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Survival Of The Fittest – And Most Compliant Evidence On The Relationship Between Firm Survival And Social Protection Compliance

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August 2015



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**SURVIVAL OF THE FITTEST – AND MOST COMPLIANT
EVIDENCE ON THE RELATIONSHIP BETWEEN FIRM SURVIVAL AND SOCIAL
PROTECTION COMPLIANCE**

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FOREWORD

Social security and an adequate standard of living are human rights recognized by Articles 22 and 25 of the Universal Declaration of Human Rights. Everyone should have at least access to a social protection floor composed of essential health care and income security across all stages of life. Social protection systems provide benefits that compensate for the loss of income resulting from life contingencies such as sickness, work injury, maternity or ill health, and ensure effective access to health and maternity care. Without proper social protection systems, life events can have adverse effects on workers' well-being and productivity and impose high costs for the worker and their employer.

Effective access to health care contributes not only to maintaining or to improving workers' health status, but it also contributes to a fully efficient and productive workforce and lowering the costs of work days missed due to illness. Ensuring employment injury protection ensures access to health care, rehabilitation and income security in the case of a work accident or occupational disease; in the case of collectively financed compensation mechanisms (social insurance), it also protects employers from financial risks. Maternity protection plays an important role in protecting the health of both mothers and children and can lower turnover and training costs. Complying with social protection requirements and providing complementary social protection packages enables companies to attract quality and motivated candidates who are committed to their employers. Social protection also provides a better business environment by having access to a more skilled and productive workforce, increased and more stable consumption, positive contributions to local economic development, resilience during economic downturns and political stability.

It is the responsibility of the State to ensure the existence of adequate social protection for society and to plan, organize and in some cases finance the necessary protections that would otherwise not exist. However, it is the responsibility of employers to protect their workers under existing legal frameworks.

The ILO Social Protection Department supports the establishment of social protection floors as a fundamental element of national social protection systems in Member States by assisting countries to develop or reform social protection systems and ensuring that people have access to their entitlements.

For social protection systems to achieve their positive benefits, individuals and enterprises need to have confidence in the system and its sustainability. Investments in law enforcement and good governance are needed to make the social protection floor a reality. We are also convinced that building more evidence on the relationships between social protection and productivity, competitiveness, turnover and the business environment will contribute to enhance employers' support of social protection. This paper is the first of a series that will support the development of the business case for social protection. It was developed thanks to a productive partnership between the ILO's Social Protection Department and the ILO/IFC Better Work programme. It is our hope that more evidence will be built in the coming months in close collaboration with several departments of the ILO.

Valerie Schmitt
Chief, Social Policy, Governance
and Standards Branch, ILO
Social Protection Department

The question of whether investing in good working conditions leads to increased business competitiveness is central to the debate on decent work in a globalized value chains. This is especially pertinent in labour-intensive manufacturing such as garments, where competitiveness has predominately been determined by low labour costs associated with poor working conditions.

The ILO/IFC Better Work programme aims to achieve safe and decent working conditions in a way that also improves the competitiveness of firms and countries. The programme has invested significantly in independent research to evaluate the impact of operations on workers and firms, building on the wealth of knowledge and information that is continuously generated through our factory-level work. Our aim has been to build a much needed evidence base to support the case for the transformation in business, government and development policy and practice that is required to drive sustained improvement in job quality. Our empirical base is now being well used by researchers including in the ILO and the World Bank Group to explore specific questions on the business case for increased compliance.

The following discussion paper originated from collaboration with the ILO Social Protection Department, and its results show that investing in social protection measures such as maternity protection and sick leave is a smart business choice. These findings hold particular relevance for enterprises operating in sectors where young women represent a high proportion of the workforce, such as the garment industry. In addition, these results from factories enrolled in the Better Work programme provide an important foundation for further research on the positive returns to investments in social protection.

In the years ahead we will continue to share the rapidly growing data, lessons and evidence that arise from our own work and our collaboration with others.

Dan Rees
Chief, ILO-IFC Better Work Programme

ABSTRACT

In an era of globalized competitive pressure, most employers in developing countries do not provide social protection benefits to their employees. This study tests the presumed argument that such provisions threaten firm survival by increasing labour costs. Using a discrete-time survival analysis model of 595 Cambodian garment factories, this study finds that increased compliance to social protection labour standards (social protection compliance) is associated with a reduced odds of factory closure. This result implies that increased social protection compliance can enhance the well-being of workers while maintaining a firm's competitiveness.

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ABBREVIATIONS

BFC	Better Factories Cambodia
ILO	International Labour Organization
SPC	Social Protection Compliance
SPF	Social Protection Floor

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1. INTRODUCTION

Do employers who provide their employees with social protection, such as paid maternity leave and sickness benefits, run more competitive firms than employers who are not social protection compliant? The low level of social protection compliance in developing countries seems to indicate that many employers expect the costs of compliance to be unbearable and therefore believe the answer to this question is a resounding “no”. Limited rigorous evidence on the question has left employers unable to make informed decisions on how to optimally manage their human capital. This study fills this evidence gap by using data from the ILO Better Factories Cambodia Programme to examine whether providing employees with social protection benefits compromises a firm’s ability to survive and compete in the market.

This study introduces the term “social protection compliance” (SPC), which refers to the overlap between employers’ compliance to social protection related articles specified in national labour laws, and social protection as defined by the ILO¹. Although previous studies have shown that general labour standard compliance does not increase the probability of firm closure, so far no study has had a specific focus on social protection as a subset of labour compliance (Brown et. al, 2013). The next section contextualizes the term SPC within the broader framework of social protection.

1.1 Introduction to Social Protection Compliance

Social protection is a broad term for programmes and policies that reduce poverty and vulnerability by minimizing an individual’s exposure to risk and enhancing a person’s capacity to manage risks. The ideological basis for the provision of such programmes is not merely built on a foundation of economic progress. The Universal Declaration of Human Rights (1948) articles 22 and 25 state clearly that everyone has the right to social security, and to a standard of living adequate for the health and well-being of him or herself and of their family. The international social security standards adopted by the International Labour Organization (ILO) further concretized the human right to social security, particularly in the Social Security (Minimum Standards) Convention, 1952 (No. 102), and the Social Protection Floors Recommendation, 2012 (No. 202).

¹ See Social Security (Minimum Standards) Convention, 1952 (No. 102), available at: http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C102

An integral part of social protection is the Social Protection Floor (SPF), which promotes nationally defined strategies to guarantee at least a minimum level of access to social services and transfers for all by enshrining the following four basic guarantees:

1. Access to essential health care, including maternity care, at a nationally defined minimum level that meets the criteria of availability, accessibility, acceptability, and quality;
2. Basic income security for children at a nationally defined minimum level, including access to nutrition, education, care, and any other necessary goods and services;
3. Basic income security at a nationally defined minimum level for persons of active age who are unable to earn sufficient income, in particular in the case of sickness, unemployment, maternity, and disability; and
4. Basic income security at a nationally defined minimum level for older persons (ILO, 2012).

This study gives specific attention to the third guarantee for individuals of working age and focuses predominantly on their social security need to replace income lost temporarily or permanently as a result of: unemployment, employment injury, disability, sickness, or maternity.

Strategies to extend social protection to people of working age are closely associated with employment policies (ILO, 2012). Hence, the extent to which compliance to these policies can contribute to the extension of social protection coverage heavily depends on its inclusion in a country's labour law, its enforcement, and the size of the informal economy. As our data was collected and applies to garment factories in the Kingdom of Cambodia, we therefore selected social benefits that (1) are included in the Cambodian Labour Law (1997) and the Cambodian Law On Social Security Schemes for Persons Defined by the Provisions of the Labour Law (Social Security Law) (2002), (2) abide by ILO Standards on social security for individuals of working age, and (3) fall under the responsibility of an employer. When juxtaposing these criteria, the benefits that remain are:

1. Unemployment benefits in the form of severance pay (Royal Government of Cambodia Labour Law 1997 Art. 73)²;

² Referring to severance pay as described in Convention 168 Concerning Employment Promotion and Protection against Unemployment, 1988 (No. 168), available at http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO:12100:P12100_ILO_CODE:C168. Severance pay is a debated compensation as it "should be seen as representing a form of deferred pay or enforced savings by

2. Employment injury benefits. Prior to 2008 this was provided in the form of in-kind medical assistance (Labour Law 1997 Art. 254). Following the implementation of the occupational risk scheme by the National Social Security Fund (NSSF) in 2008, the employer is responsible for notifying the NSSF of workplace injuries and contributing a percentage of the employee's monthly salary (Social Security Law 2002 Art. 5; 6; 14).
3. Maternity benefits as part of wage and paid leave (Labour Law Art. 103; 169; 182; 183), and
4. Sickness benefits in the form of paid leave, and treatment when a factory has an infirmary (Labour Law Art. 169; 244).

These four benefits constitute the part of labour standards that contributes directly to the level of social protection of an employee. In this study, the provision of these four benefits by an employer therefore marks the intersection between labour standard compliance and delivery of social protection, simply put: social protection compliance.

1.2 Returns to Social Protection Compliance

The provision of SPC inevitably results in an increase in a firm's cost of labour. Paying a higher price for factors of production may put suppliers in jeopardy as they will be unable to offer international buyers the same level of efficiency as other factories. This result, however, is only certain if all else stays constant.

There are in fact several potential benefits from SPC that could break the link between higher labour cost and lower competitiveness. The first is the increased level of human capital resulting from investments in SPC. According to standard Human Capital Theory, firms can improve their performance by investing in employees (Becker, 1975). Furthermore, evidence from organizational theory suggests that a worker's performance is inextricably linked to their job satisfaction and workplace attitudes. This means that better treatment of workers can motivate employees to be more productive (Pheffer, 2007).

A high level of SPC could also increase a firm's competitiveness by minimizing the costs associated with employee turnover. According to the 2015 Asia Business Outlook Survey, the average staff turnover rate in Southeast Asia is approximately 12% in 2015, and has been growing steadily over the past three years (Economist Intelligence Unit, 2015). High rates of staff renewal entail significant costs for firms in terms of recruitment and training of new staff. SPC,

workers, rather than a form of social risk-sharing. Unemployment benefits, generally in the form of periodic payments, are considered more supportive of structural transformation in the economy than severance pay" (ILO 2014).

especially maternity benefits, may be a way to mitigate these costs by ensuring employee retention.

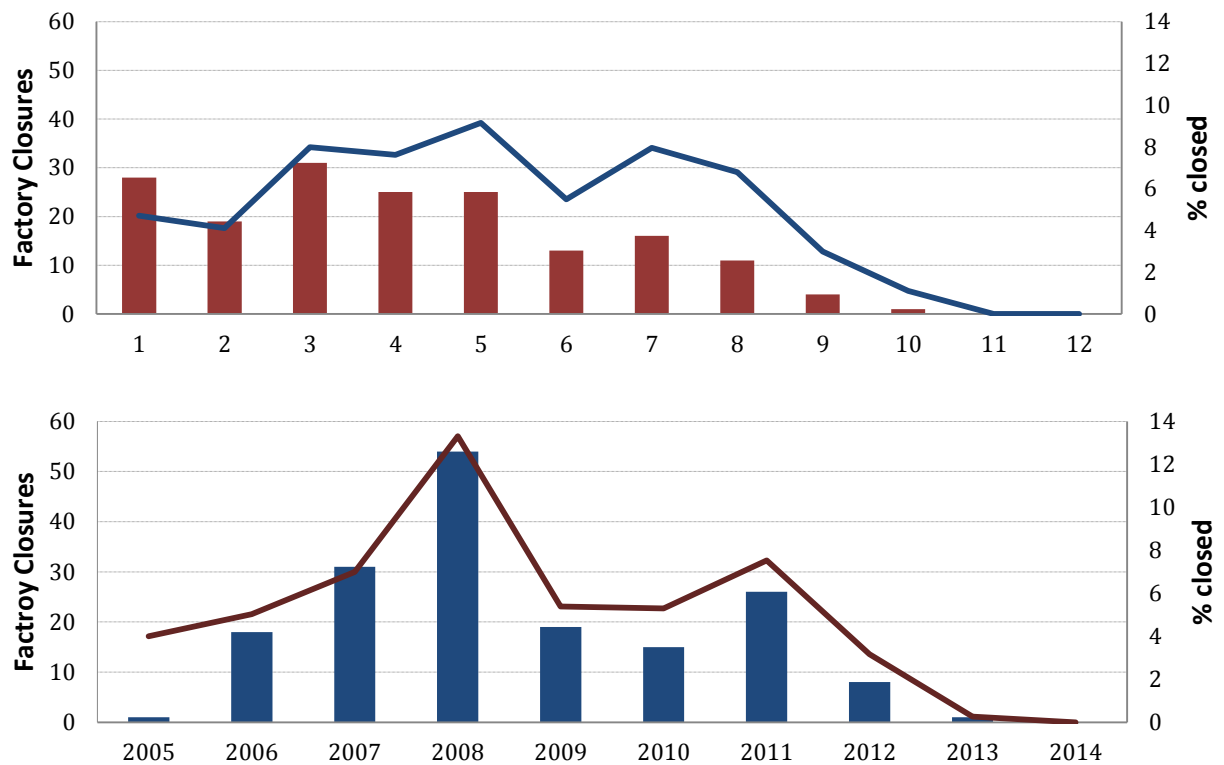
Yet another potential benefit of SPC could be the increased reputation that occurs due to labour standard compliance (Oka, 2012). A firm's target market may prefer buying from social protection compliant suppliers to safeguard their reputation. If a firm's reputation is indeed reliant on the extent of SPC, an increase in compliance can attract reputation-conscious buyers and therefore improve the market position of a firm.

Given the potential costs and benefits to SPC, the question that remains is: What is a firm's net benefit from investing in social protection for its employees? If the returns to human capital, higher staff retention, and increased firm reputation outweigh the labour costs, then SPC may in fact make a firm more competitive. Evidence of such a positive net benefit might provide further impetus for social protection compliance at the workplace, and may further strengthen the case for investing in social protection for people of working age. With this in mind, the following sections answer the net benefit question empirically by analysing the determinants of firm survival using secondary data from an ILO programme.

2. DATA

Data was sourced from factory-level monitoring assessments generated by the Better Factories Cambodia (BFC) programme (see Box 1). BFC factory assessments were combined to form a panel of 595 exporting garment firms between December 2005 and April 2014. A firm enters the dataset on its first assessment by BFC monitors. Once entered, the firm is assessed repeatedly at approximately ten-month intervals until either the factory closes down or the end of observation is reached. The median number of assessments per-factory is four with a maximum of 12 and a minimum of one. Roughly 29%, or 173 factories, closed during the period of observation (Figure 1).

Figure 1: Number and per cent of firm closures by assessment number (top) and year (bottom)



A concern may be that factories simply close down and re-open under a different name. This is a salient concern given the Cambodian Law on Taxation, which allows a tax exemption for the first three years a company generates revenue, and therefore incentivizes firms to close and re-open after three years of operation. While BFC keeps a list of confirmed factory closures, the programme has yet to conduct a mapping exercise of closed and newly opened factories. The extent to which this occurs is therefore unknown; however, a previous study found that fewer than five observations had different names for the same address (Brown et al, 2013).

Box 1: Monitoring Under the Better Factories Cambodia Programme

Better Factories Cambodia was created by the ILO in 2001 to ensure the fulfilment of labour conditions set forth in the 1999 United States/Cambodia Textile and Trade Agreement. The programme's core focus is on providing rigorous independent monitoring services to ensure factories comply with core national and international labour standards. The Royal Government of Cambodia mandates that all exporting garment factories participate in BFC monitoring as a requirement for receiving an export license.

BFC conducts factory assessments by deploying trained monitoring teams of two staff members for two-day, unannounced visits to each exporting garment factory. During the assessment, monitors interview managers, union leaders, and workers, review documents, and make direct observations of factory conditions. To ensure sound reporting, monitors cycle across factories and rarely visit the same factory twice. BFC publishes regular synthesis reports that summarize larger compliance trends, and also publicly discloses results from individual-level factory assessments (Rossi, 2011).

The monitoring assessment tool consisted of 398 labour compliance indicators that were coded into binary variables taking the value 1 if a firm is compliant and 0 if non-compliant. To facilitate analysis, the compliance indicators were sorted into six broad compliance factors as per Brown et al. (2013), however a seventh compliance factor is included for those indicators falling under the umbrella of social protection compliance (Table 1).

Table 1: Seven compliance factors

Factor	Description/Components
Factor 1: Communication and workplace systems	Factories internal systems, employment contracts, liaison officer, shop stewards, general workplace operations
Factor 2: Occupational safety and health	First aid, infirmary, fire-extinguishers, toilets, drinking water, safety equipment, safety trainings
Factor 3: Human Resources Practices	Hours, overtime, deductions, apprenticeships, termination, wage information, sexual harassment
Factor 4: Compensation	Timing of pay, minimum wage, meal compensation, bonus, contracts, hiring
Factor 5: Unions	Union dues, union autonomy, collective agreements, strikes
Factor 6: Core labour standards	Child labour, forced labour
Factor 7: Social Protection Compliance	Maternity leave, sick leave, work-injury compensation, severance

3. METHODS

3.1 Survival Analysis

To model the association between factory survival and SPC, we utilized a technique known as survival analysis. This method, originally associated with biostatistics, has become an increasingly popular tool to analyse questions in the social sciences. In survival analysis, subjects are tracked over a finite period of time until they either experience an event of interest and “fail”, or survive and remain in the dataset until the end of observation. Survival analysis provides a set of methods to characterize the distribution of failure events for a given population, compare the timing of failures between different groups and model the relationship between the failure event and other covariates.

Survival analysis is ideal for studying the causes of events for the following reasons. First, unlike regression analysis, survival methods are able to incorporate valuable information contained by surviving subjects, formally termed right-censored observations. Second, survival times tend to be non-symmetric and positively skewed, which invalidates the assumption of normally distributed residuals underlying linear regression. Lastly, survival methods are capable of modelling time-varying variables that change values over a given observation period (Allison, 1982).

3.2 Discrete Time Survival Models

Survival time can either be analysed as a continuous or discrete variable. In our case, the failure event factory closure is intrinsically a continuous event, but as closures are measured in discrete intervals, a discrete-time survival model is necessary. Incorrectly using continuous methods such as the Cox-Proportional Hazard Model will lead to failure events occurring at the same time, creating tied observations with durations of similar length. This can bias coefficients and their corresponding standard errors (Hess and Persson, 2010).

In discrete time survival analysis, the key variable of interest is the discrete hazard rate. This is defined as the probability that a factory closes in a given time interval, conditional on both its survival up to the beginning of the interval and a vector of independent variables. For firm i over a given time interval (t_j, t_{j+1}) , the discrete hazard rate, h , can be written as:

$$h_{ij} = P(T_i < t_{j+1} | T_i \geq t_j, X_{ij}) = F(\beta X_{ij} + \gamma_j)$$

where T is the random variable denoting the time the failure event occurred; F represents a particular distribution function; X_{ij} is a vector of time-varying independent variables assumed to

affect the hazard rate; and γ_j is the baseline hazard rate, which allows for period specific changes in the hazard, orthogonal to the independent variables.

Jenkins (2005) uses the discrete time hazard and survival functions to show that the log-likelihood for a sample of right-censored and failed observations is equivalent to the likelihood function for a binary regression model with person-period data. In a standard binary regression model data are in person-form with one observation per subject. However in a discrete survival model, data must be reorganized to have one record for each time period where a subject is at risk of failure.

3.3 Estimation Strategy

In our model of factory closure, time refers to a completed factory assessment and takes on values from 1 to 12. The distribution function is estimated using a complementary log-log function, which is known to be analogous to the continuous-time proportional hazards model. To capture the baseline hazard, duration dummy variables are included for each assessment number that had a failure event. Additionally, a random effect is included in the model to control for unobservable factory-specific risk factors that may affect the probability of failure.

Selection of independent variables was determined largely by our dataset as well as through previous literature. Variables include a dummy variable for the financial crisis of 2008. During the crisis, credit constraints faced by exporters had severe negative implications on Cambodia's garment sector (Dasgupta et al, 2011). Also included in the model are categorical variables for the frequency of strikes and the number of unions. The natural log of total employees is used as a measure of firm size. Larger firms have greater opportunities to exploit economies of scale, and therefore tend to exhibit higher survival rates relative to smaller factories (Fu, 2010).

The key hypothesis of this study is that social protection compliance will not cause a significant increase in the hazard rate of factories. To measure social protection compliance we first categorize each labour compliance indicator into one of seven compliance factors as mentioned previously. The seventh factor includes all indicators that relate to the components of social protection compliance: *maternity benefits*, *sickness benefits*, *employment injury benefits* and *unemployment benefits*.

This provides a list of 25 indicators such as "Are women workers aware of their right to maternity leave?" We then use Principal Component Analysis to reduce the list of indicators into a single social protection compliance variable that retains most of the underlying variation within

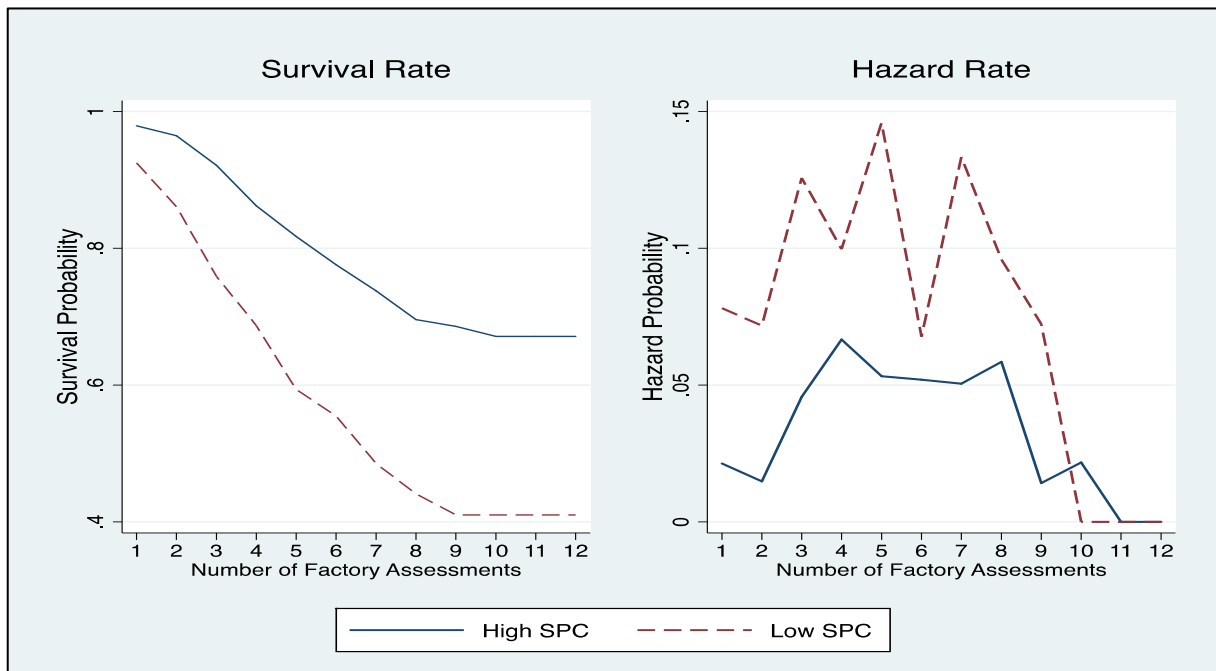
the 25 variables. This process is performed for each of the other six compliance factors in turn.

4. RESULTS

4.1 Hazard and Survivor Functions

Prior to estimation, an important first step is to analyse the survival and hazard functions for factories along the different assessment values (Figure 2). The graphs are disaggregated into two groups. The “High SPC” group contains factories that have a social protection compliance indicator that is greater than the median value, while the “Low SPC” group includes factories below the median.

Figure 2: Survival and Hazard rates for firms with low and high social protection compliance



The graphs show that factory survival in Cambodia’s garment industry falls at an increasing rate during the early years of a firm’s existence. Even following the first years in business the failure risk remains high and does not reduce drastically until the eighth assessment, roughly six years since a firm begins operation. Evidently garment manufacturing in Cambodia is a risky endeavour and the risk to default only falls once a firm has been exporting for a number of years. It is important to note that the confidence intervals for the hazard rate widen at higher assessments due to a smaller number of observations.

Comparing the differences in hazard and survival between the High SPC and Low SPC groups provides an initial indication of the relationship between firm survival and social protection compliance. Firms in the High SPC group have higher survival rates and lower hazard rates than the Low SPC group. A likelihood-ratio test confirms the difference by rejecting the null hypotheses of equality of hazard functions between the two groups (chi squared value = 46.61).

4.1 First Complementary Log-Log Model

To test this result more formally we turn to the discrete time complementary log-log regression. Two model specifications are tested (Table 2). The first includes testing the SPC factor on its own, leaving out the remaining six compliance factors. Results are presented as odds-ratios and should be interpreted as follows: an odds ratio of 1 has no effect on the hazard rate, an odds ratio greater than one has a positive effect on the hazard (increases probability of closure) and an odds ratio less than one has a negative effect on the hazard (lowers probability of closure).

Results from the first model show that firms with higher SPC have a lower probability of closure (odds ratio = 0.79). This means that for every one-unit increase in the social protection compliance index, the odds of a factory closing down reduces by 21 per cent. Additionally, an increase in the number of workers is associated with a decrease in the odds of closure (odds ratio = 0.25), while the financial crisis has a large positive effect on the hazard, as one would expect (odds ratio = 2.61).

Table 2: Results of the discrete time complementary log-log regression model

	Model 1		Model 2	
	Odds Ratio	Std. error	Odds Ratio	Std. error
Log workers	0.25***	0.08	0.26***	0.08
Unions	1.30	0.19		
Strikes	1.42	0.27		
Factor 1 – Communication and workplace systems			0.96	0.07
Factor 2 – Occupational safety and health			0.90**	0.04
Factor 3 – HR Practices			1.02	0.07
Factor 4 – Compensation			0.97	0.04
Factor 5 – Unions			1.25	0.28
Factor 6 – Core Labour Standards			0.95	0.08
Factor 7 – Social Protection Compliance	0.79***	0.05	0.85*	0.08
Recession	2.61***	0.69	2.58***	0.71
Assessment #1	0.11	0.17	0.03**	0.05
Assessment #2	0.29	0.38	0.12	0.17
Assessment #3	1.07	1.28	0.54	0.67
Assessment #4	0.99	1.16	0.60	0.72
Assessment #5	1.85	2.09	1.24	1.43
Assessment #6	1.20	1.37	0.95	1.09
Assessment #7	3.21	3.49	2.78	3.04
Assessment #8	5.45	5.83	5.07	5.42
Assessment #9	1.75	2.16	2.25	2.65
Constant	84.9	191.82	141.75	342.55
Likelihood ratio test for random effect (p-value)	0.00***		0.00***	

Notes: *** p < 0.01, ** p < 0.05 * p < 0.10. Unions = number of unions registered; Strikes = number of strikes since last assessment; Recession = dummy for financial crisis; Assessment #1-#9 = dummy for assessment number. Single variable for assessments 10-12 is left out to avoid collinearity. Coefficients are presented as odds-ratios. Odds-ratio = 1 has no effect on closure; odds-ratio > 1 positively effects closure; odds-ratio < 1 negatively effects closure.

4.1 Second Complementary Log-Log Model

The second specification follows the first specification but includes the remaining six compliance factors and also removes the variables "Unions" and "Strikes" as this information is incorporated in the fifth compliance factor. Similar to the first model, log workers (odds ratio = 0.26) and the dummy for the financial crisis (odds ratio = 2.98) remain significant predictors of the hazard. Again, higher social protection compliance is correlated with a drop in the hazard rate (odds ratio = 0.85). This important result proves the underlying hypothesis that investments in

maternity benefits, sick leave, injury compensation, and unemployment insurance are correlated with greater firm survival. The only other compliance factor with a significant impact on the hazard is occupational safety and health. Higher compliance in this factor is associated with a reduction in the probability of closure (odd ratio = 0.90). Lastly, in both models the likelihood-ratio test for the presence of unobserved heterogeneity at the factory level leads us to reject the null-hypothesis. This indicates that unobserved factory characteristics impact the odds of failure.

5. CONCLUSION

Using a survival model to analyse the determinants of factory closure, this study has shown that investments made to increase SPC are positively related to the survival of an exporting garment factory in Cambodia. Furthermore, our results suggest that investments in occupational safety and health are associated with a reduction in the odds of factory closure. These are important findings for firms to consider when deciding on the level of social benefits and safety standards to provide for their workers. The results are also salient for informal enterprises that operate outside the reach of the labour law. Such firms would benefit from knowing that investments in social protection may lower their exposure to the risk of closure.

The study does have its limitations. First, despite controlling for time-constant unobserved characteristics, there may be omitted variables that influence both the probability of factory closure and the level of social protection compliance. This limits our ability to make a causal claim that investment in SPC leads to increased factory survival, implying that our results are purely correlational. Second, the study does not have a way to control for left-truncation, which is caused by factories operating before the observation period began. Left-truncation introduces a form of bias since factories that exported prior to the beginning of the dataset must have survived up until data observation began. As such, we may be systematically including more competitive firms while excluding weaker ones.

Despite the limitations, this study provides important preliminary evidence against the common view that providing social protection benefits to employees is anti-competitive. Further research should substantiate this finding using methods of causal inference and also explore the primary mechanisms responsible for the positive returns to social protection compliance.

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