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Inferior Working Conditions in Thai Fishing Sector[*]

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Abstract

Severe working conditions on Thai fishing boats have received international attention as the so-called modern slavery, at least, since 2005. Using a survey in 2012 of fishermen on fishing boats in four provinces of Thailand conducted by the International Labour Organization, this paper examines the ranges of unacceptable working conditions by extending the measurement of forced labour. This paper makes two main contributions by identifying the degree of forced labour and measuring their working conditions. First, we conceptualise two situations, forced labour and *possibly forced labour*, with different combinations of available variables, which is an attempt to capture the multidimensional complexity in measuring forced labour. Second, we analysed the associated working conditions among the workers. We confirmed that fishing boats are places of forced labour and destinations of trafficked persons, and that the working conditions of forced and possibly forced workers are inferior to those of other workers.

Keywords: Human trafficking, forced labour, working conditions

JEL Classification: J47, J81, K42

1. Introduction

The abolition of forced labour has been a long-term goal, at least, since the adoption of the Forced Labour Convention in 1930, which is one of the fundamental conventions of the International Labour Organization (ILO). However, the abolition of forced labour and the enforcement of decent working conditions have yet been fully accomplished in most developing countries and even in some developed countries.[1] Harsh working conditions, including forced labour, are currently called modern slavery and are recognised as one of the urgent development targets of governments, the ILO, and human rights nongovernmental organizations (NGOs), and as one of the Sustainable Development Goals of the United Nations.

Slavery working conditions, which are characterised by coercion, violence, deception, intimidation, and any other means to make a person to work, constitute a failure to provide decent working conditions.[2] The victims of modern slavery are sometimes international migrants that are often intermediated by brokers at the origin and at the destination. Such slavery working conditions and incidents of trafficking have been found on Thai fishing boats and in seafood processing factories in Thailand, which have repeatedly been revealed by many newspapers.[3] Including the articles mentioned in footnote 3, Pulitzer Prize winning work by Mendoza et al (2016) proved that a direct connection exists between slavery working conditions in the Thai fishing sector and in seafood consumed in developed countries.[4] They documented that some slavery working conditions exists on the Thai fishing boats, that catches were manufactured as feed for shrimp and other fish and that slavery working conditions exist at seafood processing factories. Such foods are largely exported to various countries. Among them, fishermen on

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[1] See for example, ILO(2017) on global and regional estimates, which reveals 40 million persons are in modern slavery throughout the world.

[2] The menace of penalty and unwillingness are two core concepts that define forced labour according to Article 29 in the Forced Labour Convention by the ILO.

[3] For example, see Ishaan Tharoor (2009) 'Abandoned at Sea: The Sad Plight of the Rohingya', *Time,* 18 January; Jesse Hardman (2011) 'Escaping from Burma but Falling into Slavery', *Time,* 30th September; Kate Hodal, Chris Kelly, and Felicity Lawrence (2014) 'Revealed: Asian Slave Labour Producing Prawns for Supermarkets in US, UK', *the Guardian*, 10th June; Ian Urbina (2015) '"Sea Slaves:" The Human Misery that Feeds Pets and Livestock', *New York Times*, 27th July; *The Economist* (2010) 'Inhospitality: Life gets Harder for Thailand's Guest-workers', 25th February; and *The Economist* (2015) 'Here be Monsters: Thailand's Fishing Industry is Rife with Trafficking and Abuse', 14th March.

[4] Some multinationals are involved in products originating from Thai fisheries. Recent reactions by multinationals can be found in the following articles: Ian Urbina (2015) 'Nestlé Reports on Abuses in Thailand's Seafood Industry', *New York Times*, 23rd November, and Margie Mason, Robin McDowell, Martha Mendoza, and Esther Htusan (2015) 'Global Supermarkets Selling Shrimp Peeled by Slaves', *Associated Press,* 14th December. Recent reactions by the EU can be found in 'The Country (Thailand) was Warned with a Yellow Card due to its Inadequate Fisheries Legal Framework and Poor Monitoring, Control, and Traceability Systems', at http://europa.eu/rapid/press-release_IP-16-1457_en.htm.

Thai fishing boats, in particular, are at high risk.

Although many academic studies focused on the Thai fishing sector, until recently, they largely focused on resource management and the ocean ecosystem and the slavery working conditions on Thai fishing boats had been overlooked. The main objective of this paper is to reveal the working conditions on Thai fishing boats and to investigate the potential risk factors for unacceptable working conditions. We utilised a unique employment survey of 598 fishermen in four provinces of Thailand in 2012 conducted by the ILO. This paper makes at least four contributions. First, it identifies the key variables to find workers who are more likely to work under unacceptable working conditions. Second, this paper classifies not only "forced labour" according to the definition of the ILO but also possibly forced labour within our sample, and examines the differences in working conditions among the workers. Regarding the complexity in the multidimensionality of the phenomena and the difficulty in measuring forced labour, as pointed out by McCann and Fudge (2017), this paper employs strict criteria for its measurement; the measurement criteria may often underestimate the size and effect of forced labour. By marginally extending the measurement criteria of forced labour to possibly forced labour, this paper identifies workers who are nearly or "possibly" under forced labour. Third, given the difficulty of access to workers in slavery conditions, to our knowledge, this paper is the first to quantitatively examine working conditions with the specific questions to identify the (possible) forced labour through micro data. The related literature includes child labour whose labour participation may not be determined by their own. However, this literature also overlooks forced labour of adults. Because adult forced labour is not physically unmatured, such individuals are more difficult to identify and count. Lastly, by quantifying the magnitude of the correlation (effect size) among the risk factors, this paper shows such factors as criteria or clues to identify forced labour and possibly forced labour.

The main outcomes examined in this paper are working conditions such as economic compensation (salary), working hours, workplace safety, and ill-treatment by employers. The key exposure or explanatory variables are those that capture the workers' lack of power to confront/counteract the inferior working conditions. These variables cover the concept of forced labor that is strictly and legally defined on the basis of the criteria of involuntariness and coercion; other risk factors include not having legal documents; deceived into working; debt bondage; and being threatened; and typical personal characteristics, such as age, gender, education, literacy, and access to legal protection.

The remainder of this paper is organised as follows. Section 2 provides background on irregular migrants in Thailand and the development of the Thai fishing sector, including attention from academics and the international media. Section 3 shows the data and method. Section 4 reports the results of the estimations. Section 5 and 6 provide the discussion and conclusion, respectively.

2. Background

This section explains how the influx and status of irregular migrants in Thailand from the three neighbouring countries have changed in the last few decades. Because the fishing sector is one of the industries that receives irregular migrants, this section provides an overview of the fishing sector, including recent discussions in international media. It also describes how studies on the fishing sector in Thailand have shifted their focus to the working conditions on Thai fishing boats.

2.1. Low-skilled (irregular) migrants in Thailand

Along with steady economic growth in Thailand, the employment structure has transformed Thailand from an agrarian country to an export-led industrialised country.[5] Because of the high labour demand, low-wage industries such as agriculture, fishing, and construction offered the major employment opportunities for irregular migrant workers in the 1990s.[6] Such irregular migrant workers mainly come from the three neighbouring countries of Cambodia, Laos, and Myanmar.[7] Chalamwong (2001) described that "Illegal immigrants have become visible in the Thai society after the government decided in 1995 to implement a regularisation policy in order to bring them under some form of control." The estimates of irregular (illegal) migrant workers showed growing trends from 40,000 in 1987 to 986,889 in 1998.[8] Because a number of irregular migrants were already in Thailand and such influx continued, the government first conducted the official registration of irregular migrants in 1992. Several rounds of registration and re-registration of irregular migrants were conducted from 1992 to 2011.[9] However, these implementations were not solutions for the influx of irregular migrants but for the ex-post legalisation of irregular migrants. Registration can officially allow the irregular migrants to work in low-skilled jobs for two years only in the province of registration, with a possible extension of two more years, although they are still subject to deportation. From 2002 to 2003, bilateral memorandums of understanding (MOU) were signed with all three neighbouring countries with the aim to formalise the migration process of their migrant workers. Since 2004, two legalisation methods of irregular workers in Thailand have been

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[5] According to Timmer, de Vries, and de Vries (2015), the proportion of agricultural employment in Thailand decreased from 81.3% in 1960 to 38.3% in 2010.

[6] Irregular migrants refer to migrants who do not have a (temporary) passport, work permit or other documents for identification. In Thailand, their legal status is illegal, and they are subject to deportation.

[7] Until around 2003, all low-skilled migrants from the three neighbouring countries in Thailand were considered irregular. See Natali et al (2014).

[8] See Table 4 in Chalamwong (2001).

[9] From 1992 to 2006, see Table 25 of Sciortino and Punpuing (2009). For overall historical and recent progress, see Hall (2014).

implemented. Nationality verification is a method to register an irregular (illegal) worker in Thailand and to acquire a legal status through a temporary passport from the source country. The other method is registration in the source country under MOUs. Table 1 shows the profiles of migrants in Thailand and provides the number of registered migrants by source country, the estimates of nonregistered migrants, and the number of refugees mainly from Myanmar. Although the number of migrants from the three neighbouring countries has been increasing, the proportion of registered migrants has drastically improved from 29.8% in 1998 to 41.2% in 2009.

==Insert Table 1 here==

Regarding the sectoral distribution of registered migrant workers in Thailand who come from the neighbouring countries, Table 2 shows that, in 2009, most migrants worked in agriculture, fishery, construction, and domestic services. This trend has not changed much since 1998.[10] Because the number of Burmese workers in Thailand far exceeds that of the other two nationalities, the proportion of Burmese workers in each sector is the highest. Except for domestic services, in which men account for only approximately 20%, the other sectors are mostly dominated by male migrants.

==Insert Table 2 here==

Because of its informality, the accuracy on estimates of nonregistered migrants cannot be confirmed. Pearson et al (2006) included a sample of nonregistered migrants, which may provide an estimate of their number and behaviour. However, limited studies have been conducted that can provide plausible numbers. Additional studies should reveal the situation of irregular migrants, including their registration decisions, working conditions, and experiences, and should evaluate this sample, regardless of their registration status, legal status, and nationality. On this point, our data set uniquely covers various statuses.

As an exceptional estimate, Sciortino and Punpuing (2009) determined the approximate monthly wages by sector.[11] The wages of registered migrants are 38% of those of Thai workers in the fishing sector and 39% of those of Thai workers in domestic services.[12] The wages of nonregistered migrants range from 13% of those of Thai workers in domestic services, to 34% of those of Thai workers in the fishing sector,

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[10] See Table 7 of Chalamwong (2001).

[11] The following numbers are calculated after taking the average of the wage ranges for each category. See Table 32 of Sciortino and Punpuing (2009) for details.

[12] One exception is the construction sector, and the number is 115%.

and to 63% of those of Thai workers in the construction sector. The wages of nonregistered migrants are always lower than those of registered migrants, and such differences are larger in domestic services (34%) and the agriculture sector (36%), and are relatively smaller in the fishing sector (89%).[13]

2.2. Fishing sector in Thailand and its working conditions

Until around 1960, the Thai fishing sector mostly comprised small-scale operations, non-motorized and non-mechanised. Soon after the introduction of trawl fishing in 1960, traditional bamboo traps were replaced by trawlers and encircling gill nets. In 1965, the number of trawlers exceeded 2,500 and the number of encircling gill nets was 600.[14] Given the expansion of the types and numbers of gears, the annual catch steadily grew from 130,800 tonnes in 1960 to 1,422,321 tonnes in 1978. Except for fluctuations in the 1980s, the maximum annual catch was 2,117,929 tonnes in 1995, and the recent annual catch was approximately 1.3 million tonnes.[15] Thailand is ranked 12th for largest marine capture production using the average obtained between 2003 and 2012 and is ranked 16th using production in 2014.[16]

Given the growth of large-sale commercial fishing operations, the small-scale operations faced difficulties improving their working conditions and living standards. For fisheries during the 1970s–1980s, Panayotou (1980) and Panayotou and Panayotou (1986) pointed out the lack of alternative livelihoods at fishing villages and the difficulties in changing from fishermen to other occupations.

Thai ships catch fish from the Gulf of Thailand, the Andaman Sea, and the seas surrounding these areas. Given the rapid growth of the fishing sector in Thailand, illegal, unreported, and unregulated fishing has become an important problem. This problem also includes overfishing in the territorial sea and the adjoining exclusive economic zones. Regarding this point, studies and international discussions focused on the ecosystem in and around the territorial sea in the 1980s and 1990s.[17] Although sustainable fishing in the sea has become an issue under international cooperation and political dialogues initiated by the FAO, the discussions were mostly restricted to resource management.[18]

In 2005, the working conditions in the fishing sector in Thailand finally received international attention

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[13] Some qualitative studies of these irregular migrants were conducted by Bowles (1998) and Chantavanich and Vungsiriphisal (2012) for Burmese workers and by Derk (2010) and Walsh and Ty (2011) for Cambodian workers.

[14] The start of the modernization of Thai fishing was the Official Development Aid for the motorization of ships in the 1960s. For details, see Ch. 3 of Panayotou and Jetanavanich (1987).

[15] These numbers are from FAO landings in Table A2 of The et al (2015).

[16] See Table 2 of FAO (2016).

[17] For example, see Pauly and Chuenpagdee (2003) and Cheevaporn et al. (2003).

[18] For example, see Poonnachit-Korsieporn (2000).

in the Trafficking in Persons Report, although this report has been published since 2001.[19] The Trafficking in Persons Report 2005 pointed out that "Thailand's fishing industry relies heavily on Burmese labour– men and women– most of whom are undocumented and highly vulnerable to conditions of forced labour". Although it was not well known, this issue is not new in Thailand, because Hugo (1995) cited some articles in the *Bangkok Post* published in 1993 and Wickramasekera (2002) referred to the fishing sector in Thailand as an industry hosting migrant workers. The aforementioned studies estimated the number of irregular migrants in the fishing sector in the late 1990s. Due to the high labour demands in the manufacturing and service sectors, the labour supply was not sufficient for the fishing sector and other low-skilled sectors. Simultaneously, steady economic growth in Thailand caused wages to be much higher than those in the neighbouring countries, resulting in irregular migration to Thailand into low-skilled sectors including the fishing sector.

As described in the previous section, most migrant workers in the fishing sector are from neighbouring countries. On the way to fishing boats, such migrant workers may be deceived at some point and may be transferred. When a person is deceived and transported, he or she may be the victim of "human trafficking." When a person is forced to work against his or her own will and works under the threats of penalty, he or she may be the victim of forced labour. Newspaper articles on such experiences have revealed that some migrant fishermen were brought to boats without information in advance, saw the killing of crew members on boats, and were severely beaten to work; thus, they are clearly the victims of trafficking and forced labour. However, the practical classification of workers as forced labour or trafficked persons is not easy. In this study, we defined forced labour according to the definition in Article 29 of ILO. Namely, workers under forced labour are those who are unwilling to work in the fishing sector and have been threatened to work harder and not to escape. To explore the complexity of forced labour, we explicitly extended the measurement criteria to "potential forced labour" for those who met the criteria of several possible factors indicating coercion, violence, exploitation, vulnerability, and others.

3. Data and Methods

3.1. Data

An employment survey covering 596 samples was commissioned by ILO Asia-Pacific to study the working conditions in the fishing sector in Thailand. Data collection was conducted from May to

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[19] Until 2004, the Trafficking in Persons Report pointed out that Thailand is "a source, destination, and transit country for trafficking of women and children for sexual exploitation and street begging"; this report overlooked men and the situations in the agriculture and fishing sectors.

September 2012 by researchers at the Asian Research Center for Migration, Institute of Asian Studies, Chulalongkorn University.[20] Sampling covered the regional distribution of irregular workers and the variation in their source countries. By nationalities, three sample groups predominated the sector: Thai, Burmese, and Cambodian.[21] The individuals in these samples were selected through stratified, multistage accidental sampling. Considering the large geographical variation, after consultation with related authorities and experts, the selected study provinces were Ranong, Songkhla, Rayong, and Samut Sakhon. Based on the number of legally registered fishermen in each province and after consulting with local NGOs, the number of unregistered fishermen was estimated in the sample areas to determine the sample ratio of each region. The sample size was decided as 400–625 persons for a population of 100,000 individuals. On-site, the research team selected individuals of the three nationalities on the fishing boat, so that the fishermen were sampled in proportion to the size of the total population by nationality. Among the 596 respondents, the composition of nationalities was 8% ($n = 49$) for Thai, 40% ($n = 241$) for Cambodian, and 51% ($n = 306$) for Burmese.

3.2. Outcome variables of inferior working conditions

The survey covered variables measuring working conditions from various aspects. We categorised the outcomes as follows. *Compensation* included salary (log monthly wage [THB]); salary deduction, including fees for food, water, accommodation, debt, and so on; welfare provision, food, and water; and promotion (whether in a high position such as the chief of crew, captain/skipper, mechanic, and steersman). *Work hours* included work hours (typical hours of work on the fishing boat per day, including being on call), rest hours (continuous hours of rest typically while on board), and subjective measure of having had sufficient rest while on board. *Safety* included knowing the risk points, ever had accidents at work that required a visit to a clinic/hospital, and having first-aid kits on the boat). *Ill-treatment* included ever attempted to escape from the boat, ever seen the employer employ child labour, and ill-treatment on the ship (ever threatened with violence, beaten severely, or sold or transferred to another boat, by the respondent and other crew members).

==Insert Table 3 here==

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[20] See Chantavanich et al. (2016) and ILO (2013) for details.

[21] Our sample contained no observations from Laos. In ILO (2013; 47-48), there is a story about a Lao fishermen who escaped from the slavery working conditions on a fishing boat, was stuck in similar working conditions at a Malaysian plantation, deported from Malaysia and detained in Sonklah, Thailand.

Table 3 provides summary statistics on the key outcomes. On average, the respondents earned 6,482THB per month (S.D.: 4,749.91, median: 5,000). Moreover, 351 respondents reported 13.4 work hours and 5.7 rest hours on average. Analysis of 496 valid responses indicated that 151 (30%) workers experienced a salary deduction. According to an analysis of 596 full responses, 74% reported having sufficient rest on board, 22% were provided with welfare benefits, and 88% were adequately provided with water and food. A total of 93 (16%) were in a relatively high position (chief of crew, captain/skipper, mechanic, or steersman).

Regarding safety, 92% were aware of the risk points, 21% experienced accidents, and 73% reported that first aids kits were kept on the boat. Regarding ill-treatment, 11% attempted to escape, and 45% had seen child labour. Moreover, 18% were threatened with violence, 31% observed such treatment of other crew members, 10% were beaten severely, 29% observed severe beatings, 4% were sold or transferred to another boat, and 18% observed other crew members being sold or transferred.

We controlled for typical personal characteristics such as age, gender, literacy in own language (dummy variable for the ability to speak, write, and read in own language), ability to speak Thai (four-point scale: Thai people [reference], none at all, a little, and fairly well or fluently), years of education (four-point scales: no schooling [reference], 1–5 years, 6–10 years, and 11+ years), and experience as a fisherman (months).

Potentially, because the outcomes may depend on the fishing or vessel type, we also controlled for the following boat conditions: long haul dummy (duration of the last trip to sea was longer than one month), crew size (number of crew members on the boat), and province dummies (province where respondent was interviewed).

3.3. Identification of forced labour and personal characteristics

In our data, we have workers who are defined as forced labour in ILO (2013). We take this ILO's definition as genuine. The workers are considered to be under forced labour if they are unwilling to work in the fishing sector (working in the fishing sector against their will) and are unable to leave the employer because of penalties. This definition satisfies the two criteria, coercion and involuntariness, that are considered as the bases for defining forced labour in the ILO Forced Labour Convention, 1930 (No. 29).

However, the measurement criteria of forced labour might be too strict to capture the complex situations surrounding them. To expand the scope for the concept of forced labour, we selected various factors that capture or are related to workers' incapability, and we defined workers under potentially forced labour as those who experienced at least one of the following six factors; (1) do not have legal documents (No

ID); (2) employer demanded to hold ID (Retention of ID); (3) not made own decision to work and was deceived (Deception); (4) in debt for recruitment fee (Debt bondage); (5) sold/transferred to another boat (Sold/transferred); (6) severely beaten while on board (Beaten); and (7) threatened with violence while on board (Threatened). We excluded those identified as forced labour from the sample of potentially forced labour, so that potentially forced labour captures the surroundings of the core/strict forced labour.

==Insert Table 4 here==

Table 4 reports the summary statistics of the explanatory variables. Panel A reports the statistics for "forced" labor in our sample, which shows that 101 (17%) respondents are identified as forced labor and 368 (62%) are identified as potentially forced labor. As our concept of potentially forced labour is the marginal observations of the forced labour, we set the classification between forced and potentially forced labour as mutually exclusive. In summary, there are 469 (79%) respondents are either or both of forced labour or potentially forced labour.

There are seven criteria for the potentially forced labour; (1) Do not have legal documents (No ID) 51%; (2) Employer demanded to hold ID (Retention of ID) 14%; (3) Not made own decision to work and deceived (Deception) 4%; (4) In debt for recruitment fee (Debt bondage) 24%; (5) Sold/transferred to another boat (Sold/transferred) 4%; (6) Severely beaten while on board (Beaten) 10%; and (7) Threatened with violence while on board (Threatened) 17%.

Panel B of Table 4 reports the summary statistics of the personal characteristics. For respondents, the average age is 28.9 (S.D.: 9.7) years and worked as a fisher for 61.8 (S.D.: 81.1) months. Regarding literacy, 84.8% (506/596) can speak/write/read in his language. Regarding ability to speak Thai, 8% (49/596) are Thai people, 49% ($n = 294$) cannot speak Thai at all, 34% ($n = 205$) can speak "a little", and 8% ($n = 48$) can speak "fairly well or fluently". Regarding education, 8% (45/596) had no schooling, 51% ($n = 305$) went to school for 1–5 years, 38% ($n = 226$) went to school for 6–10 years, and 3% ($n = 20$) went to school for more than 10 years. 55% (n=325) have access to info of working rights, but only 3% (n=17) are union member.

Finally, Panel C describes the boat conditions. Regarding duration of last out at sea, 18% ($n =106$) was long haul (more than one month). The average number of crew members working on the fishing boat was 25.8 (S.D.: 11.6) persons. The survey was conducted in four different provinces: Ranong (132/596, 22%), Songkla ($n = 102$, 17%), Rayong ($n =187$, 31%), and Samut Sakhon ($n = 175$, 29%).

We performed mean comparisons of "forced", "potentially forced" and either/both to the rest. We generally observe inferior working conditions for those who are "forced" or possibly "forced" to work; they earn less, work longer, and have shorter rest hours. These tendencies are most clear when we adopt

"not own decision" as the "forced" variable.[22]

3.4. Statistical methods

We examined the association among the main outcomes, working conditions, and potential risk factors defined in the prior text using descriptive analysis and multivariate regressions. For the descriptive analysis, we reported the means of the outcome variables by risk factors.

For multivariate regressions, we estimate

$$y_i = \alpha + \beta_1 FORCE1_i + \beta_1 FORCE2_i + X_i\gamma + \varepsilon_i \qquad (1)$$

where y_i is the outcome variable for worker i, $FORCE1_i$ and $FORCE2_i$ represent our forced labour and potentially forced labour variables, X_i is the vector of personal characteristics and boat conditions, and ε_i is the error term. We estimate this model by using OLS for continuous outcomes. For discrete outcomes, we perform regressions to estimate the aforementioned equation by using a Probit model with the maximum likelihood method and reported the average marginal effects.

We also examined the correlates of forced labour by estimating $FORCED_i$.

$$FORCED_i = \alpha + X_i\gamma + \varepsilon_i \qquad (2)$$

where $FORCED_i$ is the indicator of forced, potentially forced, or both forced and potentially forced. Because the dependent variable is discrete, we used a Probit model and reported the average marginal

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[22] The calculation results are shown in Tables A1 and A2 in the Appendix. The mean values for "own decision" workers (n = 528) vs. "not own decision" workers (n = 31) are 8.7 vs. 8.4 (p = 0.005) for log of monthly wage (THB); 13.3 vs. 17.1 (p = 0.035) for working hours; and 5.7 vs. 4.3 (p = 0.060) for rest hours. However, the result is not as obvious, and the difference is not statistically precise when using "against will" or the complement of these two variables.

For other outcomes, "not own decision" workers are more likely to have experienced a salary deduction (30.1% vs. 50.0%, p = 0.104); less likely to be in a high position (16.7% vs. 0.00%, p < 0.000); took enough rest (77.7% vs. 32.3%, p < 0.000); provided welfare (22.7% vs. 6.5%, p = 0.002); provided enough food (90.2% vs. 58.1%, p = 0.001); aware of risk points (92.8% vs. 80.6%, p =0.106); more likely to have had accident (20.1% vs. 29.0%, p = 0.298); and less likely to be working on a boat with first-aids kits (75.2% vs. 48.4%, p = 0.007). Moreover, they are more likely to have attempted to escape (9.7% vs. 35.5%, p = 0.006); observed child labor (41.5% vs. 90.3%, p < 0.000); threatened with violence (15.9% vs. 51.6%, p = 0.001); observed other crew threatened with violence (29.7% vs. 64.5%, p < 0.000); beaten severely (8.7% vs. 38.7%, p = 0.002); observed other crew beaten severely (27.3% vs. 64.5%, p < 0.000); sold or transferred to another boat (3.8% vs. 9.7%, p = 0.289); and observed other crew being sold or transferred to another boat (16.5% vs. 35.5%, p = 0.040).

effects.

4. Results

4.1. Regression results for working conditions: Forced labour and working conditions

We first examined whether "forced" workers work under inferior conditions. By estimating equation (1), we showed the differences in the key outcomes of working conditions among the workers.

Table 5 lists the estimation results for compensations such as wage, salary deduction, welfare provision, food provision, and higher positions.[23] For most outcomes, our measures of forced or potentially forced workers were negatively correlated with better working conditions, implying that their compensations were inferior to those of other workers. Monthly wages were lower by 9.5% (515THB) for forced labour and by 7.8% (423THB) for potentially forced labour. For workers classified as "both forced and potentially forced", their monthly wages were 8.2% (445THB) lower. Salary deduction more likely occurred for forced labour at 8.7%, although it was less likely or none for potentially forced labour. Welfare provision were less likely for forced and potential forced labour and was 10%–11% lower. The provision of food was 7% less likely for forced labour but not obvious for potentially forced labour.

The estimation results for working hours are shown in Table 6. Among 351 respondents, those under forced labour worked longer by 2.68 hours and had fewer rest hours by 0.79 hours. Those under potentially forced labour worked 0.7 hours less and had fewer rest hours by 1.3 hours. These findings imply the ambiguous results for the inferior conditions of potentially forced labour. Regarding safety in the workplace, Table 7 shows that that the knowledge of the risks was lower and more accidents occurred for forced and potentially forced labour. Their boats were more likely to be equipped with first aid kits, which may be due to the high probability of accidents. Regarding ill-treatment occurring on the boats, Table 8 shows that probability of attempting to escape was higher for forced labour at 5% than for potentially forced labour at 1.3%. Forced labour was more likely to have seen child labour on the same boat at 0.13%, although potentially forced labour were less likely to have seen child labour at 4%. Forced labour (potentially forced labour) were more likely to have ever seen other crew members being threatened at 24.8% (11.1%), beaten at 26.8% (13.4%), and sold/transferred to other boats at 11.4% (4.8%). These findings clearly show that the situation of forced labour is much more severely coercive, and the situation of potentially forced labour is intermediate forced labour and nonforced labour.

==Insert Tables 5, 6, 7, and 8 here==

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[23] Full estimates for Tables 5–8 are reported in Table A3–A6 in the Appendix.

4.2. Regression results for working conditions after disaggregation of the criteria for potentially forced labour: Correlates of working conditions

Instead of aggregating the seven criteria for determining potentially forced labour, this section shows the disaggregated relationships of the seven potential factors with the outcomes in Table 9.[24]

Regarding salary level, among the seven criteria, working not own decision was −25% (1,357THB) and was far higher than the correlation of forced labour with the log of monthly wage, which was 0.4%. Other criteria ranged from negative such as −9.8% for violence, −8.8% for No ID, −4.3% for indebtedness, and −3.5% for confiscation of ID to positive such as 11.3% for severe violence and 3.6% for seeing other crew members sold to other boats. The two positive correlations for severe violence of oneself and of other crews may be attributed to coercive and violent work, which increase the productivity of workers.[25] Other than the seven criteria, the experience of working as fishermen (in months) was positively correlated. Proficiency in Thai is important. Compared with those who spoke Thai fairly well or fluently, non-Thai speaking workers received 9.7% lower wages, and even those who spoke a little Thai received 2.4% lower wage. Years of education was negatively correlated, implying that less educated workers received a higher wage. Although workers with access to legal rights information received 12.3% lower wages, union members received 9.3% higher wages. Workers on long haul boats received 3.0% higher wages. Regarding the difference in wages in the four provinces, wages were the lowest in Rayong and were 2.3% lower than those in Ranong. Compared with workers in Ranong, those in Songkla had the highest wage, at 22.6% higher, and the wages in Samut Sakhon were 17.4% higher.

Longer working hours were observed when working conditions were classified as forced labour or when some of the criteria were met. Specifically, working hours were 4.3 hours longer for working not own decision, 2.21 hours longer for forced labour, and 2.64 hours longer for those threatened with violence. Differences were also observed in working hours depending on verbal ability. By using Thai natives as the benchmark, all three Thai-speaking levels showed longer working hours; 5 hours for nonspeakers, 3.4 hours for beginners, and 4.5 hours for fluent speakers. These results suggest that the workload on the boat is different at least between Thai and non-Thai workers.

The experience of attempting to escape was 20% higher for working not own decision and 16.4% higher for those threatened with violence. These findings are reasonable considering that they perceive their situation as similar to forced labour.

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[24] The full estimates for the rest of the outcome variables considered in the previous sections are reported in Table A7 in the Appendix.
[25] One possible interpretation of this positive correlation may be that more severe working conditions may be compensated by higher wages.

== Insert Table 9 here. ==

4.3. Regression results for forced labour and the personal characteristics: Correlates of forced labour

Because we found that forced or potentially forced labour was negatively associated with working conditions, we examined the factors associated with workers being forced to work. By estimating equation (2), we analysed the correlates of personal characteristics. Table 10 presents the maximum likelihood estimates of Probit model regressing of "forced" dummies on various personal characteristics and boat conditions. The first column in Table 10 shows the results for forced labour, in which younger inexperienced fishermen were more likely to be forced or possibly forced to work. Proficiency of own language had a lower probability at 4.9%, although slight differences (less than 1%) were observed in fluency in speaking Thai among the different Thai-speaking levels. The positive coefficients for "access to information on legal rights" and "union membership" may imply reverse causality, suggesting that workers under harsh working conditions attempt to improve their conditions by obtaining such information and external assistance. The positive coefficient of "long-haul" of 5.1% implies that long haul boats are more likely to be places of forced labour, because the boats from the shore and are far from the homeport; thus, it is relatively easy to hold the workers in complete isolation and captivity. For potentially forced labour, the results are similar but different in the size effects of language proficiency in own language and Thai, and years of education. A negative correlation was observed for long haul, which is the opposite result of that of forced labour. The results of the combination of forced labour and potentially forced labour are shown in column 3 of Table 10, which confirmed that the difference in Thai speaking ability was approximately 2.5% between fairly well or fluent and none or a little. The possible reverse causality in "access to information on legal rights" and "union membership" was again found.

Regarding regional variations, Samut Sakhon had highest probability of forced labour at 31.8%, whereas the other three provinces had a probability less than 4.2%. In contrast to the regional variation for forced labour, Samut Sakhon was ranked the lowest, and Rayong and Songkla had higher probabilities of 36.6% and 35.1%. Combining both types, Ranong was ranked the lowest (benchmark), and Songkla was the highest at 35.4%.

== Insert Table 10 here. ==

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5. Discussion

5.1. Key results

Considering the forced labour definition by the ILO and its direct measurement, a comparison of the outcomes showed that forced labour received much fewer rewards and faced more difficult working conditions, and more severe threats. By marginally extending the measurement of forced labour to possibly forced labour, we found that the workers in this category are less exploited than those classified as forced labour but are more exploited than non-forced labour. They earned less, worked longer, had shorter resting periods, experienced salary deduction, did not rest enough, were less likely to receive welfare and enough food, attempted to escape, observed child labour, and experienced and observed ill-treatment such as being threatened with violence, beaten severely, and sold or transferred to other boats.

We also confirmed that the seven criteria to include possibly forced labour captured certain aspects of forced labour, implying that these observable features can be used as identifiers of forced labour and potential victims.

5.2. Limitations

Our study has at least, five limitations in our study; three related to data collection and two related to the research framework. First, because the population of forced labour is difficult to find and access, it is far more difficult to conduct any systematic surveys. This survey attempted to mitigate the possible bias resulting from the sampling by reflecting regional differences in composition of nationalities and ship-types. However, the observations were not randomly sampled. Interviews can be performed only when the boats returned to the ports. Also, the timing of the return depends on the weather, the type of vessels, and the fishing method preferred by the owners or captains. Thus, data collection cannot be systematically scheduled.[26] Second, the choice of vessels for the interview was sometimes determined by the connection with partner NGOs or the fishers' association.[27] Third, finding long-haul ships to interview was relatively difficult because not all of them are members of the fishers' association, and sometimes their return was not informed to authorities or associations.

Fourth, this study is very specific to the fishing sector in Thailand, and generalizing the findings to other sectors is difficult. In particular, fishing boats are closed circumstances. However, the criteria for potentially forced labour were confirmed to be effective in finding possibly forced labour. Fifth, establishing from our study possible solutions to rescue workers under forced labour is still difficult.

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[26] Randomising the timing of interviews and setting the interviews during monsoon seasons may help to diversify vessel types.

[27] Collaborative associations were the Thailand Overseas Fishing Association and the National Fisheries Association of Thailand.

Suggested solutions include access to lawyers and NGOS, and the presence of trade unions. However, the effectiveness of any possible intervention requires rigorous program evaluations. On this point, future research should seek to evaluate training programs for fishing skills and human resource management, and to inspection for illegal fishing, labour law and human rights.

Although conducting a labour force survey for fishing sector, it is not impossible to implement such a labour force survey in two steps. First, with the help of NGOs, fishery authorities, and associations of fishermen and seafood factories, as is done in ILO (2013), lists of registered fishing vessels and factories may be made available. Second, by randomly selecting the sample from the list, evaluating the impacts of available and desired interventions are possible. Such interventions may include programmes for safety and health at work, introductory training for non-experienced fishermen, technique to efficiently drive vessels and efficient factory, guidance for lawful labour managements, and etc. To abolish the unacceptable working conditions from the workplaces, technological and management assistance to the sector is required, along with pointing out the presence of slavery working conditions and boycotting the products. In particular, given the current revision trends in Global Value Chains (GVCs) of seafood, eliminating unlawful firms from the GVCs is not the complete solution because unacceptable workplaces are still excluded from GVC and left in developing countries. To achieve the abolition of slavery workplaces, another century may be needed to convert these unacceptable workplaces into acceptable ones. Thus, we need to be ready to continuously attempt to combine supports to improve work practices and inspections to eliminate unlawful workplaces.

Another important issue that we could not address was the recruitment process. Because some victims of forced labour mentioned that the labour contract was absent and oral contracts were also violated, the typical asymmetric information problem exists in this matching process between workers and workplaces. The problem also includes advanced payments, worker indebtedness and the promise of incentives for long-term work, making it difficult for workers to escape. The fundamental solution to this problem has yet to be found.

Compared with other sectors that have been pointed out as places with working conditions conductive to slavery, such as the construction sector, domestic work, and agriculture, capturing a comprehensive picture may be easier for fishing sector because fishing vessels may be largely registered and need to return to ports. Sector-specific difficulties exist in obtaining a list of potential slavery workplaces.

6. Concluding Remarks

This paper examined the working conditions on the Thai fishing boats and confirmed the presence of

forced labour and identified forced labour and potentially forced labour, using the strict measurement criteria and the extended measurement criteria. Workers in both categories are under harsher working conditions than others and are more likely to be underpaid, overworked, beaten, and threatened with violence. This study captured the multidimensionality and associated complexity of the inferior working conditions by adding seven factors to potentially reflect forced labour. It showed that most of the outcomes related to working conditions are the worst for forced labour. In contrast, it also showed that most of the key outcomes for potentially forced labour are ranked lower than forced labour but are sometimes ranked higher than that of the other workers, implying that our classification of potentially forced labour may have included some parts of nonforced labour. These difficulties are observed in the practical classification of working conditions. Given such difficulties, the overall improvements in working conditions may benefit all ranges of workers. For such improvements, several measures need to be implemented. First, systematic inspections at ports can find forced labour in severe situations. Second, it is crucial to raise awareness among employers, captains, and workers that the coercion and violence that forces people to work are criminal. Third, ensuring access to outsiders such as NGOs or a helpline can be helpful to workers on boats. Fourth, a labour contract should include informed consent.

Future studies may conduct an employee survey that can better reveal the working conditions of forced labour and potential forced labour, because such a survey can show the coexistence of workers under various backgrounds and working conditions at the same place or in similar places. For such a survey, one of the challenges may be the availability of a comprehensive list of employers. It is also desirable to implement and evaluate possible interventions after finding out the best practices to eliminate unacceptable workplaces.

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Table 1.Number and composition of migrants from neighbouring countries

Category	1998	2009	2013
Migrants from Cambodia, Laos and	986,889	2,455,744	2,675,762
Registered or with work permit [a]	293,652	1,010,941 [b,c]	1,082,892
Cambodia	*8.7%*	*9.5%*	*10.0%* [d]
Laos	*3.9%*	*8.4%*	*3.5%* [d]
Myanmar	*87.3%*	*82.1%*	*86.5%* [d]
Non-registered and irregular status	693,237	1,444,803	1,592,870
Refugees and asylum-seekers	110,000	141,076	127,038
Registered in official camps	-	95,330	78,575
Unregistered and other categories	-	45,746	48,463

Note: a) Compositions of registered migrants are shown in percentage since the numbers of "Registered or with work permit" don't always match with the sum of composition; b) the number is the end of 2010; c) this is the sum of "Regular new entrants under MOU" and "Entered or completed NV process";d) the decomposition of origin countries for 2013 is based on the "nationality verification process" only.

Source: Compiled by the authors from the following tables; compositions of registered migrants are from Table 6 of Chalamwong (2001) for 1998, Table 1.4. of Huguet et al (2011) for 2009, and Table 1.3. of Huguet (2014) for 2013; all of the other data are from Table 6 of Chalamwong (2001) for 1998, Table 1.1. of Huguet et al (2011) for 2009 and Table 1.1. of Huguet (2014) for 2013.

Table 2. Registered migrant workers in Thailand from the neighbouring countries

Category	Number of migrants	Sectoral share	Share by origin		
			Cambodia	Laos	Myanmar
Total	1,314,382		9%	8%	82%
Agriculture	295,860	22.5%	10.5%	7.6%	81.9%
Construction	220,236	16.8%	14.7%	5.7%	79.5%
Fishery	193,551	14.7%	10.8%	1.5%	87.6%
Fishing	*56,578*	*4.3%*	*26.5%*	*3.2%*	*70.4%*
Seafood processing	*136,973*	*10.4%*	*4.4%*	*0.9%*	*94.7%*
Mining	87,644	6.7%	8.4%	19.6%	72.0%
Manufacturing	71,619	5.4%	4.7%	13.3%	82.0%
Home maid	129,790	9.9%	5.1%	16.4%	78.5%
Transport	9,596	0.7%	26.1%	6.3%	67.7%
Trade	42,814	3.3%	11.2%	17.7%	71.2%
Others	261,429	19.9%	5.9%	6.3%	87.7%

Source: Author's calculation of Table 1.4. Huguet et al (2011).

Table 3. Summary statistics of key outcomes

	Obs	Mean or n (yes)	Std. Dev. or %	Min	Max
Panel A. Compensation					
ln(monthly wage in THB)	596	8.6	0.5	6.9	11.2
Deduction of salary (dummy)	496	*151*	30%		
Provided welfare? (dummy)	596	*131*	22%		
Provided enough food? (dummy)	596	*529*	89%		
Panel B. Work hours					
Work hours (hrs)	351	13.4	6.7	1	24
Rest hours (hrs)	375	5.7	3.8	1	21
Enough rest? (dummy)	596	*439*	74%		
Panel C. Safety					
Know risk points (dummy)	596	*548*	92%		
Had accident (dummy)	596	*123*	21%		
Have first aids kits on boat (dummy)	596	*436*	73%		
Panel D. Ill-treatment					
Ever tried to escape (dummy)	596	*66*	11%		
Ever seen employer employ children (dummy)	552	*246*	45%		
Ever threatened with violence, respondent (dummy)	596	*104*	17%		
Ever threatened with violence, other crew (dummy)	596	*182*	31%		
Ever beaten severely, respondent (dummy)	596	*60*	10%		
Ever beaten severely, other crew (dummy)	596	*170*	29%		
Ever been sold or transferred to other boat, respondent (dummy)	596	*24*	4%		
Ever been sold or transferred to other boat, other crew (dummy)	596	*106*	18%		

Table 4. Summary statistics of explanatory variables

	Obs	Mean or n (yes)	Std. Dev. or %	Min	Max
Panel A. "Forced" labor					
Forced labor	596	*101*	17%		495
Potentially forced labor	596	*368*	62%		228
Do not have legal documents	596	*303*	51%		
Employer demanded to hold ID	596	*82*	14%		
Not made own decision to work and deceived	596	*26*	4%		
Indebt for recruitment fee	596	*146*	24%		
Sold/transferred to another boat	596	*24*	4%		
Severely beaten	596	*60*	10%		
Threatened with violence	596	*104*	17%		
Either/both forced or potentially forced labor	596	*469*	79%		127
Panel B. Personal characteristics					
Age	596	28.9	9.7	12	69
Months worked as a fisherman (months)	596	61.8	81.1	1	504
Can speak/write/read in his language (dummy)	596	*506*	85%		
Can speak Thai (dummy)					
Thai people (reference)	596	49	8%		
None at all	596	294	49%		
A little	596	205	34%		
Fairly well / Fluently	596	48	8%		
Years of education					
No schooling (reference)	596	*45*	8%		
1 - 5 years	596	*305*	51%		
6 - 10 years	596	*226*	38%		
11+ years	596	*20*	3%		
Have access to info of working rights (dummy)	596	*325*	55%		
Member of trade union, etc. (dummy)	596	*17*	3%		
Panel C. Boat conditions					
Long haul (duration of last out at sea > 1 month) (dummy)	596	106	18%		
Number of crew members on the boat (persons)	596	25.8	11.6	2	54
Province					
Ranong (reference)	596	*132*	22%		
Songkla	596	*102*	17%		
Rayong	596	*187*	31%		
Samut Sakhon	596	*175*	29%		

Table 5. Regression results: Compensation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ln(wage)		Deduction of salary		Provided welfare?		Enough food?	
	OLS		Probit		Probit		Probit	
Forced	-0.0953		0.0874		-0.105*		-0.0719	
	(0.0684)		(0.0723)		(0.0430)		(0.0523)	
Potentially forced	-0.0787		-0.0162		-0.107*		0.000483	
	(0.0526)		(0.0568)		(0.0449)		(0.0360)	
Either/both forced or potentially forced		-0.0820		0.00496		-0.116*		-0.0164
		(0.0522)		(0.0547)		(0.0478)		(0.0328)
Observations	596	596	496	496	596	596	596	596
R-sq	0.253	0.253						

Note: Robust standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Source: Authors' calculation

Table 6. Regression results: Work hours

	(1)	(2)	(3)	(4)	(5)	(6)
	Work hours		Rest hours		Enough rest?	
	OLS		OLS		Probit	
Forced	2.688*		-0.793		-0.0855	
	(1.170)		(0.668)		(0.0675)	
Potentially forced	-0.709		-1.306*		-0.00938	
	(0.970)		(0.596)		(0.0516)	
Either/both forced or potentially forced		-0.0390		-1.193*		-0.0247
		(0.939)		(0.584)		(0.0495)
Observations	351	351	375	375	596	596
R-sq	0.247	0.219	0.251	0.249		

Note: Robust standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Source: Authors' calculation

Table 7. Regression results: Safety

	(1)	(2)	(3)	(4)	(5)	(6)
	Know risk points		Had accident		First aids kits on boat	
	Probit		Probit		Probit	
Forced	-0.0375		0.0564		0.0837	
	(0.0474)		(0.0646)		(0.0562)	
Potentially forced	-0.00493		0.100*		0.0306	
	(0.0332)		(0.0428)		(0.0529)	
Either/both forced or potentially forced		-0.0111		0.0868*		0.0436
		(0.0307)		(0.0384)		(0.0532)
Observations	596	596	596	596	596	596

Note: Robust standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Source: Authors' calculation

Table 8. Regression results: Ill-treatment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Tried to escape		Threatened (other crew)		Beaten (other crew)		Sold/transferred (other crew)	
	Probit		Probit		Probit		Probit	
Forced	0.0551		0.248***		0.268***		0.114	
	(0.0610)		(0.0745)		(0.0738)		(0.0666)	
Potentially forced	0.0135		0.111*		0.134**		0.0486	
	(0.0416)		(0.0483)		(0.0455)		(0.0442)	
Either/both forced or potentially forced		0.0203		0.131**		0.150***		0.0569
		(0.0383)		(0.0455)		(0.0421)		(0.0391)
Observations	596	596	596	596	596	596	596	596

Note: Robust standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Source: Authors' calculation

Table 9. Decomposition of seven criteria: outcomes
Regression results

	(1) ln(wage) OLS	(2) Work hours OLS	(3) Tried to escape Probit
Forced labor	0.00428	2.215*	-0.00699
	(0.0495)	(0.941)	(0.0337)
Do not have legal documents	-0.0881*	-2.735**	-0.0921**
	(0.0442)	(0.880)	(0.0292)
Employer demanded to hold ID	-0.0346	-0.149	-0.0720*
	(0.0789)	(1.120)	(0.0288)
Not made own decision to work and deceived	-0.250*	4.296	0.207*
	(0.103)	(2.189)	(0.0926)
Indebt for recruitment fee	-0.0425	0.868	-0.0266
	(0.0413)	(0.791)	(0.0268)
Severely beaten	0.113	-1.160	0.0407
	(0.0672)	(1.156)	(0.0448)
Sold/transferred to another boat	0.0380	-0.133	0.174
Threatened with violence	-0.0985	2.644**	0.164***
	(0.0570)	(0.813)	(0.0463)
Observations	596	351	596
R-sq	0.271	0.306	

Note: Robust standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001
Source: Author's calculation

Table 10. Decomposition of seven criteria: determinants
Regression results

	(1) Forced	(2) Potentially forced	(3) Either/both
	Probit	Probit	Probit
Age	-0.0000543	-0.000501	-0.000152
	(0.00171)	(0.00217)	(0.00157)
Months worked as a fisherman	-0.00112**	-0.000305	-0.000551*
	(0.000403)	(0.000334)	(0.000247)
Can speak/write/read in his language (dummy)	-0.0492	-0.00880	-0.0502
Can speak Thai (dummy)	(0.0545)	(0.0644)	(0.0507)
None at all		0.305**	0.532***
		(0.102)	(0.0875)
A little	0.0412	0.305**	0.531***
	(0.0353)	(0.0978)	(0.0837)
Fairly well / Fluently	0.0464	0.270*	0.501***
Years of education	(0.0656)	(0.106)	(0.0907)
1 - 5 years	-0.104	0.0975	-0.0182
	(0.0748)	(0.0831)	(0.0629)
6 - 10 years	-0.0660	0.0361	-0.0457
	(0.0830)	(0.0914)	(0.0682)
11+ years	-0.197*	0.0870	-0.108
	(0.0888)	(0.122)	(0.101)
Access to information on regal rights (dummy)	0.0291	0.0219	0.0238
	(0.0408)	(0.0477)	(0.0350)
Union member (dummy)	0.0143	0.0222	0.0479
	(0.0965)	(0.0992)	(0.0545)
Long haul (dummy)	0.0513	-0.00749	0.0451
	(0.0444)	(0.0517)	(0.0357)
Crew size	-0.00245	0.000153	-0.00279*
	(0.00153)	(0.00175)	(0.00130)
Province: Songkla	-0.0422	0.351***	0.354***
	(0.0401)	(0.0608)	(0.0538)
Province: Rayong	-0.0378	0.366***	0.350***
	(0.0475)	(0.0652)	(0.0528)
Province: Samut Sakhon	0.318***	-0.00479	0.286***
	(0.0691)	(0.0779)	(0.0631)
Observations	547	596	596

Notes: There is no Thai in forced labour and the baseline is set as no ability to speak Thai in the first column; Robust standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Source: Author's calculation

Table A1. Mean comparison of key outcomes of working conditions

	All	Forced (n=101)	Not forced (n=495)	Diff	p	Forced (n=368)	Not forced (n=228)	Diff	p	Forced (n=469)	Not forced (n=127)	Diff	p	Diff: Forced - potential	p
		Forced				Potentially forced				Either/both					
ln(monthly wage in THB)	8.6	8.6	8.7	-0.1	0.165	8.6	8.7	-0.1	**0.001**	8.6	8.9	-0.3	**0.000**	0.0	0.934
Deduction of salary (dummy)	0.304	0.457	0.275	0.182	**0.003**	0.272	0.361	-0.089	**0.043**	0.310	0.283	0.027	0.598	0.185	**0.003**
Provided welfare? (dummy)	0.220	0.168	0.230	-0.062	0.141	0.171	0.298	-0.127	**0.000**	0.171	0.402	-0.231	**0.000**	-0.003	0.946
Enough food? (dummy)	0.888	0.762	0.913	-0.151	**0.001**	0.913	0.846	0.067	**0.018**	0.881	0.913	-0.033	0.263	-0.151	**0.001**
Work hours (hrs)	13.4	14.9	13.1	1.8	**0.045**	13.3	13.5	-0.2	0.829	13.7	12.4	1.2	0.147	1.6	0.091
Rest hours (hrs)	5.7	5.4	5.8	-0.3	0.509	5.3	6.3	-1.0	**0.023**	5.4	7.0	-1.6	**0.004**	0.1	0.840
Enough rest? (dummy)	0.737	0.604	0.764	-0.160	**0.003**	0.774	0.675	0.099	**0.009**	0.738	0.732	0.005	0.902	-0.170	**0.002**
Know risk points (dummy)	0.919	0.871	0.929	-0.058	0.104	0.929	0.904	0.026	0.277	0.917	0.929	-0.012	0.639	-0.058	0.110
Had accident (dummy)	0.206	0.188	0.210	-0.022	0.611	0.201	0.215	-0.014	0.688	0.198	0.236	-0.038	0.369	-0.013	0.770
Have first aids kits on boat (dummy)	0.732	0.733	0.731	0.001	0.978	0.715	0.759	-0.044	0.233	0.719	0.780	-0.061	0.152	0.018	0.720
Ever tried to escape (dummy)	0.111	0.158	0.101	0.057	0.143	0.103	0.123	-0.020	0.469	0.115	0.094	0.021	0.491	0.055	0.168
Ever seen employer employ children (dummy)	0.446	0.600	0.412	0.188	**0.001**	0.402	0.514	-0.112	**0.010**	0.447	0.440	0.008	0.884	0.198	**0.001**
Ever threatened with violence, respondent (dummy)	0.174	0.277	0.154	0.124	**0.010**	0.207	0.123	0.084	**0.006**	0.222	0.000	0.222	**0.000**	0.071	0.155
Ever threatened with violence, other crew (dummy)	0.305	0.455	0.275	0.181	**0.001**	0.280	0.346	-0.067	0.091	0.318	0.260	0.058	0.196	0.176	**0.002**
Ever beaten severely, respondent (dummy)	0.101	0.218	0.077	0.141	**0.001**	0.103	0.096	0.007	0.789	0.128	0.000	0.128	**0.000**	0.115	**0.011**
Ever beaten severely, other crew (dummy)	0.285	0.446	0.253	0.193	**0.000**	0.258	0.329	-0.071	0.068	0.299	0.236	0.062	0.152	0.187	**0.001**
Ever been sold or transferred to other boat, respondent (dummy)	0.040	0.040	0.040	-0.001	0.970	0.054	0.018	0.037	**0.013**	0.051	0.000	0.051	**0.000**	-0.015	0.519
Ever been sold or transferred to other boat, other crew (dummy)	0.178	0.238	0.166	0.072	0.118	0.168	0.193	-0.025	0.454	0.183	0.157	0.026	0.486	0.069	0.142

Source: Authors' calculation

Table A2. Mean comparison of key characteristics of respondents

	All	Forced (n=101)	Not forced (n=495)	Diff	p	Forced (n=368)	Not forced (n=228)	Diff	p	Forced (n=469)	Not forced (n=127)	Diff	p	Diff: Forced - potential	p
		Forced				Potentially forced				Either/both					
Age	28.9	26.9	29.3	-2.4	**0.007**	28.0	30.4	-2.4	**0.004**	27.7	33.1	-5.4	**0.000**	-1.1	0.233
Months worked as a fisherman (months)	61.8	31.6	67.9	-36.3	**0.000**	49.3	81.9	-32.6	**0.000**	45.5	121.9	-76.4	**0.000**	-17.7	**0.001**
Can speak/write/read in his language (dummy)	0.849	0.842	0.851	-0.009	0.823	0.818	0.899	-0.081	**0.004**	0.823	0.945	-0.122	**0.000**	0.024	0.571
Can speak Thai (dummy)															
Thai people (reference)	0.082	0.000	0.099	-0.099	**0.000**	0.027	0.171	-0.144	**0.000**	0.021	0.307	-0.286	**0.000**	-0.027	**0.001**
None at all	0.493	0.614	0.469	0.145	**0.008**	0.530	0.434	0.096	**0.023**	0.548	0.291	0.257	**0.000**	0.084	0.130
A little	0.344	0.307	0.352	-0.045	0.382	0.356	0.325	0.031	0.431	0.345	0.339	0.007	0.886	-0.049	0.351
Fairly well / Fluently	0.081	0.079	0.081	-0.002	0.957	0.087	0.070	0.017	0.455	0.085	0.063	0.022	0.377	-0.008	0.801
Years of education															
No schooling (reference)	0.076	0.119	0.067	0.052	0.130	0.073	0.079	-0.006	0.804	0.083	0.047	0.036	0.117	0.045	0.198
1 - 5 years	0.512	0.515	0.511	0.004	0.946	0.530	0.482	0.047	0.261	0.527	0.457	0.070	0.163	-0.015	0.790
6 - 10 years	0.379	0.356	0.384	-0.027	0.604	0.361	0.408	-0.046	0.259	0.360	0.449	-0.088	0.076	-0.005	0.927
11+ years	0.034	0.010	0.038	-0.028	**0.031**	0.035	0.031	0.005	0.757	0.030	0.047	-0.017	0.397	-0.025	0.067
Have access to info of working rights (dummy)	0.545	0.446	0.566	-0.120	**0.029**	0.541	0.553	-0.012	0.778	0.520	0.638	-0.118	**0.017**	-0.095	0.092
Member of trade union, etc. (dummy)	0.029	0.030	0.028	0.001	0.939	0.022	0.039	-0.018	0.238	0.023	0.047	-0.024	0.240	0.008	0.669
Duration of last trip on sea < 1 month (dummy)	0.822	0.743	0.838	-0.096	**0.042**	0.845	0.785	0.060	0.071	0.823	0.819	0.004	0.915	-0.103	**0.033**
Crew members working on the fishing boat (persons)	25.8	24.8	26.0	-1.2	0.286	26.0	25.5	0.5	0.618	25.7	26.1	-0.4	0.769	-1.2	0.310
Province															
Ranong (reference)	0.221	0.158	0.234	-0.076	0.067	0.168	0.307	-0.139	**0.000**	0.166	0.425	-0.259	**0.000**	-0.010	0.808
Songkla	0.171	0.129	0.180	-0.051	0.177	0.226	0.083	0.142	**0.000**	0.205	0.047	0.157	**0.000**	-0.097	**0.016**
Rayong	0.314	0.129	0.352	-0.223	**0.000**	0.416	0.149	0.267	**0.000**	0.354	0.165	0.189	**0.000**	-0.287	**0.000**
Samut Sakhon	0.294	0.584	0.234	0.350	**0.000**	0.190	0.461	-0.270	**0.000**	0.275	0.362	-0.087	0.068	0.394	**0.000**

Source: Authors' calculation

Table A3. Correlates of working conditions (1): compensation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ln(wage)		Deduction of salary		Provided welfare?		Enough food?	
	OLS		Probit		Probit		Probit	
Forced	-0.0953		0.0874		-0.105*		-0.0719	
	(0.0684)		(0.0723)		(0.0430)		(0.0523)	
Potentially forced	-0.0787		-0.0162		-0.107*		0.000483	
	(0.0526)		(0.0568)		(0.0449)		(0.0360)	
Either/both forced or potentially forced		-0.0820		0.00496		-0.116*		-0.0164
		(0.0522)		(0.0547)		(0.0478)		(0.0328)
Age	-0.00175	-0.00176	0.000266	0.000316	0.00127	0.00127	0.00176	0.00158
	(0.00201)	(0.00201)	(0.00224)	(0.00225)	(0.00189)	(0.00189)	(0.00147)	(0.00146)
Months worked as a fisherman	0.00190***	0.00190***	0.000677*	0.000634*	0.000210	0.000212	-0.000701**	-0.000670**
	(0.000399)	(0.000395)	(0.000305)	(0.000306)	(0.000258)	(0.000257)	(0.000214)	(0.000214)
Can speak/write/read in his language (dummy)	-0.0505	-0.0501	-0.0926	-0.0972	0.119**	0.119**	0.0151	0.0154
Can speak Thai (dummy)	(0.0631)	(0.0632)	(0.0613)	(0.0616)	(0.0459)	(0.0459)	(0.0497)	(0.0498)
None at all	-0.310**	-0.313**	0.126	0.137	0.00468	0.00368	-0.138***	-0.140***
	(0.102)	(0.102)	(0.0851)	(0.0818)	(0.0801)	(0.0804)	(0.0255)	(0.0250)
A little	-0.213*	-0.216*	0.0932	0.108	0.0389	0.0374	-0.129***	-0.132***
	(0.106)	(0.106)	(0.0821)	(0.0788)	(0.0777)	(0.0779)	(0.0271)	(0.0267)
Fairly well / Fluently	-0.176	-0.179	0.182	0.202*	0.0862	0.0844	-0.0882*	-0.0910*
Years of education	(0.110)	(0.109)	(0.0952)	(0.0930)	(0.0888)	(0.0890)	(0.0396)	(0.0392)
1 - 5 years	0.140	0.142	-0.0745	-0.0837	-0.141	-0.140	-0.0717**	-0.0679*
	(0.0738)	(0.0736)	(0.0780)	(0.0785)	(0.0826)	(0.0826)	(0.0261)	(0.0285)
6 - 10 years	0.0836	0.0846	-0.0749	-0.0816	-0.162	-0.161	-0.141***	-0.141***
	(0.0829)	(0.0828)	(0.0876)	(0.0879)	(0.0902)	(0.0903)	(0.0342)	(0.0359)
11+ years	-0.0323	-0.0299	-0.151	-0.166	-0.184	-0.182	-0.109	-0.104
	(0.115)	(0.115)	(0.132)	(0.130)	(0.111)	(0.111)	(0.0734)	(0.0753)
Access to information on regal rights (dummy)	-0.110*	-0.110*	-0.0860	-0.0862	-0.0151	-0.0144	-0.0150	-0.0154
	(0.0480)	(0.0480)	(0.0504)	(0.0512)	(0.0411)	(0.0413)	(0.0283)	(0.0284)
Union member (dummy)	0.0550	0.0545	-0.0202	-0.0217	0.0647	0.0643	0.00130	-0.00141
	(0.125)	(0.125)	(0.0852)	(0.0865)	(0.0998)	(0.0996)	(0.0764)	(0.0757)
Long haul (dummy)	-0.00329	-0.00378	-0.166***	-0.168***	-0.0560	-0.0557	0.0184	0.0145
	(0.0525)	(0.0524)	(0.0427)	(0.0426)	(0.0407)	(0.0408)	(0.0314)	(0.0319)
Crew size	-0.000588	-0.000549	0.00182	0.00179	0.00128	0.00130	-0.00111	-0.000958
	(0.00170)	(0.00169)	(0.00188)	(0.00189)	(0.00170)	(0.00170)	(0.00113)	(0.00115)
Province: Songkla	0.208***	0.210***	-0.108*	-0.109*	-0.242***	-0.241***	-0.0492	-0.0414
	(0.0520)	(0.0520)	(0.0530)	(0.0519)	(0.0657)	(0.0656)	(0.0418)	(0.0395)
Province: Rayong	-0.0445	-0.0432	0.151*	0.138	-0.276***	-0.275***	-0.00408	0.000687
	(0.0698)	(0.0694)	(0.0745)	(0.0734)	(0.0684)	(0.0686)	(0.0275)	(0.0268)
Province: Samut Sakhon	0.145*	0.141*	0.297***	0.328***	-0.250***	-0.252***	-0.204***	-0.232***
	(0.0677)	(0.0681)	(0.0834)	(0.0811)	(0.0742)	(0.0727)	(0.0490)	(0.0492)
Constant	8.831***	8.831***						
	(0.161)	(0.161)						
N	596	596	496	496	596	596	596	596
R-sq	0.253	0.253						

Notes: Robust standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Source: Authors' calculation

Table A4. Correlates of working conditions (2): working hours

	(1)	(2)	(3)	(4)	(5)	(6)
	Work hours		Rest hours		Enough rest?	
	OLS		OLS		Probit	
Forced	2.688*		-0.793		-0.0855	
	(1.170)		(0.668)		(0.0675)	
Potentially forced	-0.709		-1.306*		-0.00938	
	(0.970)		(0.596)		(0.0516)	
Either/both forced or potentially forced		-0.0390		-1.193*		-0.0247
		(0.939)		(0.584)		(0.0495)
Age	-0.00594	-0.00232	-0.0474*	-0.0473*	0.000409	0.000380
	(0.0390)	(0.0399)	(0.0228)	(0.0229)	(0.00201)	(0.00201)
Months worked as a fisherman	0.0139*	0.0128*	0.00185	0.00167	0.000207	0.000230
	(0.00602)	(0.00599)	(0.00287)	(0.00285)	(0.000308)	(0.000310)
Can speak/write/read in his language (dummy)	-1.515	-1.779	-0.466	-0.487	0.0767	0.0795
Can speak Thai (dummy)	(0.981)	(0.990)	(0.650)	(0.651)	(0.0651)	(0.0648)
None at all	5.075*	5.362*	-1.735	-1.698	0.0377	0.0270
	(2.094)	(2.074)	(1.112)	(1.112)	(0.101)	(0.0998)
A little	3.350	3.795	-1.718	-1.658	0.0509	0.0384
	(2.057)	(2.031)	(1.114)	(1.113)	(0.0998)	(0.0987)
Fairly well / Fluently	4.842*	5.306**	-1.445	-1.391	0.0874	0.0731
Years of education	(2.007)	(1.931)	(1.139)	(1.139)	(0.106)	(0.106)
1 - 5 years	-1.085	-0.965	-1.551	-1.531	0.0380	0.0443
	(1.375)	(1.345)	(0.902)	(0.902)	(0.0752)	(0.0755)
6 - 10 years	-0.917	-0.730	-1.465	-1.427	0.00892	0.0127
	(1.583)	(1.553)	(0.993)	(0.994)	(0.0831)	(0.0835)
11+ years	-3.326	-3.392	-2.542	-2.550	0.0965	0.104
	(2.161)	(2.216)	(1.562)	(1.564)	(0.109)	(0.109)
Access to information on regal rights (dummy)	0.941	0.810	-0.539	-0.529	-0.0191	-0.0178
	(0.805)	(0.792)	(0.424)	(0.423)	(0.0436)	(0.0438)
Union member (dummy)	1.250	1.368	-2.438*	-2.434*	0.121	0.122
	(1.730)	(1.865)	(0.956)	(0.969)	(0.0822)	(0.0830)
Long haul (dummy)	2.191*	2.111*	1.628*	1.603*	-0.142**	-0.145**
	(0.931)	(0.956)	(0.683)	(0.682)	(0.0535)	(0.0535)
Crew size	0.0443	0.0322	0.00233	0.000619	0.00420*	0.00435**
	(0.0324)	(0.0337)	(0.0188)	(0.0186)	(0.00167)	(0.00167)
Province: Songkla	-1.066	-1.466	0.476	0.406	0.113	0.119
	(1.108)	(1.128)	(0.942)	(0.949)	(0.0657)	(0.0655)
Province: Rayong	5.805***	5.265***	-3.584***	-3.639***	0.233***	0.238***
	(1.183)	(1.184)	(0.746)	(0.745)	(0.0638)	(0.0639)
Province: Samut Sakhon	1.439	2.087	-4.304***	-4.167***	0.0304	0.0115
	(1.304)	(1.288)	(0.760)	(0.750)	(0.0790)	(0.0785)
Constant	6.606*	6.805*	14.01***	14.00***		
	(2.948)	(2.987)	(1.600)	(1.610)		
N	351	351	375	375	596	596
R-sq	0.247	0.219	0.251	0.249		

Notes: Robust standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Source: Authors' calculation

Table A5. Correlates of working conditions (3): safety

	(1)	(2)	(3)	(4)	(5)	(6)
	Know risk points		Had accident		First aids kits on boat	
	Probit		Probit		Probit	
Forced	-0.0375		0.0564		0.0837	
	(0.0474)		(0.0646)		(0.0562)	
Potentially forced	-0.00493		0.100*		0.0306	
	(0.0332)		(0.0428)		(0.0529)	
Either/both forced or potentially forced		-0.0111		0.0868*		0.0436
		(0.0307)		(0.0384)		(0.0532)
Age	-0.000222	-0.000222	-0.00279	-0.00276	-0.00152	-0.00146
	(0.00117)	(0.00116)	(0.00190)	(0.00191)	(0.00211)	(0.00212)
Months worked as a fisherman	0.000540	0.000559	0.000809**	0.000819***	0.0000728	0.0000445
	(0.000309)	(0.000314)	(0.000248)	(0.000247)	(0.000344)	(0.000343)
Can speak/write/read in his language (dummy)	0.0132	0.0148	-0.0439	-0.0433	0.0598	0.0572
Can speak Thai (dummy)	(0.0373)	(0.0370)	(0.0602)	(0.0607)	(0.0615)	(0.0616)
None at all	0.172	0.161	-0.0716	-0.0809	-0.302***	-0.301***
	(0.121)	(0.118)	(0.0866)	(0.0881)	(0.0410)	(0.0418)
A little	0.183	0.172	0.0507	0.0401	-0.224***	-0.221***
	(0.119)	(0.116)	(0.0871)	(0.0882)	(0.0383)	(0.0387)
Fairly well / Fluently	0.148	0.135	0.0527	0.0420	-0.266***	-0.261***
Years of education	(0.118)	(0.116)	(0.0951)	(0.0964)	(0.0699)	(0.0699)
1 - 5 years	-0.00615	-0.00268	0.0884	0.0913	0.0166	0.0110
	(0.0438)	(0.0439)	(0.0547)	(0.0543)	(0.0724)	(0.0721)
6 - 10 years	0.0321	0.0336	0.138*	0.139*	0.00365	0.000838
	(0.0461)	(0.0463)	(0.0632)	(0.0630)	(0.0806)	(0.0804)
11+ years	0.0576	0.0597	0.0554	0.0606	-0.0644	-0.0724
	(0.0548)	(0.0552)	(0.101)	(0.101)	(0.117)	(0.117)
Access to information on regal rights (dummy)	0.0756*	0.0796*	0.0315	0.0313	-0.0828	-0.0833
	(0.0342)	(0.0352)	(0.0376)	(0.0376)	(0.0450)	(0.0449)
Union member (dummy)			-0.158***	-0.158***	-0.00568	-0.00360
			(0.0449)	(0.0448)	(0.108)	(0.107)
Long haul (dummy)	-0.0698*	-0.0707*	0.0403	0.0398	0.00354	0.00778
	(0.0350)	(0.0356)	(0.0453)	(0.0450)	(0.0494)	(0.0493)
Crew size	0.000982	0.00110	-0.00157	-0.00145	0.00327	0.00318
	(0.00117)	(0.00118)	(0.00152)	(0.00152)	(0.00183)	(0.00184)
Province: Songkla	0.0549	0.0592	-0.222***	-0.221***	-0.119	-0.126*
	(0.0590)	(0.0585)	(0.0552)	(0.0559)	(0.0632)	(0.0635)
Province: Rayong	0.194***	0.196***	-0.216***	-0.214***	0.0355	0.0314
	(0.0548)	(0.0549)	(0.0591)	(0.0598)	(0.0629)	(0.0632)
Province: Samut Sakhon	0.169**	0.165**	-0.0527	-0.0683	-0.123	-0.107
	(0.0595)	(0.0595)	(0.0735)	(0.0713)	(0.0686)	(0.0678)
N	596	596	596	596	596	596

Notes: Robust standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Source: Authors' calculation

Table A6. Correlates of working conditions (4): ill-treatment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Tried to escape		Seen child labor		Threatened (other crew)		Beaten (other crew)	
	Probit		Probit		Probit		Probit	
Forced	0.0551		0.00135		0.248***		0.268***	
	(0.0610)		(0.0700)		(0.0745)		(0.0738)	
Potentially forced	0.0135		-0.0444		0.111*		0.134**	
	(0.0416)		(0.0567)		(0.0483)		(0.0455)	
Either/both forced or potentially forced		0.0203		-0.0347		0.131**		0.150***
		(0.0383)		(0.0551)		(0.0455)		(0.0421)
Age	0.00296*	0.00296*	-0.00565*	-0.00567*	0.0000963	0.0000848	-0.00145	-0.00144
	(0.00148)	(0.00148)	(0.00235)	(0.00235)	(0.00213)	(0.00214)	(0.00209)	(0.00210)
Months worked as a fisherman	-0.000419	-0.000433	0.000273	0.000257	0.000555	0.000527	0.000643*	0.000616*
	(0.000226)	(0.000227)	(0.000328)	(0.000327)	(0.000306)	(0.000310)	(0.000291)	(0.000296)
Can speak/write/read in his language (dummy)	0.0160	0.0138	0.0228	0.0220	-0.145*	-0.148*	-0.108	-0.110
Can speak Thai (dummy)	(0.0404)	(0.0404)	(0.0635)	(0.0635)	(0.0686)	(0.0678)	(0.0671)	(0.0665)
None at all	-0.00704	0.000679	0.327***	0.333***	0.0498	0.0664	0.00901	0.0247
	(0.0819)	(0.0782)	(0.0746)	(0.0731)	(0.0865)	(0.0843)	(0.0838)	(0.0821)
A little	-0.0359	-0.0275	0.306***	0.312***	0.0756	0.0944	0.0598	0.0776
	(0.0767)	(0.0732)	(0.0720)	(0.0702)	(0.0843)	(0.0821)	(0.0834)	(0.0816)
Fairly well / Fluently	-0.0355	-0.0269	0.364***	0.370***	0.203*	0.222*	0.0871	0.105
Years of education	(0.0793)	(0.0761)	(0.0880)	(0.0867)	(0.0974)	(0.0952)	(0.0941)	(0.0925)
1 - 5 years	-0.0267	-0.0292	-0.0225	-0.0268	0.105	0.0989	0.0207	0.0123
	(0.0598)	(0.0601)	(0.0884)	(0.0881)	(0.0610)	(0.0605)	(0.0693)	(0.0688)
6 - 10 years	-0.0120	-0.0137	0.0173	0.0137	0.227**	0.226**	0.109	0.104
	(0.0658)	(0.0662)	(0.0970)	(0.0969)	(0.0706)	(0.0705)	(0.0782)	(0.0779)
11+ years	0.0328	0.0284	-0.0414	-0.0473	0.217	0.205	0.0252	0.0120
	(0.0987)	(0.0987)	(0.130)	(0.130)	(0.119)	(0.119)	(0.113)	(0.112)
Access to information on regal rights (dummy)	-0.0155	-0.0154	-0.0447	-0.0435	0.156***	0.159***	0.150***	0.152***
	(0.0330)	(0.0330)	(0.0463)	(0.0464)	(0.0423)	(0.0429)	(0.0407)	(0.0416)
Union member (dummy)	0.0968	0.0975	0.121	0.124	-0.140	-0.140	-0.221***	-0.223***
	(0.104)	(0.104)	(0.123)	(0.122)	(0.0883)	(0.0877)	(0.0583)	(0.0573)
Long haul (dummy)	0.0426	0.0444	-0.00606	-0.00497	0.0576	0.0628	0.0433	0.0482
	(0.0371)	(0.0372)	(0.0518)	(0.0519)	(0.0518)	(0.0524)	(0.0497)	(0.0505)
Crew size	-0.00293*	-0.00305*	0.00289	0.00281	-0.00121	-0.00151	-0.00187	-0.00213
	(0.00120)	(0.00120)	(0.00193)	(0.00193)	(0.00183)	(0.00184)	(0.00177)	(0.00177)
Province: Songkla	-0.1000*	-0.0993*	-0.346***	-0.346***	-0.166**	-0.169**	-0.187***	-0.191***
	(0.0399)	(0.0398)	(0.0667)	(0.0661)	(0.0560)	(0.0551)	(0.0556)	(0.0546)
Province: Rayong	0.00419	-0.0000370	-0.0725	-0.0770	-0.0395	-0.0472	-0.0964	-0.102
	(0.0539)	(0.0536)	(0.0784)	(0.0781)	(0.0644)	(0.0644)	(0.0633)	(0.0634)
Province: Samut Sakhon	-0.0309	-0.0209	0.254**	0.265***	0.144	0.176*	0.141	0.170*
	(0.0590)	(0.0579)	(0.0822)	(0.0804)	(0.0743)	(0.0724)	(0.0744)	(0.0725)
N	596	596	552	552	596	596	596	596

Notes: Robust standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Source: Authors' calculation

Table A7. Correlates of working conditions and outcomes with decomposition: compensation of criteria for potential forced labour

	Compensation		
	(1)	(2)	(3)
	ln(wage)	Deduction of salary	Provided welfare?
	OLS	Probit	Probit
Forced labor	0.00428	0.0803	-0.0237
	(0.0495)	(0.0550)	(0.0456)
Do not have legal documents	-0.0881*	-0.0400	-0.123**
	(0.0442)	(0.0467)	(0.0385)
Employer demanded to hold ID	-0.0346	-0.0734	-0.0474
	(0.0789)	(0.0604)	(0.0512)
Not made own decision to work and deceived	-0.250*	0.0731	-0.101
	(0.103)	(0.117)	(0.0784)
Indebt for recruitment fee	-0.0425	-0.0193	-0.0394
	(0.0413)	(0.0431)	(0.0381)
Severely beaten	0.113	-0.167***	0.00815
	(0.0672)	(0.0456)	(0.0734)
Sold/transferred to another boat	0.0380	-0.0160	-0.0939
	(0.0902)	(0.0878)	(0.0638)
Threatened with violence	-0.0985	0.359***	-0.0946*
	(0.0570)	(0.0601)	(0.0446)
Age	-0.00164	0.00114	0.00128
	(0.00204)	(0.00215)	(0.00186)
Months worked as a fisherman	0.00184***	0.000566	0.000196
	(0.000406)	(0.000293)	(0.000256)
Can speak/write/read in his language (dummy)	-0.0663	-0.0389	0.110*
Can speak Thai (dummy)	(0.0642)	(0.0582)	(0.0473)
None at all	-0.271*	0.139	0.0349
	(0.106)	(0.0791)	(0.0728)
A little	-0.190	0.0983	0.0590
	(0.109)	(0.0750)	(0.0702)
Fairly well / Fluently	-0.174	0.208*	0.0866
Years of education	(0.111)	(0.0866)	(0.0785)
1 - 5 years	0.129	-0.0842	-0.154
	(0.0699)	(0.0770)	(0.0832)
6 - 10 years	0.0840	-0.107	-0.170
	(0.0800)	(0.0859)	(0.0914)
11+ years	-0.0181	-0.144	-0.177
	(0.116)	(0.127)	(0.114)
Access to information on legal rights (dummy)	-0.123*	-0.102*	-0.0234
	(0.0480)	(0.0489)	(0.0405)
Union member (dummy)	0.0933	-0.0206	0.0796
	(0.126)	(0.0774)	(0.103)
Long haul (dummy)	0.0299	-0.161***	-0.0404
	(0.0551)	(0.0422)	(0.0428)
Crew size	-0.00154	0.00177	0.000384
	(0.00177)	(0.00194)	(0.00174)
Province: Songkla	0.226***	-0.0618	-0.222***
	(0.0528)	(0.0560)	(0.0654)
Province: Rayong	-0.0230	0.133	-0.263***
	(0.0766)	(0.0751)	(0.0674)
Province: Samut Sakhon	0.174*	0.292***	-0.227**
	(0.0676)	(0.0810)	(0.0719)
Constant	8.838***		
	(0.159)		
N	596	496	596
R-sq	0.271		

Notes: Robust standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Source: Authors' calculation