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【要旨】

Commercial sex is a prevalent but risky profession in many countries, including Myanmar. While risk attitude is a potentially important factor in determining risky behavior of female sex workers (FSWs), few studies have explicitly investigated the issue. This is one of the first studies to elicit the risk attitude of FSWs using a simple risk game. We conducted the risk game with FSWs in Yangon, Myanmar, where the average GDP per capita is very low, to study how risk attitude is related with observable characteristics and with risky behavior related to the use of condoms in the commercial sex market. We found that risk attitude is relatively independent of observable characteristics and the decision to use a condom. However, transaction prices were directly associated with risk attitude.

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Risk attitude, risky behavior, and price determination in the sex market: A case study of Yangon, Myanmar

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Abstract

Commercial sex is a prevalent but risky profession in many countries, including Myanmar. While risk attitude is a potentially important factor in determining risky behavior of female sex workers (FSWs), few studies have explicitly investigated the issue. This is one of the first studies to elicit the risk attitude of FSWs using a simple risk game. We conducted the risk game with FSWs in Yangon, Myanmar, where the average GDP per capita is very low, to study how risk attitude is related with observable characteristics and with risky behavior related to the use of condoms in the commercial sex market. We found that risk attitude is relatively independent of observable characteristics and the decision to use a condom. However, transaction prices were directly associated with risk attitude.

Key words: Commercial sex work, female sex worker, risk attitude, transaction price, Myanmar

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1. Introduction

The commercial sex business is a worldwide phenomenon and is considered one of the oldest professions (Wilson 2019). Needless to say, commercial sex work is a risky business, especially due to the risk of sexually transmitted diseases (STDs). The same is true in Myanmar's largest city, Yangon. According to the Joint United Nations Programme on HIV/AIDS (UNAIDS), the HIV prevalence among the population aged 15−49 years in Myanmar in 2018 was 0.8%, whereas the rate among sex workers was 5.6%.[1] Thus, working under high risk of STDs is quite demanding for most female sex workers (FSWs). Commercial sex work is risky in another sense: it is illegal in Myanmar. FSWs are subject to arrest and other penalties if apprehended by the police. Furthermore, they face a high level of stigma and discrimination due to deeply rooted cultural norms (Aung 2019).

Some literature on prostitution has focused on risky sexual behavior in FSWs in terms of price differentials between safe and unsafe commercial sex. Rao et al. (2003) found that FSWs in India who always use condoms face losses of between 66% and 79% compared with those who never use condoms. Gertler et al. (2005) found that Mexican FSWs draw a risk premium of approximately 15 percent per transaction to engage in sex without a condom. Arunachalam and Shah (2013) reported that the premium for

[1] https://www.unaids.org/en/regionscountries/countries/myanmar, accessed May 21, 2020.

unprotected sex increases with local disease prevalence in Ecuador.[2] Jakubowski et al. (2016) reported a 136% price premium for unprotected sex in Kenya.

However, an important aspect is missing from the literature; that is, risky behaviors in FSWs may depend on risk attitude, which is a crucial preference parameter related to their utility function. In recent years, the economic literature has invoked risk attitude to explain the economic behaviors of individuals in the real world. For instance, Assandri et al. (2018) studied the relationship between risk attitude and redistribution preferences. Andreoni et al. (2019) simultaneously explored the risk preferences of children and adolescents. Gürdal et al. (2017) demonstrated the relation between risk attitudes and portfolio choice in the context of pensions (2017). However, to our knowledge, few empirical studies on commercial sex markets have considered the risk attitude parameters of FSWs, despite their potentially great importance. The lone exception is Lépine and Treibich (2020), who used an incentivized Gneezy and Potters task and specific risk-taking scales in four domains (in general, finance, health, and sex) to measure risk aversion in sex workers in Senegal in 2017. They found that risk aversion is an important predictor of sex workers' sexual behaviors. They revealed that sex workers with a higher risk aversion engage in fewer sex acts with clients, have fewer clients at

[2] Other examples include Kenya (Robinson and Yeh 2011), Mexico (de la Torre et al. 2010), Nicaragua (Willman 2008), Congo (Ntumbanzondo et al. 2006), and Canada (Johnston et al. 2010).

risk of HIV, are more likely to engage in protected sex acts, and as a result, earn less money per sex act. However, Senegal is the only African country (and perhaps one of only a few countries in the world) where sex work is legal and regulated as a public health intervention.[3] Hence, the findings obtained in their paper may not be generalizable to other countries.

To fill this gap in the literature and provide evidence in a different country setting, we conducted an exercise involving a very simple risk game developed by Crosetto and Filippin (2013), with about 400 FSWs in Yangon, Myanmar to elicit risk attitude parameters and connect them with observable characteristics, decisions about risky behavior, and price determination in the commercial sex market. As an indicator of risky/safe sexual behavior, we investigated whether FSWs use condoms or not, for consistency with the literature.

A typical concern may arise when researchers estimate the hedonic regression of transaction prices in the commercial sex market. A potential and crucial concern is omitted variable bias induced by not including a risk attitude variable in the specification. Consider a situation in which an FSW faces a trade-off between engaging in risky sex

[3] Since 1969, Senegalese FSWs over the age of 21 years have been compelled to register with a health center and to have routine check-ups to be tested and treated for STDs and to receive free condoms (Chersich et al., 2013)

(e.g., sex without condom) and the price for engaging in risky sex. In other word, consider a situation in which an FSW can earn more money for a riskier sexual transaction. A more risk-tolerant FSW may be more willing to engage in risky sex at a relatively lower price, resulting in an underestimation of the premium of risky sexual services. In another extreme case, an FSWs' decision may be completely independent of their risk attitude. In such a case, risk attitude would not lead to omitted variable bias, but there might still be a direct influence of risk attitude on the transaction price. However, these scenarios are all speculative because few studies have investigated risk attitude in FSWs. Hence, a large gap exists between the literature and the real-world commercial sex market.

The present study makes four novel contributions to the literature on the commercial sex market. First, as already mentioned, this is one of the first studies to elicit risk attitude parameters in FSWs. The risk game exercise we conducted differs from that used in Lépine and Treibich (2020). We employ a very simple risk game developed by Crosetto and Filippin (2013), which is easy for FSWs to understand because it does not involve the concept of investment and is more closely related to the context of risky commercial sex behavior. Second, we show how the elicited risk attitude parameters are associated (or not) with various observable characteristics in FSWs, something that has not been thoroughly investigated in previous studies. Third, we use more recent microdata

to answer one of the major research questions in the literature, namely, whether FSWs provide risky sexual services in exchange for higher transaction prices. To answer this question, we examined price determination in the commercial market. Lastly, Myanmar is of interest because microdata on FSWs in non-sub-Saharan African countries with income levels as low as Myanmar's are difficult to obtain, with the exception of Rao et al. (2003) and Neha Hui (2017) in India. Therefore, little is known about the commercial sex market in low-income countries beyond anecdotal evidence.[4]

To preview our results, the main findings of this study are as follows. First, the elicited risk attitude measure of FSWs is relatively independent of other observable factors. Second, the measured risk attitude does not necessarily explain the decision to use or not use a condom during commercial sex transactions. Lastly, we find a direct association between risk attitude and transaction prices.

The remainder of this paper is organized as follows. Section 2 describes the survey and the experiment for measuring risk attitude, followed by a description of the data. Section 3 presents analyses on factors associated with risk attitude and condom use.

[4] Although Sohn (2019) also claims the uniqueness of his study on the commercial sex market in Indonesia due to its low-income level, Indonesia's GDP per capita (PPP-adjusted, constant 2017 USD international) is USD 11,369, which is more than twice as high as that of Myanmar (USD 4,877), which itself is even lower than that of India USD 6,538 (all numbers are for 2018; taken from World Bank [2020]). Meanwhile, that of Senegal is USD 3,348 and that of Kenya is USD 4,192.

Section 4 presents the analysis on transaction price determination. Section 5 concludes the paper.

2. Data and experiment on measuring risk attitudes

2.1 Sampling design, survey implementation, and data[5]

The study population comprised FSWs aged 18 years or older working in brothels and entertainment venues. The survey team recruited only active sex workers who had provided sexual services in exchange for money in the past twelve months, to avoid recall bias when answering questions about their clients. In addition, only those who answered that they understood the explanation about the aim of study and provided written consent were enrolled as participants.

The number of FSWs in Yangon has been estimated to be between 5,000 and 10,000 (Talikowski and Gillieatt, 2005; Thein, et al., 2015), with the most recent behavioral surveillance survey reporting the number to be about 7,160 (National AIDS Program, 2019). Assuming a 95% confidence interval and a marginal error of 5% for the estimated FSW population of 10,000 in Yangon, a minimum sample size of 370 was calculated according to the formula of Cochran (1977). However, allowing for a non-

[5] This subsection largely relies on Aung (2019).

response rate of 10%, the survey team reached out to 403 FSWs. The survey was conducted during the first two weeks of July 2019. Finally, we used a sample of 395 FSWs who answered nearly all the questions about their four most recent transactions.

Because FSWs belong to a hidden population and do not wish to be identified, a snowball (non-random) sampling method was used to reach out to them (Atkinson and Flint, 2001; Shaghaghi, et al., 2011). The five FSW enumerators, who are also the representatives of the interest study group, were purposely selected as the initial contacts for chain sampling. At the time of the study, four were working as FSWs and one had retired. All five enumerators belong to the Sex Workers in Myanmar (SWIM) network, are very knowledgeable about sex work, and know how to contact their peers in Yangon. Because using representative enumerators is effective for recruiting members of hidden populations (Ellard-Gray, 2015), we asked the enumerators to contact acquaintances within their network and explain the study, check their availability, and arrange face-to-face interviews. The enumerators then conducted the face-to-face interviews with the women in a private space in the SWIM office, a drop-in center, the interviewer's home, the interviewee's home, a brothel, a karaoke club, or a massage parlor. To ensure the safety and security of both the study participants and the enumerators, precautions were taken to make sure that other people, including family members, were not present or

nearby during the interviews. In advance of the actual data collection, we conducted a pre-survey to finalize the questionnaire. The enumerators attended a training session before the pre-survey and a follow-up training session before the actual survey to learn how to collect unbiased information from the respondents and how to conduct the risk attitude game. We supervised the enumerators throughout the data collection phase.

The collected data on FSWs comprised socio-economic characteristics, health knowledge, health seeking behavior, working conditions, and details about their four most recent transactions, including transaction price, services provided, and use of condoms. The descriptive statistics are presented in Section 2.3.

2.2 Risk attitude game

To measure the risk attitude of FSWs, we used the game developed by Crosetto and Filippin (2013).[6] Risk preference was determined by presenting a decision-making scenario to the participants, in which they were asked to decide how many of the 100 boxes listed on a sheet of paper they would like to collect. One of the boxes contains a "bomb," but its location is not known. After the participants have collected their boxes, the enumerator draws a number between 1 and 100 from a bag, and that number

[6] There are various types of experimental methods to elicit risk preferences. See Charness et al. (2013) for a review.

determines where the bomb is located. If the drawn number is less than or equal to the number of collected boxes, the participants earn zero points because the bomb has exploded. However, if the drawn number is higher than the number of boxes collected, the participant wins the game and gets a monetary reward. The amount of money the participant receives is the number of boxes they collected multiplied by 100 Myanmar kyat (MMK). For example, if the participant collected 50 boxes and the bomb was located in box 60, she would win MMK 5,000 (i.e., 50 × MMK 100), which is equivalent to USD 3.50. However, if the bomb was in boxes 1–50, she would lose the game and receive no prize money.

Both the payoff and the risk of the bomb exploding increase with the number of boxes collected. Therefore, it is expected that the participants will want to win the game and earn as much money as possible, but will also have to weigh the benefits and risks.

2.3 Descriptive statistics

As discussed earlier, we are interested in the relationship between risky behavior and the characteristics of FSWs. Accordingly, we present descriptive statistics (Table 1) based on condom use status during their four most recent transactions with clients: (a) always use a condom, (b) sometimes use a condom, and (c) never use a condom. Table 1

also shows the descriptive statistics for the entire sample and indicates that the majority of FSWs always use a condom. Indeed, 88.9% of them used a condom in each of their four most recent transactions. This number is notably higher than those reported in previous studies: 47.3% in India (Rao et al. 2003), 69% in Kenya (Jakubowski et al. 2016), 83.7% in Mexico (Gertler et al. 2005), 81.8% in Ecuador (Arunachalam and Shah 2012), and 78% in Senegal (Lépine and Treibich 2020). Accordingly, the proportions of FSWs who never (6.6%) and sometimes use a condom (4.6%) are low. Note that the proportion of FSWs who never use a condom (6.6%) is similar to the HIV prevalence rate among sex workers in 2018 (5.6%) mentioned in the Introduction section.

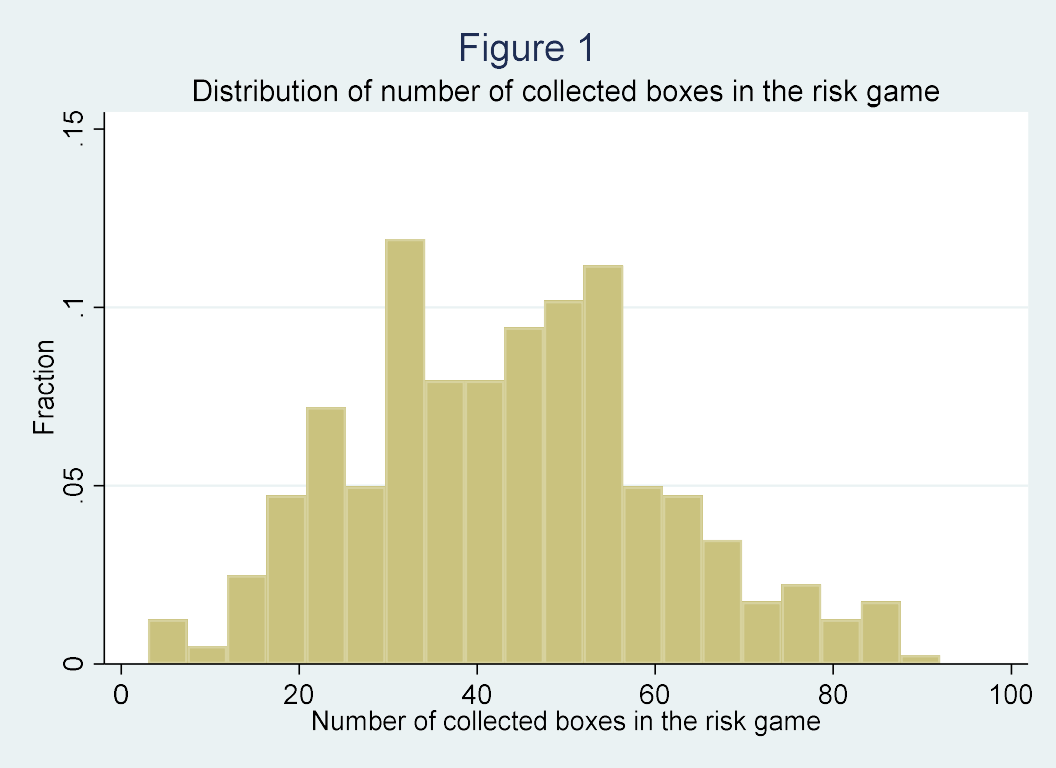
Table 1: Descriptive statistics by condom usage

Variable	Whole sample			Always users			Sometimes users			Never users		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Answer to the risk game	403	43.64	17.20	351	43.58	17.11	18	40.39	15.81	26	42.88	18.69
Age (years)	403	28.20	7.36	351	28.32	7.31	18	26.28	6.79	26	27.19	7.79
Education												
No education	403	0.06	0.24	351	0.06	0.24	18	0.06	0.24	26	0.00	0.00
Primary level	403	0.36	0.48	351	0.34	0.48	18	0.33	0.49	26	0.58	0.50
Secondary level	403	0.49	0.50	351	0.50	0.50	18	0.61	0.50	26	0.35	0.49
Above secondary level	403	0.09	0.29	351	0.09	0.28	18	0.00	0.00	26	0.08	0.27
Marital status												
Never married	402	0.26	0.44	350	0.24	0.43	18	0.22	0.43	26	0.50	0.51
Married	402	0.39	0.49	350	0.41	0.49	18	0.44	0.51	26	0.19	0.40
Widowed	402	0.07	0.26	350	0.07	0.26	18	0.06	0.24	26	0.04	0.20
Divorced/Separated	402	0.28	0.45	350	0.28	0.45	18	0.28	0.46	26	0.27	0.45
Number of children	403	1.16	1.37	351	1.17	1.35	18	1.28	1.81	26	0.73	1.15
Reason to start working as a sex worker												
To help family financially	403	0.80	0.40	351	0.80	0.40	18	0.67	0.49	26	0.77	0.43
Influenced by friends	403	0.06	0.25	351	0.06	0.24	18	0.06	0.24	26	0.08	0.27
Good pay	403	0.06	0.24	351	0.06	0.24	18	0.06	0.24	26	0.04	0.20
No other job opportunities	403	0.07	0.25	351	0.06	0.24	18	0.17	0.38	26	0.12	0.33
Others	403	0.01	0.10	351	0.01	0.09	18	0.06	0.24	26	0.00	0.00
Attractiveness (=1 if attractive or very attractive, 0 otherwise)	403	0.56	0.50	351	0.58	0.49	18	0.28	0.46	26	0.46	0.51
Willing to quit sex work (=1 if yes, 0 otherwise)	402	0.69	0.46	350	0.70	0.46	18	0.50	0.51	26	0.69	0.47
Number of clients in the past 7 days	403	9.77	7.66	351	9.99	7.49	18	5.94	4.14	26	11.35	10.88
Place to find clients												
Brothel	403	0.12	0.33	351	0.12	0.33	18	0.11	0.32	26	0.15	0.37
Street	403	0.30	0.46	351	0.31	0.46	18	0.39	0.50	26	0.12	0.33
Bar/Club/Online/Phone	403	0.09	0.29	351	0.09	0.28	18	0.17	0.38	26	0.00	0.00
Karaoke club	403	0.37	0.48	351	0.38	0.49	18	0.28	0.46	26	0.38	0.50
Massage parlor	403	0.11	0.32	351	0.10	0.30	18	0.06	0.24	26	0.35	0.49
Ever heard of HIV/AIDS? (=1 if yes, 0 otherwise)	403	0.98	0.15	351	0.99	0.12	18	1.00	0.00	26	0.88	0.33
Can people reduce their chance of getting HIV by using a condom every time they have sex?												
Yes	403	0.96	0.20	351	0.97	0.17	18	0.94	0.24	26	0.88	0.33
No	403	0.01	0.10	351	0.01	0.11	18	0.00	0.00	26	0.00	0.00
Do not know	403	0.03	0.17	351	0.02	0.14	18	0.06	0.24	26	0.12	0.33

Note: Authors' calculation.
Obs: number of observations
Std. Dev.: standard deviation

The answer to the risk game does not indicate that risk takers are necessarily sometimes or never users of condoms. The number of collected boxes for always users in the risk game was 43.6 on average, which is higher than that for sometimes and never users. This implies that risky sexual behavior is not directly or strongly related to risk preference in FSWs. Figure 1 shows the distribution of the number of collected boxes in the risk game. The distribution is close to normal. The age of sometimes and never users is slightly lower than that of always users. There does not seem to be a very clear pattern

between education level and condom use. Among the never users, half have never married and they have fewer children compared with always and sometimes users. The two main reasons stated for starting as an FSW were to help their family financially and because there were no other job opportunities. During the face-to-face interview, the participant's attractiveness was subjectively assessed (very attractive, attractive, neutral, not so attractive, not at all) by the enumerators. The proportion of attractive FSWs is higher among always users than sometimes and never users. Never users had more clients in the past seven days compared with always and sometimes users. Most of the participants had heard about HIV/AIDS and knew that people can reduce their chance of getting HIV by using a condom every time they have sex, but their proportion was slightly low among never users compared with always and sometimes users. Regardless of these differences, the overall rates (96%–98%) of previous knowledge about HIV/AIDS and the effectiveness of condoms in preventing the spread of HIV are impressive, and might have increased the proportion of always users.



3. Factors associated with risk attitude and condom use

3.1 Factors associated with risk attitude

In this subsection, we examine whether there are any (observable) factors associated with risk attitude by conducting a regression analysis. This exercise is important because careful attention must be paid in the subsequent analyses if there are any factors associated with risk attitude. The basic specification for the analysis is described as follows.

(1) $Risk\_Attitude_i = \beta X_i + \varepsilon_i$,

where $Risk\_Attitude_i$ is the risk attitude measure of FSW i, which is elicited by the risk game described above. Hence, $Risk\_Attitude_i$ takes a value between 1 and 100. X_i is a vector of variables related to FSW i, including age, educational attainment, marital status, number of children, reasons to start working as an FSW, the desire (or not) to quit working as an FSW, the number of clients during the past 7 days, places to find clients, whether an FSW has heard about HIV/AIDS, and whether an FSW knows that she can reduce her chance of getting HIV/AIDS by using a condom every time she has sex.

Columns (1) to (3) in Table 2 present the coefficients estimated using the ordinary least squares method. The values in column (1) include only the socio-economic characteristics of FSWs. Column (2) adds sex work-specific information to the values from column (1), and column (3) adds knowledge about HIV/AIDS and condom use to the values from column (2).

The results show that there are few (observable) variables associated with risk attitude. The number of children in column (2) is positive and marginally statistically significant at the 10% level. However, this significance disappears in columns (1) and (3). The only exception is attractiveness. Interestingly, more attractive FSWs tend to be more risk tolerant. This finding is statistically significant in all three columns.

Overall, the results suggest that risk attitude of FSWs is independent of their various observable characteristics, except for attractiveness.

Table 2: Factors associated with risk attitude

Dependent variable: The stated number in the risk game

VARIABLES	(1)	(2)	(3)
Age (years)	-0.138	-0.218	-0.208
	[0.154]	[0.160]	[0.161]
Education (base: no education)			
Primary level	-3.681	-4.133	-4.014
	[4.332]	[4.414]	[4.480]
Secondary level	-3.378	-3.762	-3.652
	[4.299]	[4.393]	[4.482]
Above secondary level	-4.403	-6.166	-5.635
	[5.046]	[5.064]	[5.150]
Marital status (base: never married)			
Married	1.279	1.785	2.183
	[2.652]	[2.819]	[2.776]
Widowed	0.960	0.920	0.872
	[3.987]	[4.144]	[4.166]
Divorced/Separated	-0.129	0.052	0.459
	[2.508]	[2.675]	[2.672]
Number of children	0.915	1.182*	1.138
	[0.694]	[0.706]	[0.711]
Reason to start working as a sex worker (base: to help family financially)			
Influenced by friends	0.586	-0.377	-0.439
	[3.698]	[3.847]	[3.673]
Good pay	3.893	3.780	4.144
	[3.991]	[3.989]	[4.028]
No other job opportunities	4.195	5.073	5.298
	[3.836]	[3.804]	[3.816]
Others	-0.898	0.042	0.520
	[6.775]	[6.022]	[6.100]
Attractiveness	4.009**	3.980**	3.586*
(=1 if attractive or very attractive, 0 otherwise)	[1.852]	[1.898]	[1.919]
Willing to quit sex work	1.916	1.916	1.847
(=1 if yes, 0 otherwise)	[1.928]	[1.943]	[1.956]
Number of clients in the past 7 days		-0.030	-0.019
		[0.113]	[0.113]
Place to find clients (base: brothel)			
Street		-4.081	-4.149
		[2.927]	[2.942]
Bar/Club/Online/Phone		4.243	4.474
		[3.966]	[3.977]
Karaoke club		-2.583	-2.622
		[2.760]	[2.740]
Massage parlor		0.524	0.660
		[3.575]	[3.586]
Ever heard of HIV/AIDS? (=1 if yes, 0 otherwis			-2.045
			[10.609]
People reduce their chance of getting HIV by using a condom every time they have sex? (base: yes)			
No			7.367
			[6.553]
Do not know			8.253
			[7.301]
Constant	45.285***	49.525***	50.723***
	[6.349]	[7.205]	[12.689]
Observations	401	401	401
R-squared	0.025	0.044	0.054

Note: The coefficients in column (1) include only the socio-economics characteristics of FSWs. Column (2) adds sex work-specific information to the coefficients from column (1), and column (3) adds knowledge about HIV/AIDS and condom use to the coefficients from column (2).

Robust standard errors are shown in brackets.

*** p < 0.01, ** p < 0.05, * p < 0.1

3.2 Factors associated with condom use

As mentioned above, 88.9% of the surveyed FSWs always used a condom in their four most recent transactions, whereas 11% either sometimes or never used a condom. We therefore created a binary variable *Condom_Use*$_i$ that takes 1 if FSW i always used a condom in their four most recent transactions, and 0 otherwise. Then we regressed this variable on various other variables related to individuals, including risk attitude. The basic specification for the analysis is described as follows.

(2) $Condom\_Use_i = \alpha \times Risk\_Attitude_i + \beta X_i + \varepsilon_i$,

where $Risk\_Attitude_i$ and X_i are the same as those used in the empirical specification (1) in Subsection 3.1. We are especially interested in the coefficient of $Risk\_Attitude_i$, which is α. If risk attitude is associated with condom use in FSWs, α should have statistical significance.

Columns (1) to (3) in Table 3 show the estimation results using ordinary least squares. $Risk\_Attitude_i$ is included in all three columns. Similar to the analyses in Subsection 3.1, we add different sets of individual characteristics in columns (1) to (3). Broadly speaking, we did not find (observable) characteristics associated with condom

use, except in two of the covariates. The first exception was attractiveness. More attractive FSWs are more likely to always use a condom. Another exception that remains statistically significant is lack of other job opportunities as the reasons for starting to work as an FSW (Column (3)). This reason seems to be negatively associated with condom use, which is statistically significant.

We found that $Risk\_Attitude_i$ is not at all statistically significant for any of the three specifications. The coefficient is positive, which is counterintuitive; greater risk tolerance is associated with always using a condom, though it is not statistically significant.

For the sake of comparison, we show the estimation results including the full set of covariates except $Risk\_Attitude_i$ in (4). This helps us determine whether the coefficients of other variables change by including $Risk\_Attitude_i$ or not. In a comparison of (3) and (4), the magnitudes of coefficients are very similar. The only meaningful change is that the coefficient of "no other job opportunities" loses its statistical significance in (4). This result has some implications for previous studies and for the analysis we conduct in the next section. That is, risk attitude may not be so conducive to understanding risky behavior regarding condom use in FSWs. Hence, the risk of omitted variable bias that could be induced by risk attitude may not be particularly

problematic. Despite this possibility, we explicitly included risk attitude as an explanatory variable in the following analyses of transaction prices. By so doing, we believe that the estimations could yield more reliable results. Furthermore, including risk attitude in the empirical specifications is itself a new contribution to this field of study.[7] Note that we do not mean there is no possibility of omitted variable bias once risk attitude is explicitly controlled in the empirical specification. There could be various other candidates for omitted variable biases. We claim only that we can control risk attitude, which is an unobservable variable that was not investigated in previous studies and may induce omitted variable bias.

[7] The only exception is Lépine and Treibich (2020). However, as we see in the following section, the result regarding risk attitude is contrastive.

Table 3: Condom use in FSWs

Dependent variable = 1 if always, = 0 if sometimes or never

VARIABLES	(1)	(2)	(3)	(4)
Stated number in the risk game	0.000	0.001	0.001	
	[0.001]	[0.001]	[0.001]	
Age (years)	0.002	0.003	0.003	0.003
	[0.003]	[0.003]	[0.003]	[0.003]
Education (base: no education)				
Primary level	-0.105*	-0.080	-0.064	-0.068
	[0.057]	[0.056]	[0.056]	[0.055]
Secondary level	-0.051	-0.036	-0.027	-0.030
	[0.051]	[0.051]	[0.052]	[0.051]
Above secondary level	-0.021	0.012	0.016	0.010
	[0.065]	[0.068]	[0.068]	[0.068]
Marital status (base: never married)				
Married	0.110**	0.091	0.074	0.076
	[0.053]	[0.055]	[0.054]	[0.054]
Widowed	0.131*	0.107	0.103	0.104
	[0.073]	[0.074]	[0.074]	[0.074]
Divorced/Separated	0.083	0.062	0.049	0.049
	[0.053]	[0.053]	[0.052]	[0.052]
Number of children	0.000	-0.005	-0.009	-0.008
	[0.016]	[0.017]	[0.017]	[0.017]
Reason to start working as a sex worker (base: to help family financially)				
Influenced by friends	-0.002	-0.002	0.010	0.010
	[0.067]	[0.067]	[0.062]	[0.062]
Good pay	0.049	0.050	0.040	0.043
	[0.059]	[0.059]	[0.059]	[0.059]
No other job opportunities	-0.109	-0.119	-0.128*	-0.123
	[0.077]	[0.075]	[0.076]	[0.076]
Others	-0.141	-0.131	-0.145	-0.145
	[0.224]	[0.233]	[0.234]	[0.236]
Attractiveness	0.096***	0.106***	0.115***	0.118***
(=1 if attractive or very attractive, 0 otherwise)	[0.037]	[0.037]	[0.036]	[0.036]
Willing to quit sex work	0.035	0.040	0.039	0.040
(=1 if yes, 0 otherwise)	[0.035]	[0.035]	[0.035]	[0.035]
Number of clients in the past 7 days		0.003	0.003	0.003
		[0.003]	[0.003]	[0.003]
Place to find clients (base: brothel)				
Street		0.073	0.093	0.089
		[0.058]	[0.059]	[0.058]
Bar/Club/Online/Phone		0.034	0.038	0.040
		[0.076]	[0.076]	[0.076]
Karaoke club		0.016	0.025	0.023
		[0.057]	[0.057]	[0.057]
Massage parlor		-0.095	-0.094	-0.093
		[0.081]	[0.083]	[0.083]
Ever heard of HIV/AIDS? (=1 if yes, 0 otherwise			0.211	0.207
			[0.371]	[0.367]
People reduce their chance of getting HIV by using a condom every time they have sex? (base: yes)				
No			0.055	0.061
			[0.053]	[0.055]
Do not know			-0.160	-0.154
			[0.321]	[0.320]
Constant	0.724***	0.642***	0.419	0.462
	[0.116]	[0.138]	[0.404]	[0.398]
Observations	393	393	393	393
R-squared	0.063	0.084	0.109	0.107

Robust standard errors are shown in brackets.

*** p < 0.01, ** p < 0.05, * p < 0.1

4. Association of risk attitude with price

4.1 Empirical setting

The ultimate purpose of engaging in commercial sex work is to obtain good earnings. In response to the question "What is your main reason for continuing to work as an FSW?", about 97% of the participants cited economic reasons (help their family financially, 89%; no other job opportunities, 8%). Hence, in this section, we explore price determination in the commercial sex market, with a special focus on the influence of risk attitude. The survey asked each FSW about their four most recent transactions with clients, including transaction prices. Hence, we estimate hedonic regressions, similar to those in Rao et al. (2003), Gertler et al. (2005), and Arunachalam and Shah (2013). These studies focused on the trade-off between condom use and transaction prices. That is, FSWs must decide whether to charge higher transaction prices in exchange for not using a condom (i.e., providing unsafe sex services). Condoms were the most widely used method for preventing STDs in our sample, and we obtained data on whether the participants used a condom or not in each of their four most recent transactions. Thus, we explicitly used the information on use (or non-use) of condoms in the empirical model discussed below. Furthermore, we also obtained data on whether the FSW, the client, or both suggested

whether or not to use a condom, and we incorporate this information as well.

Table 4 shows the descriptive statistics at the transaction level according to who suggested whether or not to use a condom. Surprisingly, and contrary to the findings of previous studies, the average price was higher when condoms were used, regardless of who suggested their use. Among cases in which a condom was not used, the price was highest when the client suggested not to use one, which is consistent with the trade-off for FSWs between higher prices and risky sexual services. In this case, the service provided is always vaginal sex. The age of clients varies, but the majority are in their 20s, 30s, and 40s. The proportion of regular clients is higher in the case of condom use than in the case of no condom use.

Table 4: Descriptive statistics by who suggested condom use/non-use

	Condom use sample									No condom use sample								
	FSW suggested			Client suggested			Both suggested			FSW suggested			Client suggested			Both suggested		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
ln(price)	734	9.56	0.94	401	9.44	1.03	315	9.90	0.99	57	8.58	0.57	31	9.34	1.30	36	8.74	1.24
Service provided																		
Vaginal sex (=1 if yes, 0 otherwise)	734	0.92	0.28	401	0.94	0.25	315	0.72	0.45	57	0.63	0.49	31	1.00	0.00	36	0.78	0.42
Dance (=1 if yes, 0 otherwise)	734	0.33	0.47	401	0.28	0.45	315	0.48	0.50	57	0.51	0.50	31	0.16	0.37	36	0.17	0.38
Strip (=1 if yes, 0 otherwise)	734	0.13	0.33	401	0.06	0.23	315	0.04	0.20	57	0.00	0.00	31	0.06	0.25	36	0.00	0.00
Chat (=1 if yes, 0 otherwise)	734	0.06	0.24	401	0.08	0.28	315	0.06	0.24	57	0.00	0.00	31	0.06	0.25	36	0.03	0.17
Massage (=1 if yes, 0 otherwise)	734	0.11	0.31	401	0.19	0.39	315	0.18	0.38	57	0.49	0.50	31	0.32	0.48	36	0.61	0.49
Client's age																		
younger than 20	734	0.02	0.13	401	0.03	0.18	315	0.02	0.14	57	0.07	0.26	31	0.03	0.18	36	0.03	0.17
20s	734	0.20	0.40	401	0.24	0.43	315	0.20	0.40	57	0.21	0.41	31	0.19	0.40	36	0.17	0.38
30s	734	0.34	0.47	401	0.32	0.47	315	0.38	0.49	57	0.39	0.49	31	0.32	0.48	36	0.42	0.50
40s	734	0.30	0.46	401	0.25	0.43	315	0.25	0.44	57	0.25	0.43	31	0.29	0.46	36	0.31	0.47
50s	734	0.12	0.32	401	0.14	0.35	315	0.14	0.34	57	0.07	0.26	31	0.16	0.37	36	0.08	0.28
60s	734	0.02	0.14	401	0.02	0.13	315	0.01	0.10	57	0.02	0.13	31	0.00	0.00	36	0.00	0.00
Regular client? (=1 if yes, 0 otherwise)	734	0.56	0.50	397	0.71	0.45	315	0.82	0.39	57	0.16	0.37	31	0.42	0.50	36	0.53	0.51

Note: Authors' calculation.

Next, we turn to the hedonic regression of price determination. The dependent variable is a logarithm of the transaction price of FSW i in the kth transaction ($k = 1, \ldots, 4$), which is denoted as $lnPrice_{ik}$. We take the logarithm of the transaction prices because the price distribution is skewed to the right.

Our main parameter of interest is the risk attitude of FSWs, which has been treated as an unobservable variable in previous studies. Accordingly, we estimate the following four empirical models. First, we estimate a straightforward transaction price model:

(3) $lnPrice_{ik} = \rho Condom_{ik} + \delta W_{ik} + \gamma Q_i + \mu_i + \varepsilon_{ik}$,

where $Condom_{ik}$ is a binary variable taking 1 if the FSW i uses a condom in transaction k and 0 otherwise. W_{ik} is a vector of transaction k-specific characteristics, such as the provided services (e.g., vaginal sex, dancing, stripping, chatting, massage), the client's age bracket (20s, …, 60s), and whether the client is a regular or not. Q_i is a vector of FSW i individual-specific characteristics, such as age, educational attainment, marital status, number of children, attractiveness, number of clients in the past 7 days,

and place to find clients. μ_i is an FSW-specific effect, either random or fixed, depending on the estimation methods.

The second empirical model includes the risk attitude of FSW i, $Risk\_Attitude_i$, from model (3) as follows:

(4) $lnPrice_{ik} = \rho Condom_{ik} + \theta Risk\_Attitude_i + \delta W_{ik} + \gamma Q_i + \mu_i + \varepsilon_{ik}$.

However, this model might differ from model (3) only when using a random effects model. This is because $Risk\_Attitude_i$ (and Q_i) are dropped when using a fixed effects model at the FSW level.

The third empirical model explicitly includes who actually suggested whether or not to use a condom in each transaction from model (3) as follows:

(5) $lnPrice_{ik} = \theta Risk\_Attitude_i + \sum_{j=1}^{5} \rho_j Who\_condom_{ikj} + \delta W_{ik} + \gamma Q_i + \mu_i + \varepsilon_{ik}$,

where Who_condom_{ikj} $(j = 1, \dots, 5)$ is a binary variable. There are five binary variables in total (and one additional binary variable, which is omitted as a base category). Who_condom_{ik} takes 1 if the use of a condom is suggested by FSW i and 0 otherwise

in transaction k. Similarly, Who_condom_{ik2} is a binary variable representing the suggestion of condom use by the client, and Who_condom_{ik} is a binary variable representing the suggestion of condom use by both FSW i and the client. Who_condom_{ik4} is a binary variable representing the client's request to not use a condom, and Who_condom_{ik5} is a binary variable representing the suggestion to not use a condom by both FSW i and the client. Hence, the base category is the case in which the suggestion to not use a condom is made by FSW i.

In the fourth empirical model, we interact the dummy variables for who suggested whether or not to use a condom with the risk attitude of FSWs. This allows us to know which type of FSWs, risk-averse or risk-tolerant, are more likely to get higher prices depending on who suggested whether or not to use a condom:

(6)

$$lnPrice_{ik} = \rho Condom_{ik} + \theta Risk\_Attitude_i + \sum_{j=1}^{5} \pi_j Who\_condom_{ikj} * Risk_{Attitude_i} + \gamma Q_i + \delta W_{ik} + \mu_i + \varepsilon_{ik}.$$

We estimate the abovementioned four models using both a random effects and fixed effects model. However, the fixed effects model exploits variations within each

FSW, causing dropping of various observations. In particular, only 18 FSWs at most in the sample used a condom between one and three times in their four most recent transactions. The rest were either always or never users. Therefore, the results obtained from the fixed effect models were apparently affected by the same issues resulting from the small sample size.

Table 5: Log price regressions

	(A)	(B)	(C)	(D)	(E)	(F)	(G)
VARIABLES	ln(price)	ln(price)	ln(price)	ln(price)	ln(price)	ln(price)	ln(price)
Estimation method	Random	Random	Random	Random	Fixed	Fixed	Fixed
Use condom	0.068	0.071		0.267	-0.228		-0.174
(=1 if yes, 0 otherwise)	[0.137]	[0.137]		[0.295]	[0.153]		[0.589]
Stated number in the risk game		-0.005**	-0.005**	-0.007			
		[0.002]	[0.002]	[0.007]			
Who suggest to use/not use condom? (base: FSW not to use)							
FSW to use (=1, 0 otherwise)			0.372***			-0.158	
			[0.125]			[0.133]	
Client to use (=1, 0 otherwise)			0.337**			-0.206	
			[0.136]			[0.235]	
Both FSW and client to use (=1, 0 otherwise)			0.464***			0.334**	
			[0.132]			[0.140]	
Client not to use (=1, 0 otherwise)			0.568***			0.001	
			[0.167]			[0.251]	
Both FSW and client not to use (=1, 0 otherwise)			0.354			0.417	
			[0.388]			[0.697]	
(FSW to use)*risk attitude				0.002			0.000
				[0.007]			[0.013]
(Client to use)*risk attitude				0.001			-0.000
				[0.007]			[0.016]
(Both FSW and client to use)*risk attitude				0.003			0.014
				[0.007]			[0.012]
(Client not to use)*risk attitude				0.015***			0.003
				[0.005]			[0.008]
(Both FSW and client not to use)*risk attitude				0.008			0.006
				[0.008]			[0.014]
Service provided							
Vaginal sex (=1 if yes, 0 otherwise)	0.130	0.129	0.099	0.093	1.017***	0.900***	0.907**
	[0.154]	[0.154]	[0.148]	[0.146]	[0.241]	[0.272]	[0.333]
Dance (=1 if yes, 0 otherwise)	0.051	0.047	0.051	0.054	0.376*	0.063	0.071
	[0.126]	[0.126]	[0.128]	[0.129]	[0.204]	[0.218]	[0.225]
Strip (=1 if yes, 0 otherwise)	0.180	0.167	0.168	0.168			
	[0.110]	[0.111]	[0.111]	[0.111]			
Chat (=1 if yes, 0 otherwise)	0.170	0.180	0.175	0.172	0.026	-0.055	-0.017
	[0.161]	[0.162]	[0.164]	[0.164]	[0.116]	[0.203]	[0.206]
Massage (=1 if yes, 0 otherwise)	-0.004	0.000	0.011	-0.003	-0.097	-0.424	-0.122
	[0.086]	[0.087]	[0.088]	[0.088]	[0.333]	[0.660]	[0.716]
Client's age (base: younger than 20)							
20s	0.143	0.141	0.133	0.135	-0.124	-0.242*	-0.223*
	[0.097]	[0.097]	[0.098]	[0.098]	[0.114]	[0.115]	[0.120]
30s	0.151	0.148	0.134	0.137	0.122	-0.098	-0.046
	[0.098]	[0.098]	[0.099]	[0.099]	[0.219]	[0.192]	[0.234]
40s	0.162	0.160	0.148	0.148	0.310	0.192	0.205
	[0.102]	[0.102]	[0.102]	[0.102]	[0.285]	[0.283]	[0.352]
50s	0.144	0.143	0.136	0.137	0.267	-0.035	-0.014
	[0.103]	[0.104]	[0.104]	[0.104]	[0.271]	[0.223]	[0.268]
60s	0.376**	0.374**	0.374**	0.373**	0.633***	0.430***	0.483**
	[0.156]	[0.156]	[0.157]	[0.157]	[0.201]	[0.141]	[0.189]
Regular client? (=1 if yes, 0 otherwise)	0.286***	0.286***	0.269***	0.272***	0.096	0.197	0.165
	[0.059]	[0.059]	[0.059]	[0.059]	[0.339]	[0.251]	[0.276]

Clustered standard errors at the FSW level are shown in brackets.
*** p < 0.01, ** p < 0.05, * p < 0.1

Table 5: Log price regressions (continue)

VARIABLES	(A) ln(price)	(B) ln(price)	(C) ln(price)	(D) ln(price)	(E) ln(price)	(F) ln(price)	(G) ln(price)
Estimation method	Random	Random	Random	Random	Fixed	Fixed	Fixed
Age (years)	-0.003	-0.004	-0.004	-0.004			
	[0.008]	[0.008]	[0.007]	[0.008]			
Education (base: no education)							
Primary level	0.008	-0.010	-0.061	-0.065			
	[0.126]	[0.121]	[0.112]	[0.113]			
Secondary level	0.279**	0.266**	0.210**	0.210**			
	[0.120]	[0.115]	[0.105]	[0.105]			
Above secondary level	-0.110	-0.141	-0.212	-0.212			
	[0.174]	[0.176]	[0.169]	[0.168]			
Marital status (base: never married)							
Married	0.098	0.109	0.089	0.088			
	[0.138]	[0.136]	[0.134]	[0.136]			
Widowed	0.106	0.110	0.050	0.042			
	[0.205]	[0.201]	[0.202]	[0.206]			
Divorced/Separated	-0.051	-0.048	-0.073	-0.070			
	[0.147]	[0.146]	[0.145]	[0.145]			
Number of children	0.049	0.054	0.058	0.059			
	[0.037]	[0.037]	[0.036]	[0.037]			
Attractiveness	0.121	0.142	0.130	0.132			
(=1 if attractive or very attractive, 0 otherwise)	[0.096]	[0.095]	[0.095]	[0.096]			
Number of clients in the past 7 days	0.000	0.000	0.000	0.000			
	[0.005]	[0.005]	[0.005]	[0.005]			
Place to find clients (base: brothel)							
Street	-0.134	-0.151	-0.164	-0.175			
	[0.161]	[0.160]	[0.157]	[0.158]			
Bar/Club/Online/Phone	0.870***	0.883***	0.921***	0.914***			
	[0.199]	[0.200]	[0.196]	[0.197]			
Karaoke club	0.097	0.088	0.069	0.065			
	[0.193]	[0.193]	[0.193]	[0.195]			
Massage parlor	-0.370*	-0.369*	-0.387**	-0.375**			
	[0.193]	[0.191]	[0.189]	[0.191]			
Ever heard of HIV/AIDS? (=1 if yes, 0 otherwise)	8.743***	9.005***	8.841***	8.960***	8.730***	8.945***	8.874***
	[0.367]	[0.398]	[0.384]	[0.472]	[0.151]	[0.235]	[0.265]
Observations	1,572	1,572	1,564	1,564	72	68	68
R-squared					0.337	0.413	0.400
Number of FSWs	393	393	391	391	18	17	17

Clustered standard errors at the FSW level are shown in brackets.
*** p < 0.01, ** p < 0.05, * p < 0.1

4.2 Empirical results

Table 5 presents the results of both the random effects (Columns (A)-(D)) and fixed effects (Column (E) –(G)) models. Due to the small sample for the fixed effect models (≤18 FSWs), we rely mainly on the findings from the random effects models and only refer to the results from the fixed effect models as additional information.

4.2.1 Relative independence of risk attitude from other covariates and condom use

The results of the random effects model are reported with and without the risk attitude variable in Columns (A) and (B), respectively. The sign, magnitude, and statistical significance of each variable are very similar between (A) and (B). This implies that risk attitude is relatively independent of the other variables in the price determination regression. This is an important finding because risk attitude, which was treated as an unobservable variable in previous studies, may not induce a serious omitted variable bias in the price regressions. If this is indeed the case, the results obtained by the random effects model may be reliable compared with those obtained by the fixed effects model. At the same time, this is consistent with the results of the analyses in the previous section. However, note again that we cannot rule out the possibility of omitted variable bias induced by other unobservable variables. We claim only that we can control risk attitude, which is an important unobservable variable that previous studies did not investigate.

In particular, the coefficient of condom use is positive in both columns (A) and (B), which is different from the results in previous studies, but is not statistically significant. Hence, in the context of the commercial sex market in Yangon, prices are not very sensitive to condom use. This must be further examined within the variations of each FSW (i.e., fixed effect models). However, as mentioned above, at most 18 FSWs in the

sample used condoms between one and three times in their four most recent transactions. Looking at column (E) (the results from the fixed effects model), the coefficient of condom use is negative, which is consistent with previous studies, but is not statistically significant. Thus, we do not have clear evidence that FSWs are willing to risk engaging in unsafe sex for higher prices. However, we have to note that this insignificant result may be due to the small sample size.

4.2.2 Direct effect of risk attitude on transaction prices

Unlike in previous studies, we were able use the risk attitude measure to investigate the direct influence of risk attitude on price. Columns (B) and (C) show that the coefficient of risk attitude is negative and statistically significant at the 5% level. This shows that risk-tolerant FSWs charge less for transactions. To our knowledge, this is the first study to demonstrate a direct negative relationship between risk attitude and transaction prices. In addition, this finding is contrary to Lépine and Treibich (2020), which found that sex workers with higher levels of risk aversion earn less money per sex act in Senegal.

One plausible explanation for this negative relationship between price and risk attitude may lie in the fact that risk attitude creates a barrier to entry in this particular

market. In other words, the more risk-averse an FSW is, the less willing she is to enter this market. As other studies have pointed out, this job is risky in many ways. For example, upon starting working as a commercial sex worker, women experience increased discrimination (Edlund and Korn 2002, UNAIDS 2017). In addition, there are risks associated with clients, such as STDs（Gertler and Shah 2011) and sexual assault (Deering et al. 2014). Therefore, we assume that a woman starts working as an FSW only if she thinks that the job adequately compensates her for the risks. Put another way, the more risk-tolerant she is, the less wary she is of the risk of transactional sex, which decreases the price she is willing to accept. In contrast, risk-averse individuals are more reluctant to enter this market, and so they expect to be compensated for the risk by a larger amount of money, which requires clients to pay more, and thus, increases the price. In this regard, her perception of the risk can be directly linked to the price of sexual services she provides. In summary, individuals who are willing to accept the risks involved with commercial sex are likely to charge less for the services they provide because they are less cautious about the risks. In contrast, risk-averse individuals have a higher barrier to entry in this market, and are thus more likely to charge more for their sexual services because they are trying to earn enough money to compensate for the risks. This is why there is a negative relationship between the price of transactional sex and the risk attitude of sex workers

who provide the service.

4.2.3 Suggestion of condom use or non-use

In column (C), we include dummy variables for who suggests whether or not to use a condom. The base category is one in which the FSW suggests not using a condom. The transaction prices are higher than the base category in all cases except the one in which both the FSW and the client agree not to use a condom. One new finding is that the transaction prices in all three cases of using a condom (i.e., when suggested by the FSW, the client, or both) are higher compared with the base category, which was not very clear from previous studies[8].

In column (D), we interact the dummy variables for who suggests whether or not to use a condom with the risk attitude of the FSW. These might be interpreted as indirect influences of risk attitude on transaction prices via the preference of condom use or non-use. The base category is the interaction between an FSW suggesting not to use a condom and her risk attitude. Interestingly, transaction prices are higher in the category where the dummy for the client suggesting not to use a condom is multiplied by the risk

[8] The only exception is Gertler et al. (2005), which investigated transaction prices based on who brought up whether or not to use a condom. However, their analysis does not include the "both" category that our study analyzed.

attitude of the FSW, compared with the base category. This implies that an FSW who is risk tolerant receives a higher price when the client suggests not using a condom.

Although some associations between condom use and risk attitude are revealed in the random effects models, this is not the case when we use fixed effects models (Column (E), (F), and (G)). However, given the relative independence of the risk attitude variable from other observable factors, the results obtained from the random effects models are not entirely unreliable.

4.2.4 Other factors associated with transaction prices

While the main interest of our analysis is the relationship between risk attitude in FSWs and transaction prices, it is also insightful to go over the coefficients of other factors. Yamada et al. (2020) explored in detail other factors associated with transaction prices. First, clients who appear to be over the age of 60 years pay higher prices compared with younger clients. Regular clients also seem to pay as much as 30% more compared with other clients. Yamada et al. (2020) considered this premium for regular clients to be the result of asymmetric information in the commercial sex market.

Turning to FSW-specific characteristics, age was not associated with transaction prices, whereas education levels had a non-monotone pattern. FSWs with a

secondary level of education earned about 20%–25% more than FSWs in other educational groups. Attractiveness, as evaluated by the enumerators, had a positive association with transaction prices, but was not statistically significant.[9] Finally, the places where FSWs found clients seemed to matter.[10]

5. Conclusion

Investigating the commercial sex market in general and risky behaviors in FSWs in particular is challenging due to the sensitivity of the topic and the near anonymity of sex workers. This is especially true in Myanmar, not only because commercial sex work is illegal but also because there is a high level of stigma and discrimination due to rooted cultural norms (Aung 2019). In addition, the commercial sex markets of low-income countries are severely understudied. However, these aspects make this study unique and meaningful. As discussed in the Introduction section, Myanmar's GDP per capita in 2018 was lower than that of India, so this study contributes to the literature by studying a poorer non-sub-Saharan African country. In addition, this is one of the first studies to elicit risk attitude in FSWs by using a risk game involving real money. Without understanding the

[9] However, Yamada (2020) disaggregated the attractiveness variable into five categories and found a strong positive association between attractiveness and transaction price, consistent with Islam and Smyth (2012).

[10] Yamada et al. (2020) explores in detail the price differentials according to where FSWs found their clients.

risk attitude of FSWs, we believe that the results of studies in this field are inherently difficult to interpret.

We found that the elicited risk attitude measure for FSWs is relatively independent of other observable factors. It does not necessarily explain their decision about whether or not to use a condom in commercial sex transactions. However, we did find a direct association between risk attitude and transaction prices, a plausible reason for which was discussed extensively in the text. These are all new additions to the literature, derived from the risk attitude measure obtained using the risk game.

In a future study, it will be necessary to externally validate the findings of the present study. In particular, our surprising results that the risk attitude of an FSW is relatively independent of their risky behavior and other observable characteristics must be further investigated in different settings, including various times and/or places (e.g., regions, countries). Nevertheless, this study is a crucial step toward further understanding commercial sex markets.

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