.02)
No. of Decisions Made by Woman Alone (5 max)[1]	1.74	1.73	2.25	0.04	-0.53***
	(1.69)	(1.61)	(1.86)	(0.13)	(0.10)
No. of Decisions Made by Couple Jointly (5 max)[1]	3.24	3.26	2.54	-0.06	0.72***
	(1.90)	(1.85)	(1.97)	(0.15)	(0.11)
No. of Decisions Made by Husband Alone (5 max)[1]	0.37	0.37	0.62	0.00	-0.26***
	(0.81)	(0.77)	(1.12)	(0.06)	(0.06)
No. of Situations Justifying Beating (7 max)	0.73	0.73	1.22	0.00	-0.51***
	(1.21)	(1.21)	(1.53)	(0.08)	(0.06)
Ever Experienced Emotional Violence[2]	0.08	0.06	0.16	0.03	-0.08**
	(0.27)	(0.24)	(0.37)	(0.03)	(0.03)
Ever Experienced Physical Violence[2]	0.08	0.09	0.16	-0.02	-0.09***
	(0.27)	(0.28)	(0.37)	(0.04)	(0.03)
Ever Experienced Severe/Sexual Violence[2]	0.03	0.03	0.08	-0.00	-0.05*
	(0.18)	(0.18)	(0.26)	(0.02)	(0.02)
Ever Experienced Any Violence[2]	0.13	0.12	0.24	0.03	-0.11***
	(0.34)	(0.33)	(0.43)	(0.04)	(0.04)
Educational Attainment	8.46	7.50	6.06	2.30***	2.52***
	(3.28)	(3.59)	(3.77)	(0.21)	(0.15)
Age	31.13	31.50	31.64	-0.87	-0.53
	(10.27)	(10.12)	(9.88)	(0.63)	(0.41)
Husband's Age	37.71	37.85	37.43	-0.32	0.29
	(9.14)	(9.02)	(9.32)	(0.75)	(0.52)
Wealth Score (Standardized)	1.09	0.68	-0.00	0.99***	1.14***
	(0.80)	(1.02)	(1.00)	(0.06)	(0.04)
Married	0.54	0.55	0.61	-0.03	-0.08***
	(0.50)	(0.50)	(0.49)	(0.03)	(0.02)
Divorced/Separated	0.03	0.03	0.03	-0.00	-0.01
	(0.16)	(0.17)	(0.18)	(0.01)	(0.01)
Widowed	0.03	0.03	0.03	0.00	-0.00
	(0.18)	(0.17)	(0.18)	(0.01)	(0.01)
Never Married	0.41	0.39	0.32	0.03	0.09***
	(0.49)	(0.49)	(0.47)	(0.03)	(0.02)
Observations	622	1065	12885	1065	12885

Notes: * p< 0.1 ** p< 0.05 *** p< 0.01. Wealth Score is a household-level measure of wealth, generated using factor analysis (on urban households) based on a wide array of variables, including the household's source of drinking water, type of toilet facility, ownership of different types of household furniture and appliance, etc.

1. Variables only available for married or cohabiting women (slightly over half of the sample).
2. Variables only available for random subset of ever-married women (approximately 20% of the sample).

– that is, that the termination of the marital relationship is actually possible. While 3% may represent a small share of the population, it is important to note that this captures women who currently report being divorced, not the total share women who have ever been divorced (as some divorced women may have remarried and would therefore be categorized as married). For comparison, Myanmar's currently-divorced share is similar to or higher than the share in all Southeast Asian countries with a DHS survey,[13] and about one-third of the currently-divorced share in the United States (from the 2015 American Community Survey). On a related note, in some bargaining models, the outside option is not necessarily divorce, but rather a non-cooperative equilibrium within marriage (Lundberg and Pollak, 1993).

We now focus on our attention on the sample of interest (women living within 2 km of a garment factory) and compare those who live near an exporting factory to those who do not. This comparison forms the basis of our empirical strategy. Table 2 shows that the sample is balanced in terms of woman-level characteristics like schooling, literacy, age, marital status, and recent migration behavior (which we discuss in more detail below). Husband characteristics (presence in household, education levels, and job types) are also similar across the two groups. In addition, there is no significant difference in terms of whether any household member has a bank account, which is an important consideration given that savings instruments have been found to promote female empowerment (Ashraf et al., 2010). The only significant difference is in the age gap between the couple (which we control for, along with other basic demographic controls, in our main specifications).

Interestingly, although none of these differences are statistically significant, women in exporting areas appear to be less educated and less wealthy than those in non-exporting areas. This could be due to the fact that more recently built factories, which typically export, had to be built in land abundant areas that are less developed.

Although the DHS does not measure any community-level variables, we include in our balance tests two variables that provide some insight into whether exporting firms may have targeted

[13]Statistics taken from the DHS final reports of the most recent DHS survey of each country (Institute of Population Studies, 1988; General Statistical Office (GSO) and ORC Macro, 2006; National Institute of Statistics and ICF International, 2015; National Population and Family Planning Board (BKKBN) and ICF, 2017; Philippine Statistics Authority (PSA) and ICF, 2018; Lao Statistics Bureau, 2018).

areas with better infrastructure (or if the government made more infrastructure investments in areas with exporting firms). The first is an indicator for whether the respondents consider the distance to the nearest health facility to be a barrier to accessing healthcare. The second is the number of minutes it takes to collect water from the household's main drinking water source (equal to zero for those with water on the premises). While these variables are only limited proxies for community-level infrastructure, we note that neither of them are significantly different across export and non-export neighborhoods.

2.4 World Health Survey

Because only one wave of the DHS is available for Myanmar, our main analysis will rely primarily on cross-sectional analyses. To shed light on what our factory neighborhoods looked like prior to the expansion of exporting, we also calculate summary statistics from Myanmar's 2003 World Health Survey (WHS). Implemented by the WHO, these surveys were conducted between 2002-2004 in 70 countries. Although the main purpose of the WHS was to collect information on adult health and healthcare systems, the main information we utilize includes basic demographic, socioeconomic, and employment variables.

One important feature of the WHS is the availability of GPS coordinates, which allows us to calculate distances between WHS households in 2003 and garment factory locations in 2015. We restrict to women living within 2 km of a where a garment factory will be located in 2015. We then compare women living within 2 km of at least one 2015 exporting factory to those not. We report these comparisons in Table 3.

Table 3 shows that women in these two groups are similar in terms of age, marital status, and employment rates. While there are no significant differences in terms of educational attainment, women in future exporting neighborhoods are less likely to have completed both primary school and high school, and the difference in high school completion rates is large relative to the non-export mean. There is also a statistically significant difference (at the 10% level) in household expenditures per capita, with women in future export neighborhoods reporting lower expenditures. Household travel time to drinking water (a proxy for community-level infrastructure) is

Table 2. Balance Tests (DHS)

	Full Sample		Married Women	
	(1)	(2)	(3)	(4)
	Non-Export Mean	Difference	Non-Export Mean	Difference
Educational Attainment	8.73	-0.48	8.25	-0.63
	(3.16)	(0.60)	(3.07)	(0.56)
Literate	0.90	-0.06	0.89	-0.08
	(0.30)	(0.05)	(0.32)	(0.05)
Age	31.84	-1.27	35.35	-0.15
	(10.68)	(0.87)	(8.92)	(1.23)
Migrated Within Last Year	0.05	-0.03	0.03	-0.02
	(0.23)	(0.04)	(0.17)	(0.02)
Migrated in Past 5 Years	0.13	-0.07	0.12	-0.07
	(0.34)	(0.07)	(0.32)	(0.05)
Female Head of Household	0.35	-0.11	0.21	-0.07
	(0.48)	(0.07)	(0.41)	(0.07)
Household Bank Account	0.29	-0.07	0.27	-0.08
	(0.45)	(0.07)	(0.44)	(0.07)
Wealth Score (Standardized)	0.46	-0.23	0.39	-0.22
	(0.64)	(0.17)	(0.63)	(0.17)
Married	0.52	0.03	1.00	0.00
	(0.50)	(0.04)	(0.00)	(0.00)
Husband's Age			38.51	-1.41
			(9.20)	(1.07)
Age Gap			3.16	-1.26**
			(5.46)	(0.46)
Husband Not in Household			0.10	-0.04
			(0.30)	(0.03)
Husband's Years of Schooling			8.06	0.10
			(2.89)	(0.63)
Husband White-Collar Job			0.13	0.03
			(0.34)	(0.07)
Husband Services/Sales Job			0.35	-0.09
			(0.48)	(0.07)
Husband Agricultural Job			0.00	0.01
			(0.00)	(0.01)
Husband Skilled Manual Job			0.37	0.06
			(0.48)	(0.07)
Husband Unskilled Manual Job			0.14	-0.01
			(0.35)	(0.07)
Considers Distance a Barrier to Healthcare	0.12	-0.02	0.13	-0.00
	(0.33)	(0.03)	(0.33)	(0.04)
Travel Time to Water (Minutes)	0.37	0.43	0.54	0.33
	(2.51)	(0.39)	(3.16)	(0.48)
Observations		622		333

Notes: Standard deviations (in columns 1 and 3) and standard errors clustered at the DHS cluster level (in columns 2 and 4) are in parentheses. Sample consists of women in the DHS living with 2 km of a garment factory. Non-Export Mean is the mean of the relevant variable among women in the sample who are not within 2 km of an exporting factory. Difference is obtained by regressing each variable on a dummy equal to one for women living within 2 km of an exporting factory. Wealth Score is a household-level measure of wealth, generated using factor analysis (on urban households) based on a wide array of variables, including the household's source of drinking water, type of toilet facility, ownership of different types of household furniture and appliance, etc.

Table 3. Balance Tests (WHS)

	(1) Non-Export Mean	(2) Difference
Completed Primary	0.73	-0.03
	(0.45)	(0.06)
Completed High School	0.35	-0.19
	(0.48)	(0.15)
Age	42.62	-1.98
	(16.75)	(1.72)
Female Head of Household	0.41	-0.05
	(0.50)	(0.09)
Log Household Expenditures	9.57	-0.35*
	(0.74)	(0.20)
Married	0.50	0.04
	(0.50)	(0.06)
Working	0.42	-0.02
	(0.50)	(0.06)
Travel Time to Water (Minutes)	8.39	1.41
	(7.46)	(3.32)
Observations		190

Notes: Standard deviations (in columns 1 and 3) and standard errors clustered at the WHS cluster level (in columns 2 and 4) are in parentheses. Sample consists of women in the 2003 WHS living with 2 km of the location of a garment factory in 2015. Non-Export Mean is the mean of the relevant variable among women in the sample who are not within 2 km of a 2015 exporting factory's location. Difference is obtained by regressing each variable on a dummy equal to one for women living within 2 km of a 2015 exporting factory's location.

similar across the two groups.

These patterns are in general quite consistent with the patterns in the 2015 DHS. This is important because the WHS was administered seven years before the export expansion in Myanmar, which means the statistics in Table 3 may not be a completely accurate representation of conditions immediately prior to the export expansion.[14] The similarities between the two datasets (the overall lack of statistically significant differences, along with the pattern of signs showing slightly better conditions in non-export neighborhoods) suggest it unlikely that drastic changes took place between 2003 and the beginning of the export expansion.

In short, consistent with the balance tests from 2015, this data suggest that exporting factories did not locate in areas that were substantially different from where non-exporting factories ended up. In particular, the small and negative difference in employment rates shows that exporting factories did not target areas where female employment was already higher. If anything, exporting factories seem to have ended up in areas that were worse off, perhaps due to the need to locate in relatively land abundant and potentially less developed areas.

3 Empirical Strategy

The goal of this study is to estimate the causal effect of exporting factories on the outcomes of women living nearby. That is, we are interested in β in the following regression (for woman i in cluster j):

$$Y_{ij} = \beta E_j + \delta X_{ij} + \epsilon_{ij}, \tag{1}$$

where Y_{ij} represents the outcome of interest and E_j is a dummy equal to 1 for women who live within 2 km of an exporting factory (including those who live within 2 km of both an exporting garment factory and a non-exporting one). X_{ij} represents a vector of individual and geographic

[14] Unfortunately, publicly available datasets in Myanmar before 2015, especially those with precise geographic information, are rare.

controls: schooling, age, difference between husband's age and own age (which is set to 0 for unmarried women), a married indicator, and wealth score. In some specifications, we include fixed effects for the four townships hosting major industrial zones in the Yangon region.[15] In additional specifications, we add controls for the total number of garment jobs within a 2 km radius; we also replace the exporting factory dummy with an exporting share variable, which captures the share of garment jobs within a 2 km radius that are at exporting factories. Both specifications help ensure that the exporting dummy is not simply capturing a larger number of factories or larger total employment (which would increase the likelihood that at least one factory in the 2 km radius is exporting). In all specifications, we cluster standard errors at the DHS cluster level. Because there are only 18 clusters in our sample, we report in all tables the p-values from wild cluster bootstrap methods, which account for the small number of clusters (Cameron and Miller, 2015; Roodman et al., 2019).[16]

We use E_j as our main regressor of interest because we argue that a woman's outside option is defined, at least in part, by the work opportunities within a small radius around her home. Anecdotal evidence supports the idea that distance should affect the definition of a woman's outside option in this context. Most garment factory workers walk to work (or take the factory's shuttle that usually travels a short distance around the factory), which means that factories that are not in walking distance would be much less likely considered a feasible outside option.[17] In a recent survey of 325 garment factory workers in this area, respondents lived on average 2.3 km from their workplace and 53% of the sample lived within 2 km.[18] We therefore interpret β as the effect of having an exporting factory within the set of one's outside options. There are two broad endogeneity issues that could result in a correlation between E_j and ϵ_{ij} and a biased estimate of β: (1) the location decision of exporting factories is not random, and (2) the location decision of women is not random.

Because factories are more likely to locate in urban land abundant areas, we do not estimate

[15]These townships are Hlaing Tharyar, Shwe Pyi Thar, South Dagon, and North Okkalapa.

[16]We impose the null hypothesis of $\beta = 0$ in the resampling, use 999 replications, and use Rademacher weights.

[17]Garment factories in Myanmar rarely provide dormitories.

[18]This survey was conducted by an author for another project in 2019-2020. The distance to the workplace is estimated based on the reported travel time and transportation modes.

equation (1) for the entire sample. Across the full sample of DHS respondents, there are likely to be large (observable and unobservable) differences across women who live near an exporting factory and women who do not, which could drive differences in our outcomes of interest. Therefore, as described in section 2.3, we restrict all of our analysis to women living within 2 km of any garment factory (exporting or not). As shown in Table 2, once we make this restriction, there do not appear to be large differences between women near an exporting factory and those near a non-exporting factory. If anything, it appears that export factories ended up in areas of *lower* socioeconomic status.

Our use of the recent and rapid expansion of Myanmar's garment sector helps partially alleviate concerns related to the second endogeneity issue, the non-random location decisions of women. In most developing countries, the expansion of textile exports usually occurs gradually, attracting migrants from rural areas to areas with the expanding industry. Self-selection of workers into these areas makes it difficult to identify the causal effect of exporting factories on workers. However, Myanmar had been largely closed to trade until 2010 due to the US and EU trade sanctions toward the former military regime. A wave of reforms that started in 2010 resulted in Myanmar rapidly opening to global trade, as shown in Figure A1: the value of apparel exports from Myanmar to the world tripled from 2009 to 2015 (UN Comtrade).[19] The trade opening also resulted in a surge of newly established factories, most of which are foreign owned.[20]

While this rapid expansion of trade limits the scope for potentially confounding selective migration, it is still possible that some selective migration had taken place by the time of the 2015 survey we use in our analysis. However, in the DHS, less than 10% of women report having changed their "usual place of residence" in the five years prior to the survey.[21] Of these

[19]In 2010, the country's new leader, Thein Sein, was elected and implemented various political and economic reforms. These reforms included an abolition of export tax on processing trade, a major method of exporting for the garment factories, during 2011–2012. This resulted in a large increase in exports of apparel to Japan, which did not have a trade sanction against Myanmar. In addition, responding to the political reforms, the US and EU lifted their trade sanctions in 2012 and 2013, respectively.

[20]Imports also increased over this time period, most drastically for the following products: boilers and machinery, electrical machinery, iron and steel, ships, and vehicles. Because the production volume for these products was low in Myanmar prior to its opening to trade, we view any potential increase in import competition as minor (and less important than the increase in exports that took place).

[21]We show in Table 2 that migration patterns are not significantly different across women in exporting versus

recent migrants, about one-third report having moved from one location in Yangon to another location in Yangon, which means that this variable is capturing at least some within-region migration. Due to potential differences in respondents' interpretations of this question, it is not clear whether this statistic includes all moves of any distance (including moves from one 2 km radius neighborhood to another nearby one), but data from the 2014 Myanmar census show that only 5% of the Yangon population reported having moved across townships within a district in the previous five years (Census Report Volume 4-D, 2016).

To address any remaining concerns about selective migration, selective factory location, or other sources of endogeneity, we also estimate β using an instrumental variable strategy, which uses the travel distance to the nearest international airport from the DHS cluster as an instrument. Proximity to the airport is likely to affect trade costs because foreign buyers visit the factories to decide with which factories to trade, as well as to monitor them after starting to trade. In Yangon, since around 2011, heavy traffic began increasing the travel time from factories to the airport as well as the uncertainty of arrival time. For instance, in a 2015 traffic survey in Yangon which involved five taxi rides from each of eight major factory locations, Tanaka (2020) shows that it took on average 41 minutes and a maximum of 82 minutes to the international airport from these locations. Given the importance of face-to-face communication in the formation of trade partnerships, even just one hour of difference could influence buyers' decisions about suppliers. Indeed, during field interviews, some foreign buyers who visited Yangon said they were less attracted to plants located farther than one hour of travel time from airports. In addition, apparel products are sometimes shipped by air from Yangon, especially when the buyers request a short delivery time.[22]

Using data from domestically owned garment factories in Yangon, Tanaka (2020) shows that factories nearby the airport are more likely to start exporting during 2013–2015 as well as more

non-exporting neighborhoods. In addition, the main regression results discussed later are not driven by the small proportion of migrants: dropping them from the analysis has no effect on our coefficient estimates.

[22] According to experts in trading companies, the relative attractiveness of air shipment to port shipment is higher in Myanmar compared to other countries since the port of Yangon is shallow and does not allow large containers to enter. Although statistics on air shipment in Myanmar are not available, in Japan, which imported the largest share of apparel made in Myanmar in 2015, 21% of imports (from the world for all kinds of products) came through air shipment in terms of import value in 2013 (Ameno, 2015).

likely to be exporting (cross-sectionally) during that period, while their productivity, size, and average wage in 2004 were similar to factories away from the airport (controlling for proximity to city center and location in a designated industrial zone). In addition, Tanaka (2020) provides evidence that helps rule out the possibility that unobserved shocks to areas near the airport attracted more high-performing firms in general to these areas. Data on processed food firms in Yangon, almost none of which export, reveal that airport proximity has no significant effect on food firms' employment size, working conditions, and management practices during 2013–2015.

In our context, we argue that proximity to the airport should also be exogenous to our outcomes of interest, once we control for general remoteness (distance to city center) and industrial zones. In Appendix Table A1, we regress all of the covariates used in our balance tests in Table 2 on airport travel distance, controlling for travel distance to city center and industrial zones. All coefficients on airport travel distance are small in magnitude and not statistically significant.

Our first stage is the following:

$$E_j = \alpha_1 \text{Distance to Airport}_j + \alpha_2 \text{Distance to City Center}_j + \alpha_3 \text{Industrial Zone}_j + \gamma X_{ij} + \nu_{ij}, \tag{2}$$

where Distance to Airport$_j$ is the shortest travel distance to the airport from DHS cluster j. Distance to City Center$_j$ is the shortest travel distance to the city center from DHS cluster j, and Industrial Zone$_j$ is an indicator equal to 1 if the closest garment factory to cluster j is located in an industrial zone.

The second stage is

$$Y_{ij} = \beta_1 \hat{E}_j + \beta_2 \text{Distance to City Center}_j + \beta_3 \text{Industrial Zone}_j + \delta X_{ij} + \epsilon_{ij}, \tag{3}$$

where $\hat{E}_j$ is predicted from the first stage. We use Google Maps (2019), to construct measures of shortest travel distance to the airport (the Yangon International Airport) and the city center (defined as the location of Yangon City Hall) from each DHS cluster.[23]

[23]The road network in 2019 is a fairly good proxy for that of 2015. Although there have been new road development projects funded by foreign aids since 2013–2014, most of these projects take several years (typically

4 Results

4.1 OLS Results

We begin by investigating the effects of exporting factories on female employment and decision-making. In Table 4, we report the results of three specifications. Panel A reports the baseline specification, which uses a dummy for living within 2 km of an exporting factory as the main regressor of interest. Panel B replaces this dummy with the share of total employment (among all garment factories within 2 km) belonging to exporting factories. Panel C uses the simple dummy variable used in Panel A, but controls for total garment factory employment (within the 2 km radius). We use the second two specifications to ensure that the effects in the baseline specification are not picking up a higher density of factories or larger total garment employment in the 2 km radius. Areas with more factories or more garment jobs in general would be more likely to have at least one factory that is exporting.

Living near an exporting factory increases the likelihood of being employed – for all women (column 1) as well as married women only (column 2). Importantly, this employment effect is present only for women. In Appendix Table A2, which reports outcomes for husbands as well, we show that almost all husbands are working and that exporting factories have no effect on the likelihood that a woman's husband is currently working. This is consistent with the predominantly female nature of garment factory labor: in surveyed factories, women made up approximately 90% of workers on average (in 2013). Although most household models would predict a reduction in male labor supply in response to increased female income (due to increased employment), it is likely the intensive margin rather than the extensive margin of husband's labor supply that would respond in this context.

Proximity to an exporting factory also increases the number of household decisions made jointly. This appears to be driven by a decrease in the number of decisions made by the husband alone (though in Panel A, there is a negative coefficient on woman only decisions that is significant at the 10% level, a finding we discuss in more detail in section 4.2).

6 years) to be completed.

Table 4. Effects of Exporting Factories on Female Employment and Decision-Making

			Number of Decisions Made By...		
	(1)	(2)	(3)	(4)	(5)
	Working	Working	Woman Alone	Couple Jointly	Husband Alone
	A. Baseline Specification				
Near Exporting Factory	0.17	0.22	-0.34	0.74	-0.35
	(0.064)**	(0.056)***	(0.18)*	(0.24)***	(0.10)***
	[0.02]	[0.00]	[0.10]	[0.01]	[0.00]
	B. Using Exporting Employment Share				
Employment Share of Exporting Factories	0.18	0.24	-0.38	0.90	-0.44
	(0.078)**	(0.065)***	(0.22)	(0.27)***	(0.11)***
	[0.04]	[0.01]	[0.14]	[0.01]	[0.00]
	C. Controlling for Total Garment Employment				
Near Exporting Factory	0.14	0.23	-0.20	0.51	-0.33
	(0.059)**	(0.067)***	(0.20)	(0.24)**	(0.11)**
	[0.06]	[0.01]	[0.33]	[0.06]	[0.02]
Sample	Full	Married	Married	Married	Married
Non-Export Mean	0.43	0.34	1.80	2.50	0.55
N	622	333	333	333	333

Notes: Standard errors, clustered at the DHS cluster level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wild cluster bootstrap p-values in square brackets. Sample consists of women in the DHS living within 2 km of a garment factory. "Near Exporting Factory" is a dummy equal to one for women living within 2 km of an exporting factory. All regressions control for years of schooling, age, difference between husband's age and own age (which is set to 0 for unmarried women), a married indicator, and household wealth score. In Panel B, "Employment share of exporting factories" represents the share of total workers (employed by garment factories within 2 km of the respondent's residence) that are employed by an exporting factory. Panel C controls for the total number of workers employed by garment factories within 2 km of the respondent's residence. Non-Export Mean is the mean of the dependent variable among women in the sample who are not within 2 km of an exporting factory.

The three specifications reveal the same major findings, suggesting that the effects in the baseline specification are not driven by higher factory density (leading to potentially greater competition between firms) or total garment factory employment.[24] The coefficient magnitudes are slightly larger in Panel B than in Panels A or C because those coefficients represent the effect of going from an area with no exporters to an area with only exporters. Scaling the coefficients by 0.85 would represent the effect of going from an area of no exporters to an average exporting area (the average export share, conditional on having at least one exporting factory, is 0.85).

Although these regressions rely on self-reported measures, we show in Table A2 that we also see changes in decision-making behavior as reported by husbands. For this, we rely on survey responses of the husbands of women in the domestic violence module. This sub-sample of husbands was asked questions about decision-making and domestic violence attitudes. In Panel A of Appendix Table A2, we report results from our baseline regression, using husband responses as our dependent variables. For comparison, we also report, in Panel B, regressions using their wives' responses.[25] Although there are differences in a husband's and wife's perceptions of decision-making power,[26] both panels show that men make significantly fewer decisions without the input of their wives, in couples living near an exporting factory.

In Table 5, we investigate the effects of exporting factories on domestic violence attitudes and experiences, using the same three specifications described above. The main conclusions are similar across all specifications, though the coefficients are slightly smaller in Panel C (than in

[24]The fact that the export dummy remains statistically significant in the working regressions (columns 1 and 2) even after controlling for total garment employment suggests there is not a one-to-one relationship between employment shares (at the DHS cluster level) and total garment employment within 2 km of that cluster. This could be because garment factories also hire men, and also hire women from outside the 2 km radius. The positive and significant coefficient on the export dummy, after controlling for total garment employment, could be an indication that export factories hire more women living nearby, whereas non-exporting factories end up hiring more men or women who live further away. Data from this factory sample in 2013 show that export factories have higher shares of female workers, consistent with evidence that export firms are more likely to update their technology and replace male blue-collar workers with female blue-collar workers (Juhn et al., 2014). This result could also be due to spillover effects resulting from a (newly) employed woman in a household paving the way for other women to start working (potentially in non-garment jobs). Data from the 2003 WHS suggests that export factories did not target areas where women were more likely to be employed in the first place. (see Table 3).

[25]Note that Panel B of Table A2 is identical to Panel A of Tables 4 and 5, except for two changes: (1) Table A2 restricts to the women whose husbands also responded to the questions, and (2) For decision-making variables, Table A2 only uses the decision types available for both the husband's and wife's questions: spending the husband's earnings, own healthcare, household purchases, and child wellbeing.

[26]Interestingly, women report more joint and woman-only decisions, while men report more man-only decisions.

Panel A), with the inclusion of total garment employment as a control.

For both the full sample and the women selected for the domestic violence module, proximity to an exporting factory significantly decreases a woman's tolerance for and experience of domestic violence. First, women near an exporting factory list significantly fewer situations that would justify a husband beating his wife (columns 1 and 2). When we look at husbands' responses in Table A2, there is also a negative coefficient for husbands' domestic violence tolerance, though this coefficient is not significantly different from zero and is smaller than the coefficient in the woman's regression. However, husbands' attitudes towards domestic violence do appear to be significantly different across exporting and non-exporting areas. In the last column, we use as a dependent variable an indicator for whether a respondent thinks that a wife is justified for abstaining from sex if she knows her husband has multiple partners. Husbands living near an exporting factory are significantly more likely to respond affirmatively to this question, suggesting that exporting affects the attitudes of both men and women.

Table 5 also shows that women near an exporting factory are significantly less likely to have experienced domestic violence. The probability of having experienced any domestic violence is 15 percentage points (68% of the non-export mean) lower in export neighborhoods. This is driven by reductions in physical violence, the most common form of domestic violence in this sample.[27]

In the appendix, Table A3 shows that these findings are robust to several alternative specifications: removing controls, using inverse propensity score weighting as an alternative way to control for basic covariates, controlling for fixed effects for the four townships hosting major industrial zones, and controlling for the total number of garment factories.

4.2 Instrumental Variables Results

We now move on to our instrumental variables specification, which addresses potential omitted variables that could be biasing the OLS estimates above. In Table 6, we report the second-stage estimates of an instrumental variables specification that uses travel distance to the airport as an

[27]Unfortunately, we have no better objective measure of domestic violence than the women's self reports, which make these variables difficult to verify. However, it is worth noting that these questions were only asked if privacy could be obtained. Husbands were never in the room during the domestic violence questions.

Table 5. Effects of Exporting Factories on Domestic Violence Attitudes and Experiences

	Number of...		Experienced...			
	(1) Situations Justifying Beatings	(2) Situations Justifying Beatings	(3) Emotional Violence	(4) Physical Violence	(5) Severe/ Sexual Violence	(6) Any Violence
			A. Baseline Specification			
Near Exporting Factory	-0.59	-0.62	-0.062	-0.11	-0.017	-0.15
	(0.15)***	(0.26)**	(0.046)	(0.026)***	(0.020)	(0.052)**
	[0.00]	[0.05]	[0.19]	[0.01]	[0.42]	[0.01]
			B. Using Exporting Employment Share			
Employment Share of Exporting Factories	-0.60	-0.69	-0.075	-0.13	-0.038	-0.19
	(0.17)***	(0.31)**	(0.051)	(0.031)***	(0.022)	(0.055)***
	[0.00]	[0.06]	[0.19]	[0.00]	[0.14]	[0.00]
			C. Controlling for Total Garment Employment			
Near Exporting Factory	-0.70	-0.70	-0.046	-0.099	-0.0020	-0.11
	(0.16)***	(0.29)**	(0.055)	(0.027)***	(0.029)	(0.067)
	[0.00]	[0.04]	[0.46]	[0.01]	[0.93]	[0.14]
Sample	Full	Violence Module	Violence Module	Violence Module	Violence Module	Violence Module
Non-Export Mean	1.05	1.24	0.12	0.14	0.040	0.22
N	622	127	127	127	127	127

Notes: Standard errors, clustered at the DHS cluster level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wild cluster bootstrap p-values in square brackets. Sample consists of women in the DHS living within 2 km of a garment factory. Violence module sample includes women who were randomly selected to take part in the domestic violence module of the DHS. "Near Exporting Factory" is a dummy equal to one for women living within 2 km of an exporting factory. All regressions control for years of schooling, age, difference between husband's age and own age (which is set to 0 for unmarried women), a married indicator, and household wealth score. In Panel B, "Employment share of exporting factories" represents the share of total workers (employed by garment factories within 2 km of the respondent's residence) that are employed by an exporting factory. Panel C controls for the total number of workers employed by garment factories within 2 km of the respondent's residence. Non-Export Mean is the mean of the dependent variable among women in the sample who are not within 2 km of an exporting factory.

instrument for exporting, focusing on outcome variables for which we detect significant effects in either the OLS or IV specification. Factories with shorter travel distance to the airport should be significantly more likely to be exporting by 2015, and airport travel distance should be exogenous to our outcomes of interest after controlling for travel distance to the city center and an industrial zone dummy as controls.

Table 6. Effects of Exporting Factories, IV Estimates

		No. of Decisions...			No. of...	Experienced...	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Working	Woman Alone	Couple Jointly	Husband Alone	Situations Justifying Beatings	Physical Violence	Any Violence
				A. Baseline Specification			
Near Exporting Factory	0.33	-1.75	1.61	-0.087	-1.77	-0.12	-0.14
	(0.12)***	(0.36)***	(0.59)***	(0.25)	(0.51)***	(0.050)**	(0.19)
	[0.09]	[0.01]	[0.11]	[0.76]	[0.04]	[0.04]	[0.59]
F-statistic	8.88	8.88	8.88	8.88	13.9	13.9	13.9
				B. Using Exporting Employment Share			
Employment Share of Exporting Factories	0.35	-1.89	1.74	-0.094	-1.98	-0.14	-0.16
	(0.14)**	(0.38)***	(0.59)***	(0.27)	(0.60)***	(0.053)***	(0.21)
	[0.12]	[0.01]	[0.12]	[0.76]	[0.04]	[0.03]	[0.59]
F-statistic	10.6	10.6	10.6	10.6	12.9	12.9	12.9
				C. Controlling for Total Garment Employment			
Near Exporting Factory	0.34	-1.49	1.20	-0.056	-1.78	-0.12	-0.086
	(0.13)***	(0.38)***	(0.50)**	(0.26)	(0.53)***	(0.054)**	(0.18)
	[0.07]	[0.01]	[0.09]	[0.84]	[0.04]	[0.06]	[0.70]
F-statistic	8.17	8.17	8.17	8.17	12.5	12.5	12.5
Non-Export Mean	0.34	1.80	2.50	0.55	1.24	0.14	0.22
N	333	333	333	333	127	127	127

Notes: Standard errors, clustered at the DHS cluster level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wild cluster bootstrap p-values in square brackets. Sample consists of married or cohabiting women in the DHS living within 2 km of a garment factory (and for violence-related questions, in households selected for the domestic violence questionnaire). Table reports second-stage coefficients from an instrumental variables specification that uses travel distance to the airport as an instrument. "Near Exporting Factory" is a dummy equal to one for women living within 2 km of an exporting factory. All regressions control for travel distance to city center, an indicator equal to 1 if the nearest garment factory is located in an industrial zone, and demographic controls: years of schooling, age, difference between husband's age and own age, and household wealth score. In Panel B, "Employment share of exporting factories" represents the share of total workers (employed by garment factories within 2 km of the respondent's residence) that are employed by an exporting factory. Panel C controls for the total number of workers employed by garment factories within 2 km of the respondent's residence. Non-Export Mean is the mean of the dependent variable among women in the sample who are not within 2 km of an exporting factory.

As in Tables 4 and 5, Panel A uses the simple exporting dummy, Panel B uses the exporting

employment share, and Panel C uses the exporting dummy while controlling for total garment employment. First-stage F-statistics for weak identification are also reported for each regression and reveal relatively strong first stages, though a few F-statistics are slightly under 10 (first stage regressions reported in Appendix Table A5, Panel A).

Like the OLS results, the IV estimates reveal that exporting factories significantly increase employment probabilities, reduce tolerance of domestic violence, and reduce the occurrence of physical violence. The coefficient in the any violence regression is similar in magnitude to the OLS regression, but not statistically significant. The magnitudes of these effects are quite large. In Panel A, proximity to an exporting factory reduces the likelihood of experiencing physical violence by 12 percentage points, which is over 80% of the non-export mean. This magnitude is slightly larger than the size of the gap in physical violence rates between our sample of interest and the remainder of the overall Myanmar DHS sample, as reported in Table 1. In summary, exposure to an exporting factory makes women substantially less tolerant of and less likely to experience domestic violence.

There are some important differences between the OLS and IV results in the decision-making regressions. While both specifications reveal a positive and significant effect on the number of joint decisions, the IV results show this is driven primarily from a shift away from woman-only decisions (whereas the OLS results show a shift away from husband-only decisions).

To better understand these results, we repeat the IV specification separately for each type of decision and report our results in Appendix Table A4. Each column represents a different type of decision, and each panel represents a different decision-maker.[28] The first five columns examine the decisions that are included in our main decision count variable (women's healthcare, household purchases, visiting family and friends, children's wellbeing, and how the husband's earnings are spent). The last column examines decisions about how the woman's earnings are spent, which is only available for women who work and therefore not included in the main count.

Interestingly, the negative coefficients for the woman-only decisions in Table 4 appear to be driven by decisions related to family visits and child well-being. Specifically, proximity to an

[28]For instance, the first coefficient in Panel A represents the effect of proximity to an exporting factory on an indicator for whether decisions about spending a woman's earnings are made by the woman alone.

exporting factory increases the likelihood that these decisions are made jointly, by decreasing the likelihood of them being made by the woman alone. Rather than a reflection of lower bargaining power, the decreases in these woman-only decisions could be a reflection of increased female activity in the labor market. More likely to be working, these women might be more constrained in their ability to schedule visits to family members (without discussing with their husbands), and more likely to be sharing child-care responsibilities and therefore child-related decisions with their husbands. There is also a large negative coefficient on the export dummy in the regression on woman-only healthcare-related decisions, though for this type of decision we also see reductions in husband-only decision-making.

In sum, the effect of exporting factories on female decision-making power is mixed. Proximity to an exporting factory significantly increases joint decision-making, though this appears to come from reductions in both female-only and male-only decisions.[29] Because the reduction in female-only decisions could be a result of increased labor market participation among women, these findings are consistent with our other results (increased employment and lower domestic violence), but cannot be interpreted as clear evidence of increased female control of household decisions.

In general, the similarity in the pattern of IV and OLS results offers further support for the exogeneity of the exporting variables in the OLS specifications. All coefficient signs are consistent across specifications. While magnitudes do differ (particularly in the decision-making regressions), this could be due partially to the fact that the IV results provide a local average treatment effect rather than the average treatment effect estimated by the OLS.

We also report the reduced form regressions in Table A5 (Panel B), which helps address concerns about weaker first stage F-statistics in some regressions. The reduced form results show that distance to airport is negatively associated with employment and joint decisions, and positively associated with female only decisions, tolerance of domestic violence, and experience of physical violence. In other words, women living further from the airport (who we show are less likely to be living near an exporting factory, controlling for industrial zones and distance to

[29]Both OLS and IV regressions reveal negative coefficients on both of these variables, though they differ in the estimated magnitudes and statistical significance.

city centers) have lower employment rates, make more solo decisions, make fewer joint decisions, and have higher tolerance and risk of domestic violence.

4.3 Robustness Checks

To address concerns about selective migration, we repeat this analysis for the sample of women who reported no migration in the past 5 years. The results in Table A6, almost identical to those in Table 6, show that our findings are being driven by women who were already living in their current locations when exporting began to expand. As discussed in section 3, it is possible that this restricted sample of women still includes those who migrated short distances (potentially from one exporting neighborhood to another nearby non-exporting one), though estimates from the 2014 Myanmar census suggest they are only a small proportion of the sample.

We also show that results are robust to changing the 2 km cutoff (in Table A7). Specifically, we repeat the specification in Panel B of Table 6 with distance cutoffs at each half kilometer in the range of 1 to 3 km.[30] Although statistical power is limited in the regressions using lower cutoffs, coefficient estimates are similar across panels.

As a final robustness check, we combine the 2003 WHS with the 2015 DHS and estimate the following basic difference-in-differences regression:

$$Y_{ijt} = \beta_1 E_j D2015_t + \beta_2 E_j + \beta_3 D2015_t + \delta X_{ij} + \epsilon_{ij}, \tag{4}$$

where Y_{ijt} represents female employment for woman i in location j in survey wave t (either the 2003 WHS or 2015 DHS). Employment is the only outcome available in both the DHS and the WHS, which means we cannot estimate this regression for the decision-making and domestic violence outcomes. E_j is a time-invariant dummy equal to one for women living within 2 km of where an export factory is located in 2015.[31] $D2015_t$ is an indicator equal to 1 for the 2015 DHS (post export expansion).

[30] We use the specification that uses export employment shares, rather than the export dummy, as the endogenous variable due to increasingly limited variation in the exporting dummy as the cutoff increases.

[31] Because clusters are different in the DHS and WHS, we cannot include cluster fixed effects, but E_j controls for any time-invariant differences across exporting and non-exporting neighborhoods in general.

The identifying assumption here is that employment would have trended similarly in neighborhoods that ended up as export neighborhoods and areas that ended up as non-export neighborhoods in 2015, if the export expansion had not taken place. Under this assumption, β_1 provides us with a causal estimate of the effect of proximity to an export factory on employment.

The results in Table A8 reveal a positive and significant effect of exporting factories on the probability of working. The coefficient is similar in magnitude to our OLS estimates and smaller than our IV estimates. The main effect of E_j is negative, small, and statistically insignificant, once again confirming that export factories did not locate in areas with higher female employment ex-ante. In other words, for the one outcome we can measure both before and after Myanmar's trade liberalization, the differences between export and non-export neighborhoods only showed up after the arrival of the exporting factories.

Our results demonstrate that women who are exposed to exporting factories interact with their husbands differently compared to women who are not. On the one hand, this could be because exposure to an exporting factory changes the interactions of existing couples. Alternatively, this could result from exporting factories changing the composition of new couples – that is, exporting factories might change how women choose their partners. While we acknowledge that both channels could be in play, it is worth noting that 75% of our sample is made up of women who first began cohabiting with their current partner before 2010 (the beginning of Myanmar's trade liberalization). Given this large share, it is unsurprising that results that restrict to these women (available upon request) are very similar to the results reported above. In other words, our results persist for women who chose their husbands before they were exposed to exporting factories, which means that at least part of the effect must be coming from changes in the interactions of existing couples.

4.4 Potential Mechanisms

Having established that women living near exporting factories are more likely to be working and are less likely to condone or experience violence, we now discuss why export factories improved female empowerment in this way. Most importantly, exporting factories improved female labor

market opportunities – as shown by the increase in employment rates described above, as well as previous work documenting improvements in working conditions (Tanaka, 2020). Improved labor market opportunities mean an improved female outside option, and this is precisely what we argue is driving the reductions in domestic violence tolerance and experience.

Although we show that exporting factories did shift certain women into employment, the empowerment effects do not necessarily have to be concentrated among these particular women. In fact, the existence of exporting factories should have improved the outside option of any woman for whom a garment factory job is a feasible outside option, who we argue comprise the vast majority of our sample. First of all, female garment workers in Yangon comprise more than 10% of the working-age female population in Yangon.[32] More important than the share of women actually working in the garment industry, however, is the share of women for whom this would be a feasible outside option. According to a recent ILO report (that post-dates our study), the median garment worker in their sample has completed middle school, but a large share (22%) only have a primary school degree (Laplonge, 2019). In our sample of women in factory neighborhoods, 84% have completed primary school. According to anecdotal evidence, garment workers can be trained in 10-15 days (if they have some experience with household sewing machines, which seems to be the case for the majority of women), or else start by working as a helper for 2 months. In other words, a garment factory job was obtainable for most women in our sample.

The idea that improved job conditions can empower women – even those who are not working – is consistent with theoretical models and empirical findings in existing literature. As summarized in Heath and Jayachandran (2017), intrahousehold bargaining models highlight that "jobs that improve a woman's outside options increase her bargaining power, even if she doesn't take up the job herself" (p. 14). In the Aizer (2010) model of domestic violence, the bargaining power parameter in the model is described as the share of income a woman would earn outside of her current relationship, which is not necessarily what she currently earns inside the relationship.

[32]There were approximately 260,000 women working in the garment industry in 2015 (Huynh, 2016) and 2.2 million women aged 15-49 (the age range included in the DHS) living in Yangon according to the 2014 census (Census Report Volume 3-L, 2015).

Empirically, Majlesi (2016) finds that relative improvements in female labor market opportunities strengthen female decision-making power – even among women who are not working.

We now explore what specific features of exporting factory neighborhoods were responsible for the improvements in female empowerment. We explore several channels using detailed information about factory characteristics from the survey data. As documented by Tanaka (2020), exporting in this context causally improved various factory outcomes, including working conditions (fire safety, healthcare management, and freedom of negotiation), wages, and management practices. We show in Table A9 that these measures are indeed significantly better in exporting than non-exporting factories. For wages, the gap is about a third of a standard deviation, while for the working conditions and management practices, the difference is substantial – larger than one standard deviation. On the contrary, as shown in Tanaka (2020), exporting had only negligible and insignificant effects on working hours, suggesting that our results are not likely to be coming from changes in hours outside the home.

Women living near an exporting factory are exposed to better quality jobs in terms of wages, working conditions, and management practices. In theory, higher wages could improve women's bargaining power in the household. Moreover, jobs at safer and better managed factories may encourage women to stay in the jobs for the longer term, improving the present value of the jobs.[33] To investigate the role of wages, working conditions, and management quality in explaining the improvements in female empowerment measures, we include these variables as controls in our basic OLS regressions in Table 7.

In Table 7, we drop women for whom all nearby factories (within 2 km) were missing data on wages, working conditions, and management practices. These variables are only available for factories that responded to the author-conducted survey, and we therefore drop women for whom there is no factory with detailed information available. Among the remaining women, we average factory variables across all survey-responding factories within 2 km of each woman, ignoring factories with missing information. In the regressions, we control for a a dummy equal

[33]Indeed, in our factory data, worker turnover rate is negatively associated with the working conditions score (available upon request). In addition, experimental evidence from garment factories in India show that better communication between management and workers can reduce the turnover rate (Adhvaryu et al., 2019).

to 1 if at least one factory within the 2 km radius had missing information.

First, we repeat our OLS specification on the restricted sample of women with non-missing wages, working conditions, and management practices for at least one factory in their 2 km radius. Panel A shows that our main results hold for this smaller sample. In panel B, we add three variables to the baseline specification: average wages, average working conditions score, and average management practices score across all factories within 2 km of the respondent (weighted by factory employment). Because these three variables are highly correlated, we acknowledge that these results cannot be used to infer the relative importance of these three variables in explaining the exporting effect documented above, though they will shed light on the importance of job quality overall. In addition, due to the small sample sizes, these regressions have very limited statistical power and should therefore be viewed as suggestive evidence.

In panel B, the inclusion of these three variables as controls has little effect on the magnitudes of the export coefficients for employment and decision making.[34] In the regressions related to domestic violence, however, the exporting factory coefficient changes substantially – dropping to less than 10% of the original magnitude in column 6 and even switching signs in columns 5 and 7. These changes appear to be driven by large negative coefficients on either management score or work conditions. That is, the effect of exporting factories on the domestic violence variables appears to be driven by better management and work conditions at these factories.

Lastly, in Table A10, we examine whether the effects of exporting factories differ by foreign ownership. Studies have shown that foreign ownership can have important implications for the relative outcomes of female workers (Kodama et al., 2018; Choi and Greaney, 2019; Vahter and Masso, 2019). We divide the employment share of exporting factories between those of foreign and domestically owned factories. In our sample, around half of the exporting factories are foreign owned,[35] while none of the non-exporting factories are. We regress our same outcomes of interest on two variables: the employment share (in a woman's 2 km radius) belonging to foreign owned firms and the employment share belonging to domestically owned exporting firms.

[34]Interestingly, the inclusion of these controls flips the sign of the coefficient in column 2, though this is difficult to interpret given that the coefficient was statistically insignificant to begin with.

[35]Foreign owned firms are defined as firms where more than 50% of the share is owned by foreign entities.

If there is any effect of foreign ownership on women's empowerment, we should see differences in these coefficients. The estimated coefficients have the same signs, and most of them have similar magnitudes, except for the first two regressions. With the exception of the working regression, none of the coefficient pairs are significantly different at the 10 percent level. Though limited power could be an issue, there do not appear to be important differences between the effects of foreign and domestically-owned firms on female decision-making and domestic violence.

It is not surprising that the additional effects of foreign ownership are small in our setting, given that the global markets for apparel tend to have buyer-driven supply chains. In particular, regarding working conditions, foreign buyers often pressure supplier factories in Myanmar to pass an audit and obtain a certificate showing the factory complies with international labor standards. Such buyers usually require the certificate as a condition to start trading, possibly for the purposes of protecting their brand names from criticism for supporting sweatshop factories. In this setting, the key differences in factory working conditions can be attributed to buyers' characteristics (foreign buyers vs. domestic buyers) rather than ownership characteristics (foreign owners vs. domestic owners).

In sum, these results suggest that outside option quality is an important channel through which proximity to an exporting factory improves female outcomes. Although these regressions are purely descriptive and not causal, several results discussed earlier also support the importance of job quality over job quantity. For example, our findings are not driven by a correlation between exporter presence and the quantity of employment opportunities: results persist when we control for total garment employment in the 2 km radius. In addition, the domestic violence effects are not only due to the fact that working women spend less time at home: domestic violence effects persist when we control for the woman's employment status (results available on request), though these results should be interpreted with caution due to the endogeneity of the working variable.

Table 7. Effects of Exporting Factories, Controlling for Factory Characteristics

		No. of Decisions...			No. of...	Experienced...	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Working	Woman Alone	Couple Jointly	Husband Alone	Situations Justifying Beatings	Physical Violence	Any Violence
				A. Baseline Specification, Restricted Sample			
Near Exporting Factory	0.22	-0.33	0.72	-0.35	-0.50	-0.11	-0.12
	(0.060)***	(0.21)	(0.28)**	(0.11)***	(0.27)*	(0.028)***	(0.047)**
	[0.01]	[0.17]	[0.02]	[0.00]	[0.12]	[0.02]	[0.05]
				B. Controlling for Factory Characteristics			
Near Exporting Factory	0.25	0.062	0.58	-0.58	0.12	-0.0074	0.13
	(0.22)	(0.58)	(0.81)	(0.29)*	(1.26)	(0.096)	(0.16)
	[0.42]	[0.92]	[0.56]	[0.12]	[0.93]	[0.94]	[0.52]
Log Wages	0.65	1.86	-0.93	-1.01	0.82	0.26	0.17
	(0.41)	(0.91)*	(1.04)	(0.46)**	(2.82)	(0.23)	(0.30)
	[0.46]	[0.07]	[0.34]	[0.15]	[0.82]	[0.41]	[0.61]
Management	-0.26	-1.92	0.67	1.05	-3.54	-0.39	-0.59
	(0.84)	(1.93)	(2.85)	(1.08)	(4.89)	(0.37)	(0.63)
	[0.83]	[0.39]	[0.82]	[0.43]	[0.58]	[0.39]	[0.61]
Work Conditions	-0.15	-0.45	0.50	0.12	1.30	-0.18	-0.53
	(0.25)	(0.88)	(1.06)	(0.37)	(0.89)	(0.094)*	(0.21)**
	[0.60]	[0.64]	[0.68]	[0.79]	[0.14]	[0.27]	[0.33]
Non-Export Mean	0.33	1.77	2.53	0.55	1.11	0.14	0.18
N	294	294	294	294	115	115	115

Notes: Standard errors, clustered at the DHS cluster level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wild cluster bootstrap p-values in square brackets. Sample consists of married or cohabiting women in the DHS living within 2 km of a garment factory (and for violence-related questions, in households selected for the domestic violence questionnaire), restricting to women living within 2 km of a garment factory included in the author's factory survey, which provides the additional controls in panel B. All regressions control for years of schooling, age, difference between husband's age and own age, household wealth score, and a dummy equal to 1 if at least one factory within the 2 km radius had missing wage, management, or work conditions information.

5 Conclusion

This paper provides evidence that exporting factories in Myanmar helped promote female empowerment. Previous work has shown that exporting causally improved working conditions and wages at Myanmar's predominantly female garment factories. We document that women living nearby exporting factories also benefited, as evidenced by their higher levels of female empowerment.

Specifically, we show that women living within 2 km of an exporting factory were significantly more likely to be working and less likely to experience or tolerate domestic violence. We also obtain similar results with an instrumental variables strategy that uses travel distance to the airport as an instrument. However, evidence on bargaining power is mixed, with exporting factories generating increases in joint decision making (at the expense of both female-only and male-only decisions).

We provide suggestive evidence that the estimated effects are at least partially driven by improvements in the quality of the female outside option. Wages, working conditions, and management quality explain some of the reduction in domestic violence generated by exporting factories.

While Myanmar's experience with globalization was unique in terms of the speed of its trade liberalization, it was similar to the experience of many other developing countries in the way it drastically improved female job opportunities in manufacturing. The results of this study, therefore, have broader implications for developing countries across the globe, which have experienced or will experience similar trade-driven changes in the female labor market.

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A Appendix

Figure A1. Myanmar Exports, 2005-2016

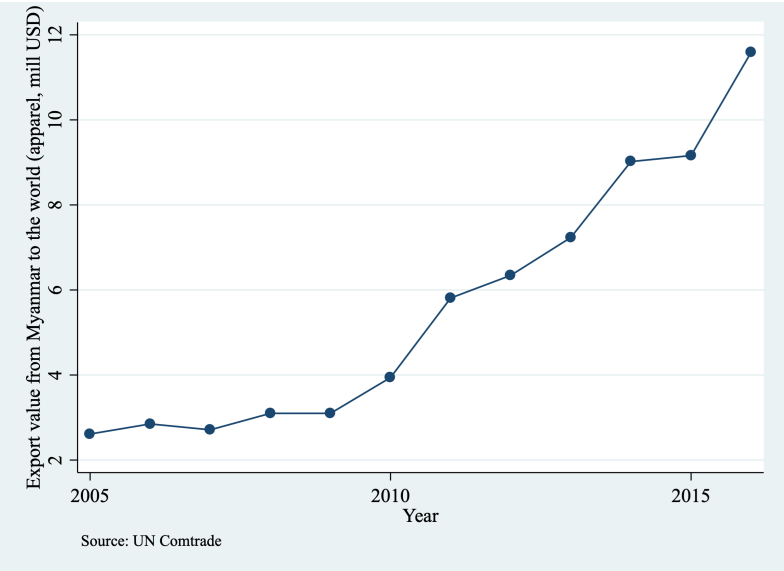

Table A1. Relationship between Airport Travel Distance and Covariates

	Full Sample		Married Women	
	(1)	(2)	(3)	(4)
	Sample Average	Airport Distance Coefficient	Sample Average	Airport Distance Coefficient
Educational Attainment	8.46	-0.26	7.89	-0.06
	(3.28)	(0.49)	(3.35)	(0.47)
Literate	0.87	-0.00	0.84	0.04
	(0.34)	(0.04)	(0.37)	(0.05)
Age	31.13	0.47	35.26	0.81
	(10.27)	(0.64)	(8.45)	(0.96)
Migrated Within Last Year	0.04	-0.01	0.02	0.03
	(0.20)	(0.02)	(0.13)	(0.02)
Migrated in Past 5 Years	0.09	-0.03	0.08	-0.03
	(0.29)	(0.05)	(0.27)	(0.05)
Female Head of Household	0.28	0.05	0.17	0.05
	(0.45)	(0.07)	(0.38)	(0.07)
Household Bank Account	0.25	-0.00	0.22	0.00
	(0.43)	(0.05)	(0.42)	(0.05)
Wealth Score (Standardized)	0.33	0.01	0.26	0.09
	(0.75)	(0.12)	(0.75)	(0.13)
Married	0.54	-0.04	1.00	0.00
	(0.50)	(0.04)	(0.00)	(0.00)
Husband's Age			37.71	1.18
			(9.14)	(1.08)
Age Gap			2.44	0.37
			(5.36)	(0.36)
Husband Not in Household			0.08	0.00
			(0.26)	(0.03)
Husband's Years of Schooling			8.12	-0.68
			(2.93)	(0.44)
Husband White-Collar Job			0.15	-0.01
			(0.36)	(0.05)
Husband Services/Sales Job			0.31	-0.06
			(0.46)	(0.06)
Husband Agricultural Job			0.00	-0.00
			(0.05)	(0.00)
Husband Skilled Manual Job			0.40	-0.00
			(0.49)	(0.07)
Husband Unskilled Manual Job			0.14	0.08
			(0.35)	(0.06)
Considers Distance a Barrier to Healthcare	0.11	0.01	0.12	-0.00
	(0.31)	(0.02)	(0.33)	(0.04)
Travel Time to Water (Minutes)	0.61	0.02	0.72	0.11
	(3.12)	(0.27)	(3.17)	(0.38)
Observations		622		333

Notes: Standard deviations (in columns 1 and 3) and standard errors, clustered at the DHS cluster level, (in columns 2 and 4) are in parentheses. Sample consists of women in the DHS living with 2 km of a garment factory. "Airport Distance Coefficient" is obtained by regressing each variable on the shortest travel distance (measured in 10km) to the airport from the DHS cluster, controlling for travel distance to city center and an indicator equal to 1 if the respondent's closest garment factory is located in an industrial zone. Wealth Score is a household-level measure of wealth, generated using factor analysis (on urban households) based on a wide array of variables, including the household's source of drinking water, type of toilet facility, ownership of different types of household furniture and appliance, etc.

Table A2. Effects of Exporting Factories on Employment and Decision-Making, using Husband's and Wife's Responses

	(1) Respondent Working	(2) Decisions: Woman Alone	(3) Decisions: Couple Jointly	(4) Decisions: Husband Alone	(5) Situations Justifying Beating	(6) Wife's Abstaining Justified
			A. Husband's Responses			
Near Exporting Factory	-0.024	0.92	0.30	-1.07	-0.31	0.23
	(0.025)	(0.19)***	(0.23)	(0.25)***	(0.27)	(0.080)**
	[0.48]	[0.00]	[0.24]	[0.00]	[0.29]	[0.05]
Non-Export Mean	1	0.74	1.47	1.53	1.23	0.74
			B. Woman's Responses			
Near Exporting Factory	0.23	-0.17	0.84	-0.34	-0.61	0.11
	(0.078)**	(0.28)	(0.32)**	(0.18)*	(0.21)**	(0.063)*
	[0.03]	[0.57]	[0.01]	[0.09]	[0.01]	[0.18]
Non-Export Mean	0.33	2.02	2.65	0.53	1.16	0.86
N	117	117	117	117	117	117

Notes: Standard errors, clustered at the DHS cluster level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wild cluster bootstrap p-values in square brackets. Sample consists of married or cohabiting couples in the DHS living with 2 km of a garment factory, in a household selected for the domestic violence module and male questionnaires. "Near Exporting Factory" is a dummy equal to one for women living within 2 km of an exporting factory. All regressions control for demographic controls: each person's years of schooling, wife's age, difference between husband's and wife's age, and household wealth score. Panel A uses the husband's responses. Panel B uses the wife's responses. "Wife's Abstaining Justified" is an indicator equal to 1 if the respondent answered "yes" to the question: "Is a wife justified in refusing to have sex with her husband when she knows her husband has sex with other women?" Non-Export Mean is the mean of the dependent variable among women in the sample who are not within 2 km of an exporting factory.

Table A3. Effects of Exporting Factories, Alternate Specifications

		No. of Decisions...			No. of...	Experienced...	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Working	Woman Alone	Couple Jointly	Husband Alone	Situations Justifying Beatings	Physical Violence	Any Violence
A. Baseline Specification with No Controls							
Near Exporting Factory	0.22	-0.40	0.81	-0.36	-0.60	-0.10	-0.14
	(0.065)***	(0.20)*	(0.25)***	(0.10)***	(0.26)**	(0.032)***	(0.064)**
	[0.01]	[0.07]	[0.00]	[0.00]	[0.07]	[0.03]	[0.06]
B. Inverse Propensity Score Weighting							
Near Exporting Factory	0.23	-0.32	0.73	-0.34	-0.60	-0.10	-0.13
	(0.067)***	(0.20)	(0.26)**	(0.092)***	(0.27)**	(0.032)***	(0.059)**
	[0.01]	[0.14]	[0.01]	[0.00]	[0.07]	[0.02]	[0.05]
C. Baseline Specification with Zone Fixed Effects							
Near Exporting Factory	0.20	-0.24	0.67	-0.41	-0.82	-0.099	-0.055
	(0.072)**	(0.29)	(0.28)**	(0.10)***	(0.32)**	(0.031)***	(0.082)
	[0.07]	[0.43]	[0.09]	[0.02]	[0.09]	[0.02]	[0.60]
D. Controlling for Number of Factories							
Near Exporting Factory	0.22	-0.23	0.61	-0.37	-0.67	-0.099	-0.11
	(0.065)***	(0.21)	(0.27)**	(0.12)***	(0.29)**	(0.027)***	(0.061)*
	[0.00]	[0.32]	[0.06]	[0.01]	[0.06]	[0.01]	[0.12]
Non-Export Mean	0.34	1.80	2.50	0.55	1.24	0.14	0.22
N	333	333	333	333	127	127	127

Notes: Standard errors, clustered at the DHS cluster level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wild cluster bootstrap p-values in square brackets. Sample consists of married or cohabiting women in the DHS living within 2 km of a garment factory (and for violence-related questions, in households selected for the domestic violence questionnaire). "Near Exporting Factory" is a dummy equal to one for women living within 2 km of an exporting factory. With the exception of Panels A and B, all regressions control linearly for demographic controls: years of schooling, age, difference between husband's age and own age (which is set to 0 for unmarried women), a married indicator, and household wealth score. Panel B instead uses inverse probability weights to account for these demographic covariates. Panel C also includes indicators (fixed effects) for the zone of the factory closest to the respondent. Panel D also controls for the total number of garment factories within 2 km of the respondent's residence. Non-Export Mean is the mean of the dependent variable among women in the sample who are not within 2 km of an exporting factory.

Table A4. Effects of Exporting Factories on Specific Household Decisions, IV Estimates

	Decisions About...					
	(1)	(2)	(3)	(4)	(5)	(6)
	Woman's Healthcare	Household Purchases	Visiting Family	Children's Wellbeing	Spending Man's Earnings	Spending Woman's Earnings
	A. Decision Made by Woman Only					
Near Exporting Factory	-0.67	-0.14	-0.32	-0.51	-0.095	-0.046
	(0.28)**	(0.11)	(0.13)**	(0.12)***	(0.16)	(0.31)
	[0.12]	[0.33]	[0.09]	[0.06]	[0.77]	[0.90]
Non-Export Mean	0.45	0.15	0.44	0.54	0.22	0.35
	B. Decision Made Jointly					
Near Exporting Factory	0.78	0.0069	0.19	0.52	0.11	-0.088
	(0.31)**	(0.30)	(0.21)	(0.14)***	(0.17)	(0.33)
	[0.09]	[0.99]	[0.49]	[0.12]	[0.79]	[0.83]
Non-Export Mean	0.46	0.58	0.43	0.40	0.63	0.57
	C. Decision Made by Man Only					
Near Exporting Factory	-0.12	-0.0094	0.11	-0.051	-0.015	0.13
	(0.061)*	(0.16)	(0.14)	(0.038)	(0.042)	(0.12)
	[0.12]	[0.97]	[0.52]	[0.32]	[0.68]	[0.36]
Non-Export Mean	0.091	0.18	0.10	0.028	0.14	0.087
N	333	333	333	333	333	159

Notes: Standard errors, clustered at the DHS cluster level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wild cluster bootstrap p-values in square brackets. Sample consists of married or cohabiting women in the DHS living with 2 km of a garment factory. Table reports second-stage coefficients from an instrumental variables specification that uses travel distance to the airport as an instrument. "Near Exporting Factory" is a dummy equal to one for women living within 2 km of an exporting factory. All regressions control for travel distance to city center, an indicator equal to 1 if the nearest garment factory is located in an industrial zone, and demographic controls: years of schooling, age, difference between husband's age and own age, and household wealth score. In panel A, each dependent variable is a dummy equal to 1 if the particular type of decision is made by the woman only. In panel B, each dependent variable is a dummy equal to 1 if the particular type of decision is made by the couple jointly. In panel C, each dependent variable is a dummy equal to 1 if the particular type of decision is made by the man only. Non-Export Mean is the mean of the dependent variable among women in the sample who are not within 2 km of an exporting factory.

Table A5. First Stage and Reduced Form Regressions

						No. of Decisions...			No. of...	Experienced...	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Near Exporting Factory	Exporting Employment Share	Near Exporting Factory	Exporting Employment Share	Working	Woman Alone	Couple Jointly	Husband Alone	Situations Justifying Beatings	Physical Violence	Any Violence
	A. First Stage				B. Reduced Form						
Travel Distance to Airport	-0.29	-0.27	-0.30	-0.27	-0.095	0.51	-0.47	0.025	0.53	0.036	0.042
	(0.098)***	(0.083)***	(0.080)***	(0.074)***	(0.043)**	(0.18)**	(0.26)*	(0.079)	(0.23)**	(0.015)**	(0.068)
	[0.16]	[0.11]	[0.07]	[0.08]	[0.29]	[0.19]	[0.42]	[0.79]	[0.14]	[0.04]	[0.67]
Sample	Married	Married	Violence Module	Violence Module	Married	Married	Married	Married	Violence Module	Violence Module	Violence Module
Mean of Dep. Var.	0.571	0.484	0.606	0.510	0.465	1.571	2.964	0.342	0.874	0.0787	0.134
N	333	333	127	127	333	333	333	333	127	127	127

Notes: Standard errors, clustered at the DHS cluster level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wild cluster bootstrap p-values in square brackets. Sample consists of women in the DHS living with 2 km of a garment factory (and for violence-related questions, in households selected for the domestic violence questionnaire). All regressions control for travel distance to city center, an indicator equal to 1 if the nearest garment factory is located in an industrial zone, and demographic controls: years of schooling, age, difference between husband's age and own age, and household wealth score. "Near Exporting Factory" is a dummy equal to one for women living within 2 km of an exporting factory. "Employment share of exporting factories" represents the share of total workers (employed by garment factories within 2 km of the respondent's residence) that are employed by an exporting factory.

Table A6. Effects of Exporting Factories Restricting to Non-Migrants, IV Estimates

		No. of Decisions...			No. of...	Experienced...	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Working	Woman Alone	Couple Jointly	Husband Alone	Situations Justifying Beatings	Physical Violence	Any Violence
			A. Baseline Specification				
Near Exporting Factory	0.36	-1.93	1.89	-0.11	-1.95	-0.11	-0.16
	(0.11)***	(0.36)***	(0.52)***	(0.21)	(0.50)***	(0.050)**	(0.18)
	[0.08]	[0.01]	[0.05]	[0.62]	[0.04]	[0.05]	[0.54]
F-statistic	11.6	11.6	11.6	11.6	15.7	15.7	15.7
			B. Using Exporting Employment Share				
Employment Share of Exporting Factories	0.39	-2.12	2.07	-0.12	-2.19	-0.13	-0.18
	(0.14)***	(0.38)***	(0.51)***	(0.23)	(0.62)***	(0.053)**	(0.20)
	[0.11]	[0.01]	[0.06]	[0.63]	[0.04]	[0.04]	[0.53]
F-statistic	12.2	12.2	12.2	12.2	13.3	13.3	13.3
			C. Controlling for Total Garment Employment				
Near Exporting Factory	0.37	-1.66	1.48	-0.090	-1.96	-0.11	-0.098
	(0.12)***	(0.39)***	(0.47)***	(0.23)	(0.52)***	(0.051)**	(0.17)
	[0.04]	[0.02]	[0.05]	[0.72]	[0.02]	[0.06]	[0.66]
F-statistic	10.1	10.1	10.1	10.1	13.5	13.5	13.5
Non-Export Mean	0.33	1.81	2.56	0.50	1.27	0.14	0.20
N	307	307	307	307	118	118	118

Notes: Standard errors, clustered at the DHS cluster level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wild cluster bootstrap p-values in square brackets. Sample consists of married or cohabiting women in the DHS living within 2 km of a garment factory (and for violence-related questions, in households selected for the domestic violence questionnaire), who report no migration in the past 5 years. Table reports second-stage coefficients from an instrumental variables specification that uses travel distance to the airport as an instrument. "Near Exporting Factory" is a dummy equal to one for women living within 2 km of an exporting factory. All regressions control for travel distance to city center, an indicator equal to 1 if the nearest garment factory is located in an industrial zone, and demographic controls: years of schooling, age, difference between husband's age and own age, and household wealth score. In Panel B, "Employment share of exporting factories" represents the share of total workers (employed by garment factories within 2 km of the respondent's residence) that are employed by an exporting factory. Panel C controls for the total number of workers employed by garment factories within 2 km of the respondent's residence. Non-Export Mean is the mean of the dependent variable among women in the sample who are not within 2 km of an exporting factory.

Table A7. IV Estimates of Export Factory Effects, Various Distance Cutoffs

		No. of Decisions...			No. of...	Experienced...	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Working	Woman Alone	Couple Jointly	Husband Alone	Situations Justifying Beatings	Physical Violence	Any Violence
				1 km Cutoff			
Employment Share of Exporting Factories	0.26	-1.51	1.27	0.079	-1.31	-0.11	-0.15
	(0.095)***	(0.38)***	(0.49)***	(0.25)	(0.61)**	(0.059)*	(0.14)
	[0.09]	[0.05]	[0.18]	[0.81]	[0.16]	[0.12]	[0.43]
N	259	259	259	259	96	96	96
F-Statistic	6.85	6.85	6.85	6.85	7.20	7.20	7.20
				1.5 km Cutoff			
Employment Share of Exporting Factories	0.31	-1.93	1.66	0.077	-1.99	-0.16	-0.23
	(0.17)*	(0.68)***	(0.89)*	(0.28)	(0.76)***	(0.062)**	(0.21)
	[0.32]	[0.13]	[0.33]	[0.82]	[0.08]	[0.02]	[0.44]
N	277	277	277	277	104	104	104
F-Statistic	12.1	12.1	12.1	12.1	11.2	11.2	11.2
				2 km Cutoff			
Employment Share of Exporting Factories	0.35	-1.89	1.74	-0.094	-1.98	-0.14	-0.16
	(0.14)**	(0.38)***	(0.59)***	(0.27)	(0.60)***	(0.053)***	(0.21)
	[0.11]	[0.02]	[0.13]	[0.75]	[0.05]	[0.04]	[0.62]
N	333	333	333	333	127	127	127
F-Statistic	10.6	10.6	10.6	10.6	12.9	12.9	12.9
				2.5 km Cutoff			
Employment Share of Exporting Factories	0.35	-2.05	1.91	-0.13	-1.99	-0.15	-0.18
	(0.17)**	(0.59)***	(0.73)***	(0.26)	(0.64)***	(0.067)**	(0.20)
	[0.14]	[0.03]	[0.16]	[0.68]	[0.06]	[0.07]	[0.52]
N	346	346	346	346	132	132	132
F-Statistic	6.42	6.42	6.42	6.42	8.74	8.74	8.74
				3 km Cutoff			
Employment Share of Exporting Factories	0.29	-1.69	1.57	-0.10	-1.70	-0.13	-0.15
	(0.13)**	(0.45)***	(0.68)**	(0.23)	(0.63)***	(0.052)**	(0.19)
	[0.22]	[0.07]	[0.28]	[0.69]	[0.10]	[0.08]	[0.61]
N	346	346	346	346	132	132	132
F-Statistic	26.3	26.3	26.3	26.3	28.8	28.8	28.8

Notes: Standard errors, clustered at the DHS cluster level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wild cluster bootstrap p-values in square brackets. In each panel, the sample consists of married or cohabiting women in the DHS living within the specified kilometer radius of a garment factory (and for violence-related questions, in households selected for the domestic violence questionnaire). Table reports second-stage coefficients from an instrumental variables specification that uses travel distance to the airport as an instrument. "Employment share of exporting factories" represents the share of total workers (employed by garment factories within the specified kilometer radius of the respondent's residence) that are employed by an exporting factory. All regressions control for travel distance to city center, an indicator equal to 1 if the nearest garment factory is located in an industrial zone, and demographic controls: years of schooling, age, difference between husband's age and own age, and household wealth score. Non-Export Mean is the mean of the dependent variable among women in the sample who are not within 2 km of an exporting factory.

Table A8. Difference-in-Differences Estimates

	(1) Working	(2) Working
Post x Near (Future)		
Exporting Factory	0.17	0.19
	(0.087)*	(0.089)**
	[0.09]	[0.10]
Near (Future)		
Exporting Factory	-0.016	-0.016
	(0.061)	(0.064)
	[0.84]	[0.82]
Post	-0.13	-0.14
	(0.066)*	(0.075)*
	[0.15]	[0.18]
N	942	942
Mean of DV	0.528	0.528
Controls	No	Yes

Notes: Standard errors, clustered at the survey cluster level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wild cluster bootstrap p-values in square brackets. Sample consists of women in the 2003 WHS and 2015 DHS living within 2 km of the location of a garment factory in 2015. "Controls" include indicators for primary and high school completion, age, and a married indicator.

Table A9. Factory Summary Statistics

	Exporting Factories	Non-Exporting Factories	Difference
Hourly Wage (USD)	0.32	0.30	0.021*
	(0.065)	(0.063)	(0.0099)
Work Conditions Score	0.46	0.18	0.28***
	(0.22)	(0.15)	(0.027)
Management Score	0.71	0.48	0.23***
	(0.17)	(0.20)	(0.026)
Observations	94	101	195

Notes: Sample includes factories with location and exporting information that responded to the author-conducted survey.

Table A10. Effects of Foreign and Domestic Exporting Factories on Female Outcomes

		No. of Decisions...			No. of...	Experienced...	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Working	Woman Alone	Couple Jointly	Husband Alone	Situations Justifying Beatings	Physical Violence	Any Violence
Domestic Exporter Share	0.069	-0.51	0.81	-0.41	-0.90	-0.19	-0.14
	(0.100)	(0.27)*	(0.41)*	(0.18)**	(0.48)*	(0.046)***	(0.13)
	[0.57]	[0.18]	[0.21]	[0.12]	[0.20]	[0.01]	[0.38]
Foreign Exporter Share	0.31	-0.33	0.94	-0.45	-0.58	-0.097	-0.21
	(0.076)***	(0.25)	(0.30)***	(0.11)***	(0.30)*	(0.039)**	(0.078)**
	[0.00]	[0.25]	[0.02]	[0.01]	[0.07]	[0.03]	[0.03]
Non-Export Mean	0.34	1.80	2.50	0.55	1.24	0.14	0.22
N	333	333	333	333	127	127	127

Notes: Standard errors, clustered at the DHS cluster level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wild cluster bootstrap p-values in square brackets. Sample consists of married or cohabiting women in the DHS living within 2 km of a garment factory (and for violence-related questions, in households selected for the domestic violence questionnaire). All regressions control for years of schooling, age, difference between husband's age and own age (which is set to 0 for unmarried women), a married indicator, and household wealth score. "Domestic Exporter Share" is the share of total workers (employed by garment factories within 2 km of the respondent's residence) that are employed by domestically-owned exporting firms. "Foreign Exporter Share" is the share of total workers that are employed by foreign-owned firms. Non-Export Mean is the mean of the dependent variable among women in the sample who are not within 2 km of an exporting factory.