Working Conditions and Factory Survival: Evidence from Better Factories Cambodia

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Abstract: A large and growing literature has identified several conditions, including exporting, that contribute to plant survival. A prevailing sentiment suggests that anti-sweatshop activity against plants in developing countries adds to the risk of closure, making survival more difficult by imposing external constraints that may interfere with optimizing behavior. Using a relatively new plant-level panel dataset from Cambodia, this paper applies survival analysis to estimate the relationship between changes in working conditions and plant closure. The results find little, if any, evidence that improving working conditions increases the probability of closure. In fact, some evidence suggests that improvements in standards relating to compensation are positively correlated with the probability of plant survival.

Keywords: Working Conditions, Apparel, Sweatshops, Plant Survival, Closure

JEL Codes: J8, J5, J3

Data Availability statement: Factory-level compliance data are managed by Better Work (http:/www.betterwork.org).

1 INTRODUCTION

Low wages, long hours, high temperatures, excessive noise, poor air quality, unsanitary conditions, and abuse (verbal, sexual and physical) in developing country manufacturing establishments are often cited as evidence that "sweatshops" characterize production in low income countries. Harsh working conditions in apparel factories are at the center of a large and growing debate about globalization and labor standards (Elliott and Freeman 2003, Locke 2013). International, intergovernmental, nongovernmental, and activist organizations have responded to rising public concern by pressuring governments and employers to improve working conditions.

One concern with anti-sweatshop activity is that it imposes constraints on factories that may make survival more difficult, especially in very competitive markets. Many improvements require costly capital investments such as air conditioning, electrical infrastructure, or safety equipment. Complying with minimum wage laws and providing additional compensation (such as paid leave and overtime) can also increase unit labor cost. If firms are operating efficiently in competitive markets, increases in costs (holding all else constant) will necessarily cause marginal firms to exit.[1]

Factory closings are a considerable concern in developed and developing countries. As a result, there is a sizable literature that seeks to uncover the variables linked to factory survival. Early papers focused on the United States and other developed countries (Bernard and Jensen 2007, Disney et al. 2003, Doms et al. 1995, Baggs 2005, Greenaway et al. 2008). These studies illustrate the importance of technology, capital intensity, age, and size in survival rates. Advances in data collection and availability have extended this literature to developing countries, including Ghana, Kenya, and Tanzania (Soderbom et al. 2006), Ethiopia (Shiferaw 2009), Indonesia (Behrman and Deolalikar 1989), and Malaysia

(Nor et al. 2007). Subsequent studies, such as Harris and Li (2010), find a positive relationship between export status or exposure to foreign markets generally and survival.

While it may seem intuitive that social compliance imposes a cost on firms that increases the probability of closure, existing empirical evidence indicates that the impact on closure may depend on the factory practices subject to audits. In the United States, minimum wage compliance has been associated with price increases (Aaronson 2001; Aaronson and French 2007; Lester 2016; Colla et al. 2017; Allegretto and Reich 2017) and falling stock values (Card and Krueger 1995; Bell and Machin 2016). Similarly, Harrison and Scorse (2010), analyzing Indonesian manufacturing census data, find that the anti-sweatshop campaign of the early 1990s improved compliance with minimum wage law, but compliant firms experienced a fall in profits and the smaller plants among them were more likely to close.

In contrast, Levine et al. (2012) analyze the impact of random occupational safety and health inspections in the state of California. Inspected firms experienced a 9.4 per cent fall in injuries, a 26 per cent fall in costs associated with injuries, and no change in employment, sales, credit rating, or probability of survival.

An optimistic case for social compliance rests more broadly on the possibility that social audits promote the adoption of innovative labor management practices and elements of high performance workplace systems. Social compliance addresses business systems such as clear communication concerning pay practices and work hours, occupational safety and health, maintaining accurate business records, and developing workplace systems that promote communication and problem solving. Social compliance implicitly moves factories from an exploitative or traditional labor management system to one that incorporates labor management innovations.

Such workplace innovations have been shown to improve important aspects of firm performance. Ichniowski et al. (1997) find that labor management innovations including multi-dimensional pay, production teams, job security, and training increase productivity and product quality in U.S. steel plants. Business benefits emerge particularly with innovative job assignments. Dunlop and Weil (1996) find that the introduction of production teams increases firm profits and Hamilton et al. (2003) estimate that production teams increase productivity by 14 per cent. Even pay increases may improve firm performance if they are consistent with an efficiency wage (Cappelli and Chauvin 1991; Levine 1993; Akerlof 1982; Stoft 1982; Shapiro and Stiglitz 1984).

While the early evidence indicated that high performance workplace systems are productivity-enhancing, evidence for the impact on profits is not definitive (Osterman 2018; Cappelli and Neumark 2001). Such innovations raise both productivity and labor costs, resulting in an ambiguous impact on profits. Lollo and O'Rourke (2020), conducting a pay incentives experiment, found that pay incentives increased wages by 4.2-9.7 per cent and productivity by 8-10 per cent, yet profits still declined (though, why profits declined when unit labor costs are declining is unclear). Similarly, Freeman and Kleiner (2005) found that the shift away from incentive pay reduced productivity but reduced labor costs by a greater amount, resulting in an increase in profits.

Further, the directional relationship between workplace innovations and social compliance has not been established. Adopting elements of high performance workplace systems has been shown to improve social compliance. Lean manufacturing is associated with a 15 percentage point decline in noncompliance particularly related to wages and working hours (Distelhorst et al. 2016). This finding raises the question as to whether social compliance promotes efficiency-enhancing workplace innovations or whether factories that have already introduced innovations have, incidentally, a stronger record of social compliance.

An alternative source of potential benefit for a socially compliant firm is the impact that humane conditions of work have on the purchasing terms of a firm's reputation sensitive customers. Cambodian factories supplying reputation sensitive firms have a stronger record of social compliance (Oka 2010a, 2010b). Analysis of official Chinese industrial survey microdata indicates that, while compliance with international labor standards predicts lower profit margins and productivity, socially compliant factories have greater access to export markets (Distelhorst 2020) (though why a firm would enter the export market if doing so lowers profits is unclear). Distelhorst and Locke (2018) estimate that a record of social compliance increases average sales by 4 per cent. An important exception to the positive relationship between social compliance and orders concerns suppliers that have monopoly control of essential inputs to the production process (Amengual et al. 2019).

These studies suggest that the relationship between improvements in working conditions and closure in developing countries is a relevant dimension for analyzing the determinants of apparel factory performance. Apparel factories are generally small, have less sophisticated technology than other sectors, are often recent start-ups, and are considered "footloose" internationally because of the ease with which they close. As a result, apparel factories have much higher closure rates than factories in other sectors (Watson and Everett 1999).

The evidence to date does not provide a clear picture as to how social compliance affects any element of business performance. The goal of this paper is to analyze changes in various categories of social compliance in Cambodian apparel exporting factories to see which, if any, are statistically related to the probability of factory closure. Focusing on closure allows us to capture the collective impact of social compliance on productivity, unit labor cost, sales, and price.

We are able to address three questions concerning the impact of social compliance on closure. We begin with a very basic question. Is social compliance associated with an increase or decrease the probability of closure? The answer provides evidence as to whether social compliance is on balance helping or hurting factories in developing countries. Second, is the probability of closure affected by which dimensions of compliance a firm chooses? The answer provides evidence as to whether and which elements of high performance workplace systems are promoted by social compliance and whether their adoption may promote survival. Third, is the relationship between social compliance and the probability of closure mediated by the social compliance requirements of reputation-sensitive international buyers? If the effect of social compliance on survival is mediated by buyer type, such a finding would indicate that a record of compliance is rewarded by customers concerned with working conditions rather than through an impact on unit labor cost.

Closure is highly salient in our sample. About 41 per cent of our firms fail during the sample period, 2001-2011. Our data do not include financial information (such as profits), but in the robustness section we explore the relationship between changes in working conditions and employment growth.

We find no evidence that improvements in any of the working conditions subject to audits increase the probability of closure in a statistically or economically important way. In fact, for nearly half of the 31 compliance categories, newly compliant factories are actually more likely to survive.

Having a reputation sensitive buyer reduces the probability of closure. However, the contribution of a factory's buyer to survival is not mediated by their demand for social compliance. Socially compliant firms with a reputation-sensitive buyer are no less likely to close than noncompliant firms with a reputation-sensitive buyer.

These preliminary results are inconsistent with the argument that improving conditions puts unmanageable cost pressure on factories. Our results are most consistent with the findings of Levine et al. (2012) and extend results beyond OSH to other areas of social compliance. A broad program of social compliance is associated with improvements in firm performance and the mechanism is by promoting efficiency rather than meeting the demands of reputation sensitive international buyers.

In the sections that follow, we first describe the BFC program. We then briefly present an empirical framework that guides our analysis. The next section describes the data. The penultimate section presents the empirical results and the final section concludes.

2 BETTER FACTORIES CAMBODIA

Cambodia is considered to be a relatively recent example of a successful transformation from central planning to a market-based export-oriented economy. The growth of the apparel sector in Cambodia has played a key role in Cambodia's transformation. Figure 1 shows the rise of Cambodia's exports of apparel to the United States since 1995. Until the financial crisis, U.S. apparel imports from Cambodia rose impressively. As with all imports, the values drop during the crisis (roughly 2008-2010) but demonstrate a considerable recovery afterwards.

Consistent with its status as a low-wage country, Cambodia's apparel exports generally consist of relatively lower-valued products. Low-wage apparel producers, such as Cambodia, are often focal points for concerns about apparel-related human resource management practices. Labor-related trade-agreement provisions between the United States and several countries are becoming increasingly common. These agreements typically include provisions that require countries to at least enforce national labor law. One early example, the 1999 U.S.-Cambodia trade agreement, used increased access to the U.S. market as an incentive for Cambodian firms to improve working conditions (Berik and van der Meulen Rogers 2010). Since apparel trade was restricted by the Multi-Fibre Arrangement (MFA) and the Agreement on Textiles and Clothing (ATC), the promise of such access was believed to be strong enough to induce factories to improve conditions.

To measure such improvements, *Better Factories Cambodia* (BFC) was given the task of monitoring factories. The International Labor Organization (ILO) established the BFC program in 2001. Multi-stakeholder participation that includes government, labor, factory owners, and international buyers[2] is a key dimension of the program. In place since 2001, the program strives to improve working conditions with a combination of monitoring, remediation, and training. ILO-trained Cambodian monitors assess the factory's compliance during unannounced visits. The two-person monitoring teams rarely assess the same factory twice in order to minimize monitor bias. The BFC team then compares the results with national law and international standards to develop feedback and suggestions to help factories address concerns. The results are aggregated and presented in annual synthesis reports that include each factory's name and progress on improving working conditions. The BFC program shares these reports with the factories' buyers. Firms were certainly encouraged and perhaps even pressured to improve working conditions using several means including public disclosure of factory-level noncompliance.

Although BFC does not enforce compliance explicitly, factories seem to take the reports seriously because the monitoring reports played a key role in establishing the apparel industry's record of compliance. This record was used by the U.S. government to determine Cambodia's apparel export quota allocation before the end of the Multi-Fibre Arrangement/Agreement on Clothing and Textiles (MFA/ACT). Many wondered if the loss of the quota incentive after the end of the MFA/ATC would adversely affect factory compliance, but factories continued to comply and improve working conditions after the Arrangement ended. Combining interviews, observations, and BFC synthesis reports, Shea et al. (2010) document sustained increases in working conditions in Cambodia and Beresford (2009), in particular, finds that working conditions did not fall in an increasingly competitive post MFA/ACT environment.

The BFC program has captured the attention of many as an example of an innovative way to improve working conditions in global supply chains (Adler and Woolcock 2010, Beresford 2009, Berik and van der Meulen Rodgers 2010, Miller et al. 2009, Oka 2010a and 2010b, and Polaski 2006). These papers identify several variables that, in the context of the BFC program, are positively related to the factory-level decision to improve working conditions, such as a relationship with a reputation-sensitive buyer (Oka 2010a) and public disclosure of non-compliance (Ang et al. 2012, Robertson 2020). In the next section we incorporate these and other factors into a general model that identifies some of the relationships between factory characteristics, the BFC program characteristics, working conditions, and survival.

3 EMPIRICAL STRATEGY

We begin the empirical analysis by plotting the Kaplan-Meier survival function for all factories in our sample, which has been increasingly applied in situations similar to that studied in this paper (e.g. Harris and Li 2010). The probability of survival is given by

$$(1) \quad S_{t+1} = S_t \frac{n_{t+1} - d_{t+1}}{n_{t+1}}$$

where S_t is the probability of survival at least until factory visit t and d_t is the number of firms that close and n_t is the number if firms that survive past visit t.

In order to capture the effect of compliance on survival probability, we compare the graph of survival probability by BFC visit of factories that have improved compliance between the first and second visits relative to those that have not changed compliance performance. A log rank test is used to determine whether the probability of survival of the improving firms is statistically different than for the static firms. Analysis is conducted on 31 different individual compliance categories.

One limitation of the Kaplan-Meier survival function is that is does not allow us to control for other noncompliance related determinants of survival, such as buyer type, or analyze buyer type as a mediator between compliance choice and survival. To analyze survival probabilities more formally, we follow Harris and Li (2010), Esteve-Pèrez et al. (2004), Disney et al. (2003), and others and employ the Cox (1972) proportional hazard model. Two of the main advantages of the Cox estimation approach is that it is quite straightforward and it is robust to various (all) specifications of the baseline hazard. It is therefore considered to be the main workhorse of survival analysis.

The Cox hazard approach allows us to control for other factors that have been shown to affect survival, such as firm size and ownership (Harris and Li 2010).

The hazard function is given by

(2) $$h(t) = h_o(t) \exp\left(\boldsymbol{\beta C(t)} + \gamma RS + \boldsymbol{\delta Owner} + \theta lnEmployment\ (t) + \vartheta Crisis\ (t) + \mu Recovery(t)\right)$$

where

$h(t)$ is the expected hazard of closure at visit *t*

$h_o(t)$ is the expected hazard of closure at visit t if all of the predictors are set to zero

C(t) is a vector of compliance indicators observed at visit t

RS is a binary variable indicating whether the factory has a reputation sensitive buyer

Owner is a vector of binary variables indicating the regional location of the factory owner (Anglo, Korea, China, Other Asia, Other)

lnEmployment(t) is the natural log of factory employment at visit *t*

Crisis is a binary variable identifying the financial crisis period 2008-09

Recovery is a binary variable identifying the recovery period after the crisis.

A positive value of any element of $\boldsymbol{\beta}$ indicates that increased compliance is associated with a higher probability of closure.

In order to determine whether reputation sensitive buyers are rewarding compliance, we also estimate a mediation model given by equation (3)

$$(3)\ h(t) = h_o(t) \exp\left(\boldsymbol{\beta C(t)} + \gamma RS + \boldsymbol{\tau C(t)} * RS + \boldsymbol{\delta Owner} + \theta lnEmployment\ (t) + \vartheta Crisis\ (t) + \mu Recovery(t)\right)$$

A negative value of $\boldsymbol{\tau}$ indicates that reputation-sensitive buyers are rewarding social compliance in a way that lowers the probability of closure.

Introducing all 31 compliance categories into equations (2) and (3) is likely to provide little insight into how factory compliance choices are affecting the hazard of closure. The changes in individual compliance categories are highly correlated, and these correlations may mask underlying considerations – such as implementation costs – that drive the decisions about compliance. For this reason, we use factor analysis to reduce the 31 categories to a group of five compliance aggregates.

The goal of factor analysis is to find a few underly factors that might be driving changes of individual categories and thereby reduce the number of variables considered by forming linear combinations of the underlying 31 categories into meaningful groups. One important concern about factor analysis is that the groupings are admittedly subjective, and therefore we explain our steps carefully.

We test four specifications of the elements of the compliance indicator, $\boldsymbol{C}$. First, we simply take individual elements of ***C*** at visit *t*. This specification assumes that the probability of closure at visit *t* is determined by the level of compliance at time *t*. However, this specification raises questions about direction of causality. That is, does compliance choice affect the probability of closure or were compliance and closure jointly determined by some other factory characteristic such as manager quality?

In order to partially address the issue of causality, the second specification assumes that the change in compliance before visit *t* determines the probability of closure at visit *t*. By focusing on the change in compliance, we include only the variation in labor practices that were implemented by the factory after joining BFC.

However, most of the improvement in compliance occurs between the first and second visits. Therefore, the third specification considers only the change in compliance between the first and second visits. The fourth specification focuses simply on whether any improvement in compliance occurred between the first and second visits. The elements of **C** are binary variables taking on the value of 1 if compliance improved between the first and second visits and zero otherwise. The fourth specification treats all changes in compliance as equivalent and controls for possible asymmetry in the effects of compliance changes.

4 DATA

This paper uses factory-level monitoring reports matched with factory-specific information. Factory-specific information includes ownership, unions, dates of monitoring visits, location, and, of course, results from individual questions about working conditions in the factory. Participation is mandatory for all exporting factories. We take the integrity of the compliance reports at face value. While it would be naïve for us to suggest that these, or any compliance reports anywhere in the world, are completely immune from corruption, ILO and International Finance Corporation (IFC) involvement has provided higher integrity than might otherwise be expected. Kotikula et al. (2015) provide a more complete discussion of the evolution of the Better Work program.

The 2001-2002 wave of visits included 119 factories. For the following three years, monitors focused on specific concerns identified in the initial reports and did not complete full monitoring reports. As a result, factory-level data are unavailable for the 2003-2005 period. An improved Information Management System (IMS) survey initiated the next wave of documented visits in December 2005. Since 2005, the BFC has maintained a goal of visiting factories about every eight months, but, in practice, some factories were visited once per year.

Table 1 shows the number of factories by visit by year. The available data span the 2001-2011 period. As expected, the table's upper triangular structure shows new firms entering each year (with a first visit) and existing firms accumulating visits. The 446 individual factories identified in our data generate a total of 2,113 total observations with the maximum number of visits observed for any factory being ten. The vast majority of the sample (93.7%) is foreign-owned, with 42 per cent owned by China, Hong Kong SAR, and Macau SAR, 23.3 per cent owned by Taiwan, and less than 3 per cent owned by Western countries.

Since the main focus of this paper is factory closures, it is important to identify factories that have actually closed rather than simply changed names (Watson and Everett 1999). We address this in two ways. First, the BFC program maintains a list of factories that they have confirmed to have actually closed. We use this list as our primary indicator of factory closings. As a secondary check, we compare the addresses of the factories over time. Fewer than five have the same address with distinct names. We use the same factory identifier for factories with the same address but with different names. It is possible, of course, that factories close and then re-open at another location with a different name and different ownership (e.g. Macau SAR may have a factory that closes and passes its business to a firm owned by mainland China), and we treat these as separate factories.

Table 2 contains the operating status (defined as whether or not the factory closes at some point in the sample) by operating country. The first point is that about 41 per cent of the factories with a first visit close during the sample period. Closure rates are highest for those countries that had very few factories associated with them. This result may indicate that these countries are less committed to Cambodian production and therefore provide fewer resources that may be associated with survival, or there may be weaker supply-chain links between these countries and Cambodia due to distance or other barriers. The financial crisis also seems to have significantly increased factory closures. Figure 2 shows factory closures by month during the sample period. The crisis period, roughly 2008-2010, shows a significant increase in closures relative to the earlier period. Even as exports recover, however (as illustrated in Figure 1), Figure 2 suggests that closures remain high.

Factory monitors use a tool that includes 405 specific questions designed to cover the gamut of working conditions. These questions are coded with a binary variable in which the value 1 indicates compliance and 0 indicates non-compliance. Sixty-two of the 405 questions show no variation across both factory and visit and therefore are dropped from the analysis. We aggregate the remaining questions into 31 categories that are listed in Table 3. Table 3 also includes the average compliance at the first visit, which is calculated by first taking the simple (unweighted) average across binary compliance questions for each compliance category within each factory and then taking the average of each category across all factories.

Table 3 shows significant variation across compliance category first-period averages. Firms are almost universally compliant (99.7%) with forced labor standards, which is not surprising since this is widely considered to be an extremely serious violation. At the other extreme OSH (Occupational Safety and Health) Assessment/Recording/Reporting has a much lower compliance average of just over 59 per cent.

It is interesting to note that sexual harassment also has extremely high compliance, which may reflect the difficulty of accurately capturing cases. This is especially true in countries with a limited history of legislation protecting women from workplace harassment. A 2006 United Nations report notes that, “Regardless of data collection procedures, the actual number of women who experience sexual harassment is likely to exceed by far the number of reported cases” (United Nations 2006, p. 68).

One characteristic of our working conditions measures is that the most significant improvements in working conditions generally occur between the first and second visits (Ang et al. 2012). Therefore, Table 3 also includes the change in the average between the first and second visits. Not surprisingly, the largest changes occur in those areas with the lowest levels of compliance in the first visit. Although not demonstrated here, we also note improvement generally follows a similar pattern across the categories: the largest improvements occur between the first and second visits and the absolute magnitude of improvements falls (but generally remains positive) as the number of visits increases.

The factory-level data are then arranged to facilitate survival analysis. The first relevant assumption for the data construction involves exposure to risk. We have no data prior to the BFC program. In particular, we have no factory-level data prior to the BFC program. Therefore, we make the assumption that the risk-exposure period corresponds to the BFC period. In doing so, we are therefore evaluating the exposure to the BFC "treatment" on survival probabilities using visits as our measure of time. As will be evident below, we control for the financial crisis in our formal estimation.

5 ANALYSIS

In the analysis below, we first calculate the Kaplan-Meier survival probabilities for the sample overall and differentiated by compliance behavior in each of the 31 compliance categories. We then report detailed analysis using the Cox proportional hazard function. The main analysis is followed by some robustness checks.

5.1 Kaplan-Meier survival analysis

Our first step is to calculate the Kaplan-Meier survival function given by equation (1). Figure 3 shows that the Kaplan-Meier probability of survival declines as the number of visits increase. Nearly half of the firms have exited by the 8th visit. This pattern is similar to that found in other countries in which the probability of survival falls over time. Apparel manufacturing, especially at the lower end of the value chain, is risky. Turnover is high; factory births and deaths are common.

A simple way to evaluate whether or not improving working conditions affects survival is to compare the survival probability conditional only on whether or not factories increased compliance prior to closing (or the end of the sample). We test this result formally using log rank tests of equality of survival functions for each of the 31 compliance groups. Results from the log rank test are available in an online appendix.

There are few, if any, categories in which levels of compliance are associated with a higher probability of survival. The only compliance category for which compliance predicts higher survival (at 5% level of significance) is payment of wages. Though, it should be noted that there is no case for which improvement in compliance predicts lower chance of survival.

However, factories that made large changes between the first and second visit may have little room for improvement left for future visits. If these factories survive longer, then the contemporaneous change in working conditions may have little to do with the probability of survival in any given period. Therefore, we also contrast survival functions based on whether or not the factory made improvements in a given category between the first and second visits. Many more areas with improvements are statistically significant, suggesting that the initial improvements affect later survival. Survival is higher for factories that improve compliance between the first and second visits for nearly half (15 of 31) of the compliance categories. Several statistically significant categories are associated with compensation, notably payment of wages, regular hours/weekly rest, and contracts. Other categories include occupational safety and health and workplace operations. Importantly, there is no case for which new compliance predicts a lower probability of survival.

Disaggregating Kaplan-Meier survival functions between factories that improved compliance between the first and second visit for a selection of compliance areas, with 95% confidence intervals, are depicted in Figure 4. Note, for example, in the upper left hand quadrant, factories that improved compliance between the first and second visits on payment of wages had a higher probability of survival than those that did not improve. We also see that improvements in compliance on several OSH categories, including health and first aid, sanitation and OSH assessment, increase the probability of survival.

The positive effect of compliance with occupational safety and health on survival is consistent with the findings of Levine et al. (2012) concerning the impact of OSH inspections on costs associated with injuries. The surprise finding is the impact of compliance with payment of wages on survival. Generally, findings in the literature indicate that wage compliance is associated with a fall in profits or increased probability of closure (Distelhorst 2020, Lollo and O'Rourke 2020, Freeman and Kleiner 2005, Harrison and Scorse 2010).

5.2 Cox proportional hazard estimation

Of course, these unconditional comparisons do not control for other factors that might affect survival. For this reason, we now turn to estimates of the Cox proportional hazard function given in equation (2). Given the collinearity of compliance items, it is not very informative to include all 31 compliance categories in a single regression, though for the sake of comparison, this analysis is provided in an online appendix. Rather, we perform factor analysis to capture the underlying relationships within the 31 compliance categories using the principle-factor method.

One alternative possibility would be to employ the principle-components factor method. This approach assumes that the commonalities are equal to one. The problem in our case with this approach is that assuming that the commonalities are equal to one is equivalent to assuming that the uniqueness (the proportion of the variation in the categories explained by the underlying factors) is equal to zero. The average of our uniqueness estimates is just over 0.65. Given that the uniqueness values are so high, the principle components analysis is probably not appropriate.

We perform the principle-factor method on 28 of the 31 categories. The first three – child labor, forced labor, and discrimination – correspond to three of the four core labor standards. Core labor standards generally start with high compliance and vary little, so we put them into a separate group and perform the factor analysis on the remaining 28 categories.

We then perform an orthogonal rotation on the results to generate Table 4. The factor analysis identifies nine possible factors. The maximum values of each row (category) are shown in bold. Note that none of the maximum values appear in factors 6 and 8, so we focus our attention on the remaining factors. Although subjective, it appears that a meaningful pattern emerges from the results in Table 4. We use these results to sort the 31 categories into the five groups shown in Table 5. The five factors are (1) Communication and Workplace Systems, (2) Occupational Safety and Health, (3) Modern HR Practices, (4) Compensation, and (5) Unions.

Estimates of equation (2) are reported in Table 6. Table 6 contains four columns. Column 1 uses the compliance factors (weighted mean levels of the working conditions groups) as the indicator of compliance. Column 2 uses the changes in the compliance factors between visits. Column 3 uses the change in compliance factors just between the first and second visit. Column 4 uses an indicator variable equal to one if the factory improved compliance in this compliance factor between the first and second visit.

Estimated effects of compliance on the probability of closure is very sensitive to the specification. Four variables that are statistically significant at the 5% level (Communication in column 1 and Communication, Modern HR, and Compensation in Column 4) have negative coefficients, suggesting that these improvements in compliance reduce the probability of factory closure.

Importantly, there is only one case in which compliance is associated with a higher probability of closure. The estimated coefficient of Compensation in column 1, statistically significant at the 10% level, is positive, but this result reverses in columns (2), (3), and (4). Improvements in compliance on Compensation between the first and second visits is strongly associated with reduced probability of closure. Thus, there is little evidence suggesting that higher compliance increases the probability of factory failure, with the weight of evidence that compliance, in fact, promotes survival.

The positive relationship between compensation and survival may have roots in an "efficiency wage" explanation that dates back to Marshall (1890). Paying workers more than their outside option may be associated with higher productivity, which might increase profits for the firm if productivity increases more than compensation (broadly defined).

Two measures that are consistently important – both economically and statistically – are the crisis period (equal to one after mid-2008) and being associated with a reputation-sensitive buyer. Oka (2010a and 2010b) finds that a reputation-sensitive buyer is important for factory compliance, and there may be additional effects here too on the probability of survival. Reputation sensitive buyers may support their factories with higher prices in exchange for improvements in working conditions that might improve the reputation of the buyers, as found by Distelhorst and Locke (2018).

We tested for whether reputation-sensitive international buyers are rewarding new compliance in a way that reduces the probability of closure by estimating the mediation model in equation (3). However, we did not find evidence that reputation-sensitive buyers were mediating the effect of compliance on closure. When estimating equation (3), none of the buyer-compliance interaction terms was both significant and negative. Results are reported in an online appendix.

These results indicate that if new compliance is reducing the probability of closure, the treatment channel is not driven by the demand by buyers for improvements in social compliance. Rather, to the extent that improvements in social compliance are increasing the probability of survival, firms must be experiencing some efficiency gains, consistent with findings from the high performance workplace systems literature.

The financial crisis period (2008-2009) is also strongly associated with closure, which is consistent with Figure 2. Also consistent with Figure 2 is the fact that even during the period in which imports recover (years after 2009), closures remain high. The estimated coefficient on the “recovery” variable is just slightly lower than the estimated coefficient for the crisis period, suggesting that the increase in U.S. imports from Cambodia was not immediately transmitted into higher survival probabilities for factories.

As expected, firm size as measured by total employment reduces the probability of closure. However, surprisingly, foreign ownership does not have a statistically significant effect on closure.[3] The result contrasts with most previous research on factory closure that finds foreign ownership generally increases survival.

5.3 Robustness

There are several dimensions over which we explore the robustness of the results. Our first concerns the finding that foreign ownership does not appear to affect closure. One possibility is that the disaggregated country groups hide an overall distinction between domestic (Cambodian) and foreign factories. Table 7 shows the results of including a single control (equal to one) for foreign factories. This variable is never statistically significant, and the rest of the results for the compliance variables remain qualitatively similar. In particular, column (4) shows that second-visit changes in several of the working conditions are associated with a lower probability of closure.

Another possibility is that foreign ownership may proxy for international support and commitment to factories, or may reflect value chain relationships (upstream and downstream). To explore the possibility that the number of other firms of the same nationality group affect survival,[4] we include this variable directly in place of the foreign ownership controls. These results are shown in Table 8. In three of the four columns, the number of other factories with the same ownership is statistically significant and has a consistently negative sign. These results indicate that support networks may matter in the sense that having more factories of the same nationality may reduce the chance of closure. These results may also alternatively suggest that the number of factories with the same ownership reflects better market opportunities (such as stronger value chain links). Understanding these differences may be a valuable direction for future research.

A second concerns our specification choice concerning the global financial crisis. The crisis controls that are included in the earlier tables may not sufficiently control for the crisis. Table 9 contains the results when the crisis period is excluded from the sample. If anything, the results now suggest that the correlation between changes in working conditions and the probability of closure becomes stronger in the sense that now three of the five groups have statistically significant negative coefficients (communication, modern HR, and compensation).

A third concern is that factories that have higher initial compliance may have less room to improve and may be more likely to survive. If so, then incompletely controlling for initial compliance would bias the results toward zero. This argument is especially salient for the new entrants. New entrants may learn from the experiences of previous entrants and, presumably, adjust their starting levels of compliance in response to lessons learned from previous entrants. Kotikula et al. (2015) show that first-visit noncompliance rates fall over time. Note that this argument presumes that good working conditions are correlated with survival, which runs counter to the presumption that improving working conditions imposes disadvantageous cost increases.

To address these arguments, Table 10 contains the results in which the initial compliance levels are included along with the changes in columns (2)-(4). The initial compliance level coefficients are omitted to save space. As when the crisis period is excluded, controlling for initial compliance levels generates statistically significant results that suggest that improvements between the first and second periods are correlated with lower probabilities of closure.

As a fourth robustness check, we also explore the relationship between changes in working conditions and changes in employment (measured as the log difference of total employment between visits). Employment changes are on average rather small (less than 5%). Table 11 contains the analog to columns (1) and (4) from the previous tables. The results suggest that, with the exception of modern HR, the coefficients are either negative and small or positive and not statistically significant. Modern HR is negative and significant, suggesting firms with initially higher levels of modern HR compliance have smaller changes in employment over time.

When considering the improvements in working conditions between the first and second visit in column (2) we see only compensation is statistically significant and negative. Presumably, these firms are paying higher wages and may be making a trade-off between having fewer workers who earn more. It is also interesting that being associated with a reputation-sensitive buyer, shown to be positively correlated with other positive firm characteristics and outcomes, is negative and statistically significant. To explore this further, figure 5 shows the distributions of employment changes for firms that improved compensation compliance between the first and second visit. Figure 5 shows that, while the change in employment is lower, the variance is lower for firms that improved working conditions in this area. Worker turnover is often cited as a significant cost for firms, and figure 5 suggests that firms that improved compensation may have a lower variance in employment (that is, less turnover), and therefore may have realized cost savings that could possibility help explain the positive correlation between improvements in this area and the increased probability of survival, but the causality is not definitely established here.

We finally considered the possibility that compliance within broadly defined ranges matter for closure. To evaluate this hypothesis, we created indicator variables identifying whether compliance in each of the main factor categories was less than 70 per cent, between 70 and 90 per cent, and above 90 per cent. These three categorical variables replaced the continuous compliance variable used above. Results are reported in an online appendix. Only one of the 10 new compliance variables was statistically significant, which is consistent with our finding that levels of compliance are not determining survival. Our main argument is that improvements matter.

In order to test for discrete improvements in compliance, we created an indicator variable equal to 1 for observations in which factories moved up from one broad category to another, and again for factories that jumped categories between the first and second visit. In no cases were any of these measures statistically significant, although the Modern HR and Compensation categories had very large negative estimates (suggesting that improvements in these areas reduced the chance of shutting down). Thus, the results were very weakly consistent with the rest of our results (and demonstrated no evidence contradicting our main findings).

6 CONCLUSIONS

Thirty years of experience with social compliance auditing paints a murky picture of the impact of social compliance on firm outcomes. On the one hand, pressure during the 1990s to comply with Indonesian minimum wage law reduced profits and increased the probability of closure (Harrison and Scorse 2012). More recently, socially compliant Chinese firms have been found to have lower productivity and profits (Distelhorst 2020). According to this strand of evidence, firm benefits from social compliance may be limited to access to export markets and increased orders from and higher prices paid by reputation-sensitive and socially conscious international buyers (Distelhorst and Locke 2018, Oka 2010a,b). Evidence that factories are more likely to improve compliance performance if they fear public disclosure of noncompliance (Ang et al. 2012, Robertson 2020) further suggests that factories are motivated to comply for reasons related to reputation rather than for the impact that compliance might have on the internal operations of the firm. On the other hand, random exposure to OSH inspections is found to positively impact firm operations, reducing accidents and costs associated with injuries, without adversely affecting stock values or probability of survival (Levine et al. 2012).

Our analysis adds to this growing but unsettled literature by analyzing the impact of Better Factories Cambodia on the probability of closure for Cambodian apparel factories. Social compliance auditing and capacity building of Cambodian factories under the auspices of BFC is associated with improvements in working conditions and rising exports, wages, and employment (Adler and Woolcock 2010; Brown et al. 2014a, 2014b; Brown et al. 2016; Miller et al. 2009; Oka 2010a, 2010b; Shea et al. 2010).

We find no evidence that these improvements in working conditions have imposed burdens great enough to cause factories to shut down. In fact, there is some evidence that newly socially compliant factories are less likely to close. Our findings indicate that new compliance that promotes communication, problem solving, and transparent compensation practices are negatively related to closure.

Further, to the extent that the relationship between compliance and survival is causal, our evidence indicates that new compliance is positively affecting firm organization rather than output market opportunities. Buyer type is not a mediator between improved compliance choice and closure. The benefits of improved social compliance to the firm in terms of survival are no greater for factories supplying reputation sensitive customers.

There is the question, of course, concerning the direction of the causal arrow. Do newly socially compliant firms survive because they have become more compliant or do factories that are failing reduce costly investments in social compliance?

While it is possible that factories expecting to close may refrain from making compliance-related investments, there are two arguments that militate in favor of an interpretation that new social compliance is improving firm performance. Consider first the possibility that factory managers have full information concerning the relationship between working conditions and firm performance. Manager quality heterogeneity results in some factories surviving and some failing. In this case, survival and social compliance investments are being jointly determined by manager quality. In the perfect information scenario, then, higher quality managers choose investments in social compliance and are more likely to go on to survive. Thus, even if compliance choice and survival are jointly determined by manager quality, improving working conditions is a decision that is made by high quality managers.

Bloom et al. (2013), however, provide evidence that factory managers do not have full information and systematically make suboptimal management decisions until prompted to make improvements by agents external to the firm. In the imperfect information scenario, then, it is likely that BFC emphasis on improving working conditions induced organizational experimentation in potentially efficiency enhancing labor management innovations.

Though, it remains the case that one of the weaknesses in the literature on the relationship between working conditions and firm performance is that few studies are able to establish a causal relationship between working conditions and firm performance. The analysis conducted by Levine et al. (2012) perhaps stands alone in this regard. A failure to effectively identify a causal treatment channel may, in part, explain the contradictory array of findings in the social compliance literature. Establishing causality is an important direction for future research.

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[1] Reflecting a voluminous literature, Walker (2011), for example, shows that environmental regulation in the United States had adverse consequences for employment. The literature on the effects of labor-market regulations is not as large.

[2] More information about the Better Factories program can be found at http://www.betterfactories.org/.

[3] In additional unreported results, we collapse all foreign ownership into a single dummy variable and try alternative groupings of countries. These variables are also statistically insignificant in the survival analysis.

[4] We thank Martin Hess and Ross Jones for this suggestion.

Table 1: Factory Visits by Year

	Visit Year									
Visit	2001	2002	2005	2006	2007	2008	2009	2010	2011	Total
1	85	34	7	188	30	37	27	20	18	446
2	0	0	18	122	136	34	28	16	6	360
3	0	0	0	48	186	33	24	27	5	323
4	0	0	0	0	80	152	27	20	11	290
5	0	0	0	0	11	112	82	24	12	241
6	0	0	0	0	0	38	102	42	12	194
7	0	0	0	0	0	0	52	75	20	147
8	0	0	0	0	0	0	11	43	28	82
9	0	0	0	0	0	0	0	13	12	25
10	0	0	0	0	0	0	0	3	2	5
Total	85	34	25	358	443	406	353	283	126	2,113

Notes: Data are missing for 2003-2004 because BFC monitors concentrated on previously identified issues rather than completing a full evaluation. See text for details. Data are available from the ILO's Better Work program in Geneva (BetterWork 2020).

Table 2: Compliance Summary Statistics

Category	(1) Average	(2) St. Dev.	(3) Difference	(4) St. Error.	(5) Sig. Diff. Ind.
Overall Mean	0.833	(0.084)	-0.057	(0.006)	**
Child Labor	0.767	(0.123)	0.046	(0.009)	**
Discrimination	0.962	(0.120)	0.005	(0.009)	
Forced Labor	0.998	(0.033)	0.002	(0.003)	
Collective Agreements	0.931	(0.121)	-0.033	(0.009)	**
Strikes	0.988	(0.091)	-0.004	(0.007)	
Shop Stewards	0.648	(0.195)	-0.077	(0.014)	**
Liaison Officer	0.751	(0.319)	-0.148	(0.024)	**
Unions	0.966	(0.114)	-0.004	(0.009)	
Information About Wages	0.689	(0.214)	-0.093	(0.016)	**
Payment of Wages	0.799	(0.174)	-0.060	(0.013)	**
Contracts/Hiring	0.840	(0.138)	-0.041	(0.010)	**
Termination	0.895	(0.115)	-0.014	(0.010)	
Discipline	0.890	(0.141)	-0.070	(0.010)	**
Sexual Harassment	0.990	(0.099)	-0.020	(0.008)	**
Disputes	0.952	(0.140)	0.006	(0.011)	
Internal Regulations	0.928	(0.133)	-0.060	(0.010)	**
Health/First Aid	0.649	(0.195)	-0.113	(0.014)	**
Machine Safety	0.869	(0.151)	-0.063	(0.011)	**
Temperature/Ventilation/Noise/Light	0.775	(0.185)	-0.069	(0.014)	**
Drinking Water	0.887	(0.137)	-0.035	(0.010)	**
Sanitation	0.812	(0.170)	-0.100	(0.012)	**
Food	0.789	(0.160)	-0.051	(0.014)	**
Workplace Operations	0.741	(0.147)	-0.074	(0.011)	**
OSH Assessment/Recording/Reporting	0.668	(0.235)	-0.140	(0.017)	**
Chemicals	0.764	(0.243)	-0.013	(0.018)	
Emergency Preparedness	0.895	(0.142)	-0.064	(0.010)	**
Overtime	0.644	(0.213)	-0.092	(0.016)	**
Regular Hours/Weekly Rest	0.819	(0.160)	-0.080	(0.012)	**
Accidents/Illnesses Compensation	0.905	(0.238)	-0.091	(0.018)	**
Holidays/Annual/Special Leave	0.863	(0.136)	-0.060	(0.010)	**
Maternity Benefits	0.800	(0.191)	-0.097	(0.014)	**

Notes: The first two columns represent mean compliance for the first two visits across all factories. Column (3) represents the difference between factories that eventually close and factories that survive to the end of the sample; negative values mean lower compliance in closing factories. Column (4) is the standard error of the estimate of the difference, and column (5) indicates whether the difference between closing and surviving factories is significant at the 5% level.

Table 3: Working Conditions Categories and Summary Statistics

Category		First Visit	First Change
1	Child Labor	0.792	-0.041
2	Discrimination	0.962	-0.002
3	Forced Labor	0.997	0.004
4	Collective Agreements	0.924	0.017
5	Strikes	0.979	0.020
6	Shop Stewards	0.592	0.109
7	Liaison Officer	0.652	0.197
8	Unions	0.953	0.031
9	Information About Wages	0.644	0.093
10	Payment of Wages	0.784	0.036
11	Contracts/Hiring	0.836	0.012
12	Termination	0.888	0.010
13	Discipline	0.870	0.039
14	Sexual Harassment	0.986	0.003
15	Disputes	0.947	0.011
16	Internal Regulations	0.905	0.043
17	Health/First Aid	0.603	0.092
18	Machine Safety	0.857	0.025
19	Temperature/Ventilation/Noise/Light	0.767	0.007
20	Drinking Water	0.883	0.005
21	Sanitation	0.779	0.065
22	Food	0.792	0.011
23	Workplace Operations	0.720	0.042
24	OSH Assessment/Recording/Reporting	0.591	0.153
25	Chemicals	0.769	-0.021
26	Emergency Preparedness	0.876	0.028
27	Overtime	0.618	0.063
28	Regular Hours/Weekly Rest	0.781	0.074
29	Accidents/Illnesses Compensation	0.849	0.116
30	Holidays/Annual/Special Leave	0.861	0.014
31	Maternity Benefits	0.759	0.088

Notes: First-visit values are the averages first across all sub-questions in each category for each factory and then averaged across all factories. The second column is the average change in this average value across all factories between the first and second visits.

Table 4: Factor Analysis Results

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8	Factor9
Collective Agreements	0.115	0.196	0.085	0.229	0.058	0.063	**0.287**	0.078	0.040
Strikes	0.029	0.003	-0.014	-0.050	**0.300**	0.009	0.005	0.058	-0.054
Shop Stewards	**0.193**	-0.034	0.040	0.064	0.063	0.003	-0.039	-0.234	-0.032
Liaison Officer	**0.297**	0.239	0.155	0.287	0.065	0.146	0.283	0.020	0.005
Unions	0.050	0.119	-0.009	0.100	**0.387**	0.013	0.017	-0.071	-0.029
Information About Wages	0.233	**0.392**	0.149	0.318	0.056	0.129	-0.044	0.016	0.054
Payment of Wages	0.271	0.391	0.241	**0.395**	-0.001	0.067	0.022	0.008	0.064
Contracts/Hiring	0.318	0.287	0.285	**0.497**	0.023	0.010	0.056	0.031	-0.007
Termination	0.148	**0.301**	0.161	0.219	0.018	0.019	-0.037	-0.050	0.013
Discipline	0.146	**0.440**	0.150	0.230	0.051	-0.059	0.132	-0.048	0.069
Sexual Harassment	0.019	**0.099**	-0.011	-0.013	-0.030	-0.058	0.091	0.024	0.053
Disputes	0.147	0.084	0.071	0.151	**0.342**	-0.041	0.048	0.025	**0.105**
Internal Regulations	0.204	0.258	0.134	**0.329**	-0.036	0.143	0.117	0.240	-0.060
Health/First Aid	**0.769**	0.194	0.300	0.213	0.027	0.092	0.030	0.010	0.031
Machine Safety	0.303	0.189	**0.506**	0.284	-0.002	0.205	0.023	-0.025	-0.032
Temperature/Ventilation	0.247	0.123	**0.627**	0.086	0.005	-0.010	-0.024	0.057	0.003
Drinking Water	0.315	0.230	**0.338**	0.198	-0.010	0.048	0.034	-0.020	0.196
Sanitation	0.321	0.223	**0.467**	0.235	0.056	0.044	0.071	-0.031	0.200
Food	**0.691**	0.118	0.150	0.033	0.023	-0.093	-0.016	-0.005	-0.024
Workplace Operations	0.308	0.153	**0.630**	0.115	0.004	-0.034	0.038	-0.035	-0.037
OSH Assessment/Recording	**0.440**	0.230	0.227	0.323	-0.016	0.273	0.159	-0.033	-0.012
Chemicals	**0.102**	0.072	0.086	-0.033	-0.036	0.018	-0.047	-0.037	-0.077
Emergency Preparedness	0.321	0.138	**0.416**	0.262	-0.012	0.336	0.045	0.064	0.035
Overtime	0.217	**0.673**	0.166	0.177	0.061	0.036	0.023	-0.024	0.017
Regular Hours/Weekly Re	0.183	**0.607**	0.146	0.113	-0.047	0.047	0.014	0.072	**-0.028**
Accidents/Illnesses Com	0.094	0.221	0.137	**0.375**	0.101	0.064	0.055	-0.003	0.089
Holidays/Annual/Special	0.264	0.430	0.234	**0.491**	0.079	-0.021	0.081	0.013	0.014
Maternity Benefits	0.325	0.217	0.232	**0.507**	0.019	0.077	-0.037	-0.048	0.017

Notes: Principle factor method used to analyze the correlation matrix. Communality estimated with squared multiple correlations. Orthogonal rotation applied. Principle Components factor analysis not used because the mean value of resulting uniqueness is over 0.65. Maximum values in bold.

Table 5: Groupings Resulting from Factor Analysis

Group 1: Communication and Workplace Systems
6 Shop Stewards
7 Liaison Officer
23 Workplace Operations

Group 2: Occupational Safety and Health
17 Health/First Aid
18 Machine Safety
19 Temperature/Ventilation
20 Drinking Water
21 Sanitation
22 Food
24 OSH Assessment/Recording
25 Chemicals
26 Emergency Preparedness

Group 3: Modern HR Practices
9 Information About Wages
12 Termination
13 Discipline
27 Overtime
28 Regular Hours/Weekly Rest

Group 4: Compensation
10 Payment of Wages
11 Contracts/Hiring
16 Internal Regulations
29 Accidents/Illnesses Com
30 Holidays/Annual/Special
31 Maternity Benefits

Group 5: Unions
4 Collective Agreements
5 Strikes
8 Unions
14 Sexual Harassment
15 Disputes

Group 6: Core Labor Standards
1 Child Labor
2 Discrimination
3 Forced Labor

Table 6: Compliance Groups and Closure Probabilities

VARIABLES	(1) Compliance Levels	(2) Compliance Changes	(3) Visit 2 Compliance Change	(4) Visit 2 Change Indicator (=1 if improved)
Communication	-1.512**	-0.235	0.143	-0.507***
	(0.638)	(0.967)	(0.682)	(0.185)
OSH	-2.018*	-0.467	-1.626	-0.229
	(1.112)	(1.745)	(1.468)	(0.195)
Modern HR	-0.720	-1.262	-1.025	-0.459**
	(0.956)	(1.395)	(1.097)	(0.191)
Compensation	2.057*	-2.829	-2.828*	-0.541***
	(1.057)	(1.885)	(1.507)	(0.192)
Unions	-0.712	2.202	-0.841	-0.085
	(1.191)	(2.082)	(1.820)	(0.196)
RS Buyer	-0.957***	-0.431*	-1.086***	-1.006***
	(0.213)	(0.240)	(0.215)	(0.212)
Owned: Anglo	-0.106	-0.278	-0.062	-0.194
	(0.304)	(0.374)	(0.305)	(0.314)
Owned: Korea	-0.351	-0.257	-0.426	-0.396
	(0.397)	(0.459)	(0.402)	(0.406)
Owned: China	-0.222	-0.407	-0.217	-0.283
	(0.295)	(0.362)	(0.306)	(0.307)
Owned: Other Asia	-0.180	-0.249	-0.267	-0.100
	(0.372)	(0.422)	(0.372)	(0.385)
Owned: Other	0.790*	-0.065	1.059**	0.890*
	(0.460)	(0.685)	(0.459)	(0.461)
Log Emp	-0.236*	-0.376**	-0.288***	-0.267**
	(0.122)	(0.148)	(0.110)	(0.112)
Crisis=1	1.836***	3.535***	1.865***	1.923***
	(0.188)	(0.344)	(0.186)	(0.189)
Recovery=1	1.737***	3.181***	1.692***	1.767***
	(0.245)	(0.376)	(0.244)	(0.246)
Constant	0.979	-1.578	-0.466	0.096
	(1.398)	(1.024)	(0.733)	(0.743)
Observations	1,821	1,410	1,822	1,822

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimation: Stcox. Positive coefficients represent higher probability of closure. OSH stands for Occupational Safety and Health as described in Table 7. RS Buyer indicates "Reputation Sensitive Buyer." "Log Emp" represents the natural log of total employment. The omitted category for the "Owned" (Nation of ownership variables) is Cambodia. "Crisis" represents calendar years 2008 and 2009. "Recovery" represents years after 2009. Compliance categories are described in Table 5

Table 7: Aggregate Foreign Ownership

VARIABLES	(1) Compliance Levels	(2) Compliance Changes	(3) Visit 2 Compliance Change	(4) Visit 2 Change Indicator (=1 if improved)
Communication	-1.631**	-0.238	0.277	-0.510***
	(0.638)	(0.963)	(0.665)	(0.187)
OSH	-2.094*	-0.391	-1.293	-0.220
	(1.119)	(1.730)	(1.449)	(0.195)
Modern HR	-0.704	-1.305	-1.343	-0.533***
	(0.958)	(1.382)	(1.070)	(0.186)
Compensation	2.326**	-2.708	-2.685*	-0.502***
	(1.057)	(1.864)	(1.514)	(0.189)
Unions	-1.107	2.172	-0.928	-0.052
	(1.261)	(2.083)	(1.815)	(0.195)
RS Buyer	-0.934***	-0.408*	-1.058***	-0.954***
	(0.209)	(0.235)	(0.212)	(0.208)
Foreign	0.166	0.327	0.144	0.200
	(0.279)	(0.340)	(0.285)	(0.291)
Log Emp	-0.218*	-0.361**	-0.269**	-0.248**
	(0.122)	(0.146)	(0.109)	(0.112)
Crisis=1	1.821***	3.559***	1.854***	1.928***
	(0.184)	(0.342)	(0.183)	(0.186)
Recovery=1	1.763***	3.185***	1.736***	1.805***
	(0.243)	(0.373)	(0.243)	(0.245)
Constant	0.985	-2.019**	-0.760	-0.243
	(1.443)	(0.965)	(0.695)	(0.716)
Observations	1,821	1,410	1,822	1,822

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. "National Factories" is the number of factories in the sample with the same national ownership.

Table 8: National External Economies

VARIABLES	(1) Compliance Levels	(2) Compliance Changes	(3) Visit 2 Compliance Change	(4) Visit 2 Change Indicator (=1 if improved)
Communication	-1.675***	-0.077	0.197	-0.556***
	(0.637)	(0.958)	(0.660)	(0.183)
OSH	-2.023*	-0.602	-1.439	-0.227
	(1.115)	(1.759)	(1.454)	(0.190)
Modern HR	-0.858	-1.146	-1.171	-0.526***
	(0.965)	(1.414)	(1.067)	(0.185)
Compensation	2.216**	-2.912	-2.708*	-0.511***
	(1.072)	(1.915)	(1.510)	(0.189)
Unions	-1.025	2.423	-0.933	-0.066
	(1.221)	(2.103)	(1.813)	(0.194)
RS Buyer	-0.981***	-0.500**	-1.087***	-1.004***
	(0.211)	(0.235)	(0.211)	(0.209)
National Factories	-0.003**	-0.005**	-0.002	-0.003**
	(0.001)	(0.002)	(0.001)	(0.001)
Log Emp	-0.235*	-0.403***	-0.284***	-0.276**
	(0.122)	(0.147)	(0.109)	(0.111)
Crisis=1	1.805***	3.542***	1.843***	1.913***
	(0.184)	(0.342)	(0.183)	(0.186)
Recovery=1	1.780***	3.206***	1.743***	1.815***
	(0.243)	(0.373)	(0.242)	(0.245)
Constant	1.504	-1.268	-0.457	0.293
	(1.426)	(1.003)	(0.718)	(0.740)
Observations	1,821	1,410	1,822	1,822

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. "National Factories" is the number of factories in the sample with the same national ownership.

Table 9: Omitting the Crisis

VARIABLES	(1) Compliance Levels	(2) Compliance Changes	(3) Visit 2 Compliance Change	(4) Visit 2 Change Indicator (=1 if improved)
Communication	-3.775***	1.069	0.168	-1.064***
	(0.841)	(1.265)	(1.027)	(0.278)
OSH	-1.386	2.772	-3.889	-0.414
	(1.331)	(2.414)	(2.680)	(0.294)
Modern HR	0.135	1.707	-1.500	-0.646**
	(1.194)	(2.184)	(1.671)	(0.291)
Compensation	1.062	-5.067	-4.916*	-0.867***
	(1.367)	(3.199)	(2.564)	(0.323)
Unions	-1.374	2.999	-0.708	-0.092
	(1.234)	(2.763)	(2.410)	(0.329)
RS Buyer	-1.394***	-0.663*	-1.667***	-1.609***
	(0.301)	(0.381)	(0.296)	(0.297)
Foreign	0.250	0.663	0.340	0.155
	(0.364)	(0.506)	(0.393)	(0.366)
Log Emp	-0.117	-0.412	-0.246*	-0.180
	(0.166)	(0.267)	(0.134)	(0.138)
Recovery=1	1.892***	3.207***	1.776***	2.113***
	(0.254)	(0.378)	(0.255)	(0.265)
Constant	1.915	-1.808	-0.590	-0.091
	(1.568)	(1.697)	(0.857)	(0.885)
Observations	1,550	1,214	1,551	1,551

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. "National Factories" is the number of factories in the sample with the same national ownership.

Table 10: Controlling for Initial Compliance

VARIABLES	(1) Compliance Levels	(2) Compliance Changes	(3) Visit 2 Compliance Change	(4) Visit 2 Change Indicator (=1 if improved)
Communication	-1.631**	-0.248	-0.718	-0.511***
	(0.638)	(1.065)	(0.707)	(0.195)
OSH	-2.094*	0.054	-1.801	-0.196
	(1.119)	(1.940)	(1.457)	(0.201)
Modern HR	-0.704	-0.685	-1.313	-0.535***
	(0.958)	(1.543)	(1.103)	(0.194)
Compensation	2.326**	-3.752*	-1.791	-0.388*
	(1.057)	(2.092)	(1.596)	(0.199)
Unions	-1.107	1.561	-1.308	-0.122
	(1.261)	(2.382)	(1.906)	(0.201)
RS Buyer	-0.934***	-0.477**	-0.835***	-0.842***
	(0.209)	(0.242)	(0.218)	(0.213)
Foreign	0.166	0.343	-0.040	0.065
	(0.279)	(0.355)	(0.292)	(0.298)
Log Emp	-0.218*	-0.434***	-0.204*	-0.199*
	(0.122)	(0.157)	(0.117)	(0.119)
Crisis=1	1.821***	3.619***	1.961***	2.052***
	(0.184)	(0.346)	(0.189)	(0.195)
Recovery=1	1.763***	3.286***	1.925***	1.979***
	(0.243)	(0.380)	(0.250)	(0.253)
Constant	0.985	-4.291	2.295	1.606
	(1.443)	(3.513)	(1.439)	(1.390)
Observations	1,821	1,410	1,821	1,821

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 11: Employment Growth and Compliance

VARIABLES	(1) Compliance Levels	(2) Compliance Changes
Communication	-0.023	-0.007
	(0.107)	(0.015)
OSH	0.157	-0.012
	(0.115)	(0.016)
Modern HR	-0.510***	0.018
	(0.119)	(0.015)
Compensation	0.131	-0.037**
	(0.156)	(0.016)
Unions	-0.043	-0.007
	(0.219)	(0.014)
RS Buyer	-0.050***	-0.052***
	(0.015)	(0.015)
Foreign	-0.058	-0.048
	(0.095)	(0.096)
Log Emp	0.068***	0.072***
	(0.009)	(0.009)
Crisis=1	-0.083***	-0.090***
	(0.016)	(0.015)
Recovery=1	0.097***	0.098***
	(0.018)	(0.018)
Constant	-0.093	-0.334***
	(0.236)	(0.118)
Observations	1,666	1,666
R-Squared	0.075	0.068

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.