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A 'She-session'? The Impact of COVID-19 on the Labour Market in Thailand

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Abstract: *This paper studies the impact of COVID-19 on different demographic groups in the Thai labour market using the Labour Force Survey in 2018 and 2019. We construct a new set of COVID-19 impact indicators capturing both the degree of risk in industries and degree of occupational flexibility in the Thai context. Our results show that the impact of the COVID-19 pandemic is highly unequal across demographic groups and it may further worsen the pre-existing inequality in the Thai labour market as a result of the composition of industrial sectors and occupations. The results suggest that education attainments and income levels play a significant role in protecting individuals from the current crisis, indicating the important contribution of human capital. In addition, marriage affects men and women differently in the COVID-19 crisis, with married women suffering more. Finally, our study highlights the need for government supports that target vulnerable groups, including workers with low education, informal workers, private employees, older women, and the young, who are more likely to be affected by COVID-19.*

Keywords: COVID-19, labour market, demographics, Thailand

JEL Classification: J21; J24; J16; J12

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1. Introduction

The coronavirus disease (COVID-19) pandemic has caused an unprecedented worldwide economic recession. With lockdowns and social distancing, labour markets have been hit severely and many people are suffering from the dramatic loss of income and jobs. Several recent studies have argued that the COVID-19 pandemic is highly unequal across countries and depends on the characteristics of workers and occupations (Alon et al., 2020a; Adoms-Prassl et al., 2020). Concerns that the crisis will worsen existing inequalities, with women being more affected by the pandemic than men due to their jobs, has arisen (World Bank, 2020a).

In Thailand, although the infection rate of COVID-19 is relatively low, its impact has been dramatic due to the country's openness to trade and exposure as a global tourism hub (World Bank, 2020b). Meanwhile, this impact is unprecedented and unequal across demographic, industrial and occupational groups. On the one hand, people working in particular industries have been hit harder in Thailand, especially tourism and manufacturing sectors that depend on intermediate inputs from abroad, with other industries having had relatively less impact, for example, financial and insurance, manufacturing of pharmaceutical and chemical products, and machinery (ILO, 2020a). On the other hand, government lockdown measures expose workers differently according to their occupations, in particular whether they are able to work from home, or adapt to the 'New Normal', and their dependence on Information and Communication Technology (ICT) and machinery.

This study analyses COVID-19's impact on different demographic groups in the Thai labour market using the Labour Force Survey in 2018 and 2019, specific to human capital and gender inequality. We construct a new set of indicators by using the International Labour Organization (ILO, 2020a) assessment of industries on COVID-19 disruption risk for Thailand and exploiting COVID-19-related occupational requirements from the Occupational Information Network (O*NET)

to capture both the degree of risk in industries and degree of occupational flexibility within the Thai context.

Several key findings can be drawn from our study. First, there are large differences in the impact of COVID-19 across different industrial sectors and occupations. Workers in high-risk sectors with low probability of adjustment to social distancing are likely to face significant negative labour demand shock. Second, the impact of COVID-19 is not the same across demographic groups. Although women are not worse off than men, COVID-19 potentially exacerbates pre-existing inequality in the Thai labour market. We find that workers with low education, those in informal sectors, private employees and the young are more likely to be negatively affected by the crisis, which require the government to pay more attention due to their vulnerability. On the gender perspective, our results suggest that marriage plays a different role for men and women in the COVID-19 crisis, protecting men but hurting women. Moreover, women in informal sectors and those over 60 years old are more vulnerable than men. Consistent with World Bank (2021) findings on Thailand's labour market, workers' hours have dropped sharply during the pandemic, where the decrease is larger for women than men (7.2% vs. 5.7%). Meanwhile, the unemployment rate is particularly high for young people, and those with low skills and less education have experienced decreased working hours (World Bank 2021).

Third, the pandemic recession displays some irregularities compared to previous economic downturns in Thailand, specifically the 1997 Asian financial crisis and the 2008 global financial crisis, such as not only causing a large impact on workers in the affected sectors, but also having an effect on workers relating to their work flexibility.

Our study contributes to the literature by evaluating the impact of COVID-19 on the labour market considering both the predicted economic outcome of industries and the work flexibility. Our industry-occupation pairing can provide additional insights into risk exposure to COVID-19, rather than the industrial or job-related characteristic alone. In addition, our analysis has shed light on the vulnerable groups that are affected severely by the pandemic and help to adjust and develop government policies for COVID-19 recovery objectives.

The paper is organised as follows: Section 2 provides insights into the recent disruption in Thailand. Section 3 describes the data and methodology. Section 4 presents the impact of COVID-19 and gender difference in the labour market, while section 5 analyses the impact of COVID-19 by individual characteristics. Section 6 compares regular crises to COVID-19 pandemic and section 7 discusses relevant policy implications. Section 8 concludes.

2. Recent disruption in Thailand

In responding to COVID-19, Thailand has implemented social distancing restrictions and travelling bans. While Thailand has achieved relative success in flattening the infection curve, the economy has been severely impacted. The National Economic and Social Development Council (NESDC) has reported 1.8% contraction of the Thai economy in the first quarter of 2020, which is expected to worsen later this year. The World Bank (2020c) has projected 8.3% to 10.4% contraction of Thai economy, which is amongst the highest declines in the region. According to the World Bank (2020c), Thailand's exposure to trade and remittance, its dependence on service exports and the risk of travel disruption is relatively high compared to other East Asian countries.

Industrial sectors have experienced differing impacts from COVID-19, where, according to NESDC (2020), in the first quarter of 2020, accommodation and food service, manufacturing, agriculture, transportation and storage and construction all declined, while wholesale and retail trade, electricity and gas, ICT and financial and insurance expanded. The unemployment rate remains low at 1% (NESDC, 2020). Consistent with previous records, Thailand had the ninth-lowest unemployment rate (around 1%) of 233 countries (World Bank, 2018). Although Thailand underwent significant economic growth in recent decades, the low unemployment rate has implied several structural problems in the labour market, including a large proportion of informal employment and underemployment, skill-mismatch employment, and those not seeking jobs (Bank of Thailand, 2019). During the pandemic, those suffering most experienced a significant reduction in economic output, with workers in those industrial sectors having decreased working hours and wages, or becoming unemployed. Over half of all Thai workers are in the informal sector, which are amongst the most vulnerable groups (ILO 2020a).

According to the World Bank (2020a), globally, female-dominated occupations in retail, travel, leisure and hospitality have been hit hard in the pandemic, while male-dominated occupations in manufacturing and construction have also been affected badly. In Thailand, women are affected more than men, as a higher share of women work in high-impact COVID-19 sectors, especially wholesale and retail trade, accommodation and food service activities (ILO, 2020a). However, Thai women, on average, have more flexible occupations than men, but endure conditions of closer physical proximity (Lekfuangfu et al., 2020).

In May 2020, Thailand gradually lifted some measures of lockdown (Corona Virus Epidemic Management Center, 2019), which may decrease the impact of COVID-19 on high physical proximity jobs; nonetheless, the upcoming future remains uncertain. The government reopened all businesses and activities in July

2020 as the infection rate decreased and remained in single digits. However, in December 2020, the infection cases rose sharply, partly because of migrant workers and Thais returning from other countries. As a result, mild lockdown measures, including closure of high-risk places, restrictions on mobility and bans on mass gatherings were reimposed (World Bank, 2021).

3. Data and Methodology

This study, using the third quarter of the Labour Force Survey of Thailand in 2018 and 2019 conducted by National Statistical Office, analysed the impact of COVID-19 via a sample of 235,958 observations (121,226 in 2018 and 114,732 in 2019) restricted to workers age over 15. The subgroup analysis restricted the sample to different age groups. The composition of education (in Appendix Table 1A) by gender shows that a higher share of women obtains basic and higher education than men (27.50% to 24.86%; 19.08% to 11.91%), and a higher share of men with primary, secondary and high school education. Overall, Thai women have higher average years of schooling than men (8.847 to 8.546 years).

We use the normalised factors and ordinal ranking of industry-occupation pairs by merging the information on industrial risk and occupational flexibility to assess COVID-19's impact adjusted to the Thai context. The occupational flexibility index is based on COVID-19-related job task requirements from O*NET using factor analysis (Gorsuch, 1983; Hamilton, 2013), considering occupational characteristics related to adaption of work from home due to social distancing (Mongey et al., 2020). Dingel and Neiman (2020) evaluated the impact of social distancing on US jobs and found that 37% can be performed entirely at home. They applied the measure to 85 other countries by mapping the Standard Occupational Classification based on O*NET to the International Standard Classification of Occupations, and suggested that lower-income economies have a lower share of

jobs that can be performed at home, with Thailand at around 17%, compared to Myanmar at around 10% and Lao PDR at 22%.

Using these matchings, we adapt the approach to assess the occupational flexibility in Thailand and add additional survey questions to account for the impact. The occupational flexibility contains information from O*NET database on the Work Context Questionnaire and Generalised Work Activities Questionnaire. The full selected variables for factor analysis are presented in Appendix Table 2A. The two main factors capture occupational flexibility relating to the frequency of ICT usage, and machinery dependence, such as operating devices, repairing mechanical equipment and inspecting equipment (Lekfuangfu et al., 2020). The factors are standardised to a 0–1 scale and the analysis is based on an oblique rotation method allowing factors to correlate (Darton, 1980; Gorsuch, 1988). The correlation of factors and selected variables from the O*NET database is represented by the factor loading.

In addition, workers in occupations that may have high physical proximity, such as teachers and lecturers, or those in public sectors or medical fields, should be excluded as their exposure has much less impact (Hicks et al., 2020). As the occupational task may be unrelated to the industrial risk exposure, the occupational flexibility alone cannot fully capture the impact of COVID-19. For example, reservation agents for a travel company who have low direct physical proximity, high ICT usage and low machinery dependence are severely affected by COVID-19 as the travel industry suffers from the crisis. Therefore, we incorporate industries' COVID-19 risk degrees, which are generated from the assessment of Thai employment by the International Labour Organization using expected impact to economic output with 2-digit International Standard Industrial Classification codes (ILO, 2020a; 2020b).

Although the occupational context from O*NET can evaluate the amount of social distancing, mapping the physical proximity from the US to Thailand to access the impact of COVID-19 requires some assumptions, as communication, working conditions and related equipment are quite different between the two. Considering the problems, following Autor et al. (2003) and Rendall (2013), we use the normalised factors under the assumption that the aggregated industry-occupation pair ranking matches with Thailand on the ordinal scale.

4. The impact of COVID-19 and gender difference in labour market

Table 1 shows the aggregated indicators to measure the impact of COVID-19 based on both industries and occupational flexibility on 0–1 scale.[1] The highest impact on an industry-occupation pair from COVID-19 is plant and machine operators in high-risk industries, including retail trade, water transport, air transport and warehousing, and support activities for transportation, accommodation, travel agency and related activities, and sports and recreation activities. Professionals in legal and accounting activities, architectural and engineering activities, crop and animal production, printing and reproduction of recorder media, education, residential care activities, etc., are affected by the COVID-19 at the lowest degree.

[1] The table presents the impact by broad one-digit occupational groups and three-level risk assessment for industrial sectors.

Table 1. The Indicators of # of COVID-19 at Occupational and Industrial Level

Occupation groups	Risk assessment of industrial sectors		
	High	Mid	Low
Manager & legislators	0.459	0.709	0.959
Professionals	0.500	0.750	1.000
Technicians	0.344	0.594	0.844
Clerks	0.389	0.639	0.889
Service workers	0.244	0.494	0.744
Agriculture	0.043	0.293	0.543
Craft worker	0.070	0.320	0.570
Plant & Machine	0.000	0.250	0.500
Unskilled	0.061	0.311	0.561

Note: The risk assessment of industrial sectors is at 2–digit ISIC level (ILO 2020). The low risk includes 01–09, 12, 14, 17, 18, 33–38, 42, 49, 53, 58, 61–63, 66, 69–74, 80–88, 95, 96, 99. The middle risk includes 10, 11, 13, 15, 16, 19–32, 41, 43–46, 56, 59, 60, 64, 65, 68, 75–78, 90–92, 94, 97. The high risk includes 47, 50–52, 55, 79, 93.
Source: Authors' calculations.

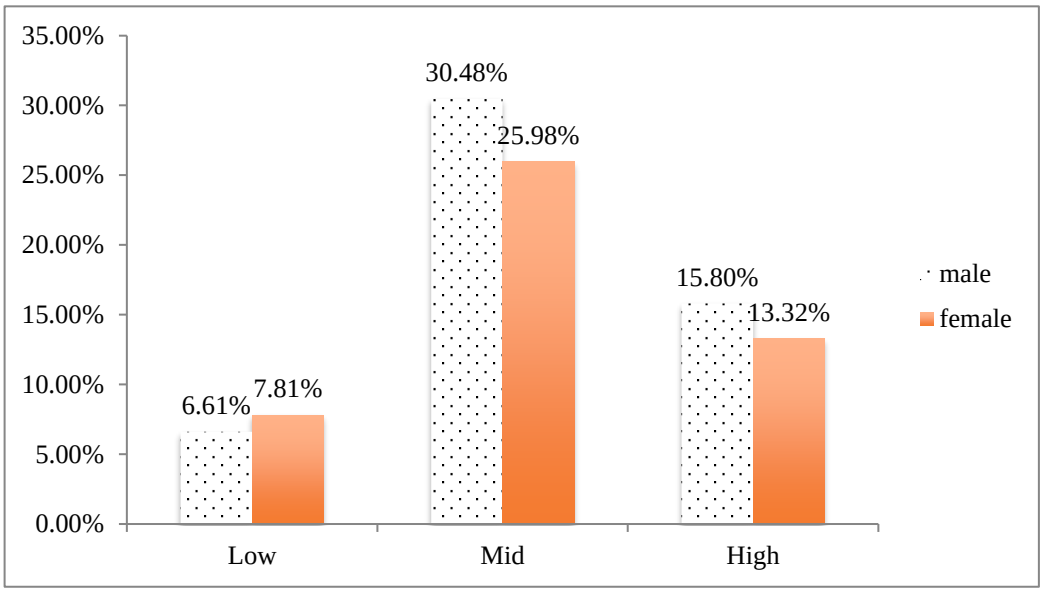
In Table 2, we assign the ordinal sorting impact indicators of industry-occupation pairs of COVID-19 to degrees by tertile, including high impact, middle impact, and low impact and show the share of employment and share of women in each industry-occupation pair. The COVID-19 impact index ranks from high impact to low impact. The highest share of employment subject to high impact is service workers in high-risk industries (9.98%), where women account for 62.4%. The largest share of employment amongst our sample is agriculture workers in low-risk industries (35.14%), where women account for 42.79%. Figure 1 shows the share of impact by gender in each of the three levels. Overall, the labour market consists of 52.89% men and 47.11% women, where 6.61% (7.81%) of women (men) experiencing low impact, 25.98% (30.48%) experiencing middle impact and 13.32% (15.8%) experiencing high impact.

Table 2. Impact Ordinal Sorting and Share of Employment by Industry-Occupation Pairs

Impact level	Industry risk level	Occupation groups	COVID-19 impact (high to low)	Share of employment	Share of women
	High	Plant & Machine	0.000	0.370%	5.808%
	High	Agriculture	0.043	0.107%	29.730%
	High	Unskilled	0.061	1.376%	55.472%
	High	Craft worker	0.070	0.348%	29.469%
High	High	Service workers	0.244	9.978%	62.404%
	Mid	Plant & Machine	0.250	3.775%	35.978%
	Mid	Agriculture	0.293	0.150%	20.833%
	Mid	Unskilled	0.311	4.461%	50.360%
	Mid	Craft worker	0.320	8.563%	29.429%
	High	Technicians	0.344	0.325%	58.133%
	High	Clerks	0.389	0.465%	67.910%
	High	Manager & legislators	0.459	0.449%	50.095%
	Mid	Service workers	0.494	8.348%	63.724%
	Low	Plant & Machine	0.500	0.118%	23.122%
Mid	High	Professionals	0.500	2.908%	23.083%
	Low	Agriculture	0.543	35.136%	42.792%
	Low	Unskilled	0.561	4.597%	44.173%
	Low	Craft worker	0.570	1.566%	30.738%
	Mid	Technicians	0.594	1.346%	53.759%
	Mid	Clerks	0.639	1.193%	73.852%
	Mid	Manager & legislators	0.709	1.341%	31.207%
	Low	Service workers	0.744	2.732%	47.573%
	Mid	Professionals	0.750	0.659%	45.007%
Low	Low	Technicians	0.844	1.844%	52.100%
	Low	Clerks	0.889	1.891%	71.133%
	Low	Manager & legislators	0.959	1.441%	30.178%
	Low	Professionals	1.000	4.510%	69.376%

Source: Authors' calculations.

Figure 1. Share of Impact Levels by Gender



Source: Authors' calculations.

To further assess the gender difference in the labour market, Table 3 presents the ordinal sorting impact and the respective average wage and working hours for males and females. Generally, males' wages across industry-occupation pairs are higher than females' wages, with females having a higher wage in only six out of 27 pairs. Amongst low-impact pairs, only female managers and legislators have a slightly higher wage than their male counterparts (–485.09), while in middle-impact pairs, female clerks and professionals earn more than male ones (–1,671.04; –1,216.90). Regarding working hours, overall, there are not many differences between men and women. Despite women's higher education attainments, on average, men's wages still outperform women's.

Table 3. Impact Ordinal Sorting, Wage, and Working Hours by Gender

Impact level	COVID-19 impact (high to low)	Weekly wage			Working hours		
		Male	Female	Diff.	Male	Female	Diff.
	0.000	4,240.94	2,563.35	1,677.60	47.34	47.56	(0.22)
	0.043	2,101.74	2,046.82	54.92	43.77	38.76	5.01
	0.061	3,016.93	3,134.89	(117.96)	46.12	45.13	0.99
	0.070	3,737.95	2,098.98	1,638.98	47.42	44.50	2.92
High	0.244	3,729.37	2,942.02	787.34	49.47	49.93	(0.46)
	0.250	3,714.91	2,882.42	832.49	49.78	51.94	(2.15)
	0.293	2,249.44	1,828.49	420.95	45.68	40.73	4.95
	0.311	1,921.99	2,422.71	(500.71)	45.27	45.33	(0.06)
	0.320	2,734.15	2,203.90	530.25	46.28	44.61	1.67
	0.344	7,720.71	4,542.40	3,178.31	45.52	47.05	(1.53)
	0.389	4,433.41	4,001.75	431.67	47.67	47.14	0.53
	0.459	10,607.26	7,952.88	2,654.39	48.67	48.86	(0.19)
	0.494	2,708.59	2,747.52	(38.93)	48.11	46.57	1.55
	0.500	3,680.80	1,870.61	1810.19	47.72	47.11	0.61
Mid	0.500	5,378.77	7,049.81	(1,671.04)	40.35	36.10	4.25
	0.543	2,069.33	1,701.99	367.33	38.23	36.10	2.13
	0.561	2,294.48	1,998.27	296.21	40.35	41.53	(1.18)
	0.570	3,943.70	2,022.30	1,921.40	44.53	44.50	0.03
	0.594	6,433.08	5,638.00	795.08	46.32	45.59	0.73
	0.639	3,742.97	4,959.87	(1,216.90)	46.70	45.96	0.73
	0.709	10,942.08	10,305.11	636.98	46.37	45.40	0.97
	0.744	5,227.33	3,272.71	1,954.61	44.28	44.91	(0.64)
	0.750	9,697.42	7,335.28	2,362.14	42.74	43.79	(1.06)
Low	0.844	6,696.88	5,080.43	1,616.45	40.32	41.10	(0.79)
	0.889	6,268.79	4,804.99	1,463.79	40.11	38.77	1.34
	0.959	5,827.67	6,312.76	(485.09)	40.71	39.78	0.93
	1.000	8,492.41	7,344.44	1,147.97	38.17	38.31	(0.14)

Source: Authors' calculations.

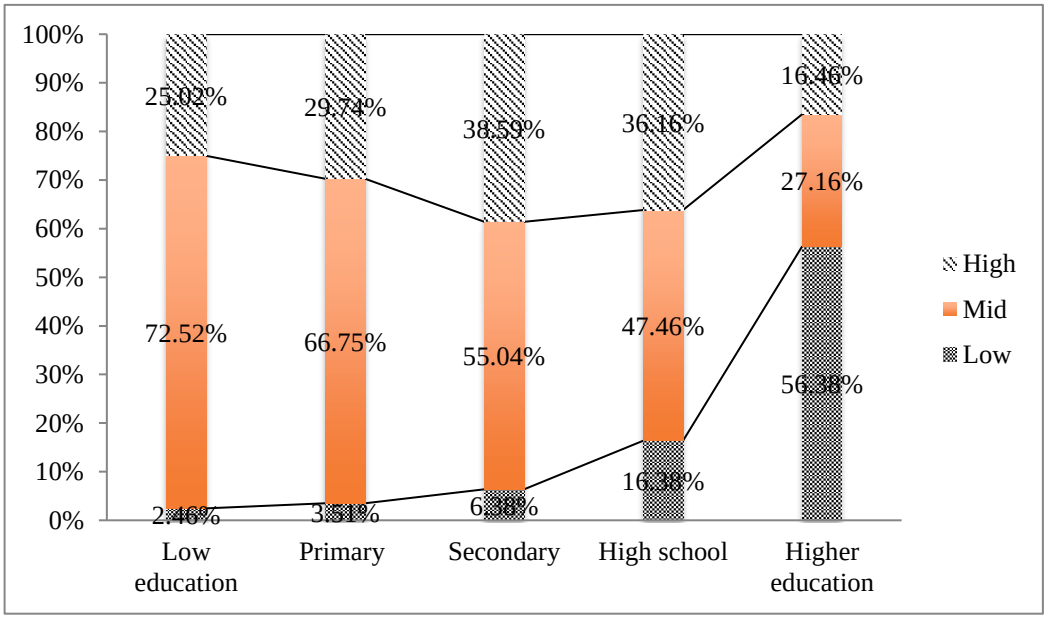
5. The impact of COVID-19 by individual characteristics

Next, we disaggregate the sample by education level, marital status, work status, income levels, residence areas, regions and age to show how the impact of COVID-19 pandemic differs across individuals.

5.1. The impact of COVID-19 by educational levels

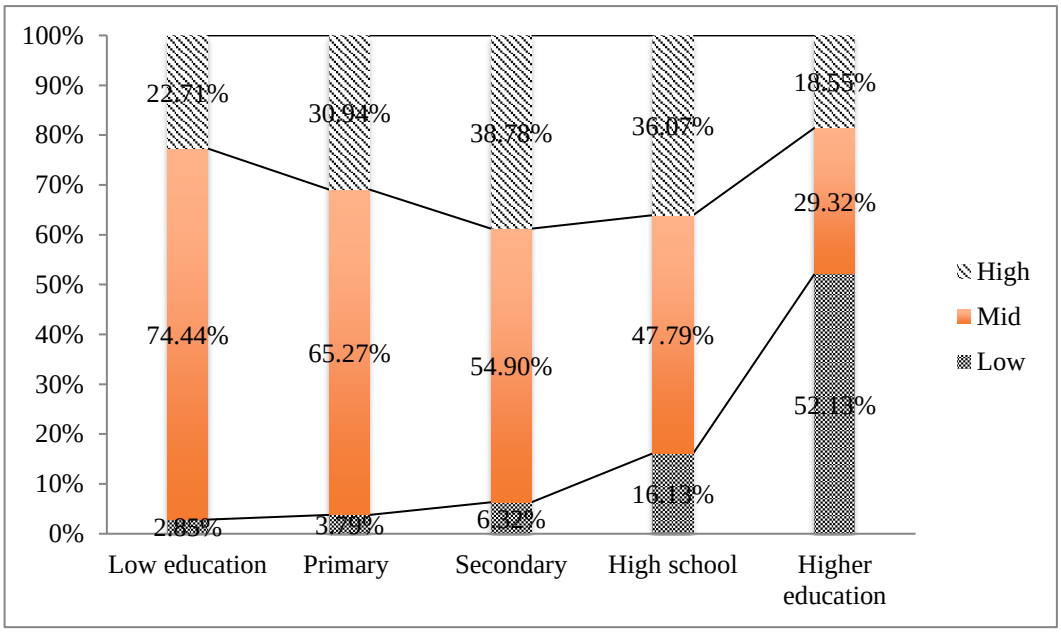
Figure 2 shows the share of workers in each impact degree by education levels. The share of workers in low impact increases with higher education. There are only 2.46% of workers with low education in low impact, while it increases to 56.38% for workers with higher education. The share of middle impact decreases when education increases, from 72.52% with low education to 27.16% with higher education. The share of high impact does not show a monotonic pattern, with secondary level having the highest share of high impact (38.59%).

Figure 2. Share of Impact Levels by Education



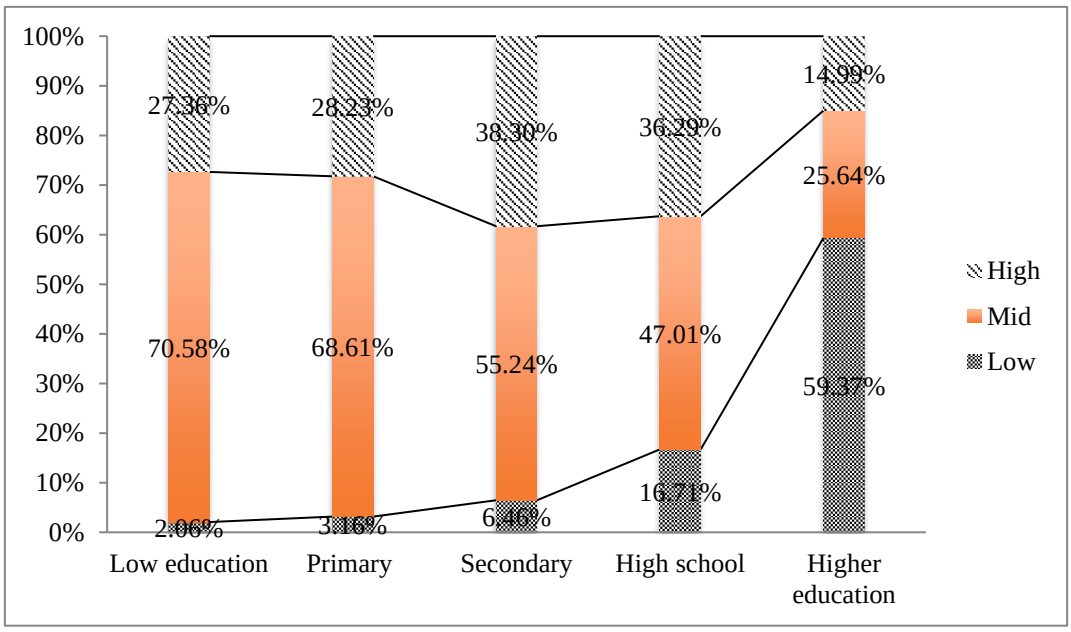
Source: Authors' calculations.

Figure 3. Share of Impact Levels by Education for Males



Source: Authors' calculations.

Figure 4. Share of Impact Levels by Education for Females



Source: Authors' calculations.

The underlying assumption is that more-educated workers are less vulnerable than less-educated ones. A university degree is likely to provide an insurance against the negative impact of COVID-19, which may worsen the pre-existing inequality between individuals with education attainments. Daly et al. (2020) and Rho et al. (2020) have found that individuals with bachelor's degree or higher are much more likely to be in online or low-contact jobs. Similar findings are suggested by Adams-Prassl et al. (2020), i.e. that lower-educated UK and US workers are more likely to be affected by COVID-19 due to low adoption of work from home.

Figures 3 and 4 present the share of impact by education levels for males and females, respectively. Comparing the two figures, the major differences appear at the low end and high end. For low education, females tend to experience higher impact from COVID-19 than males, while for higher education, the situation reverses.

5.2. The impact of COVID-19 by marital status

Table 4 presents the distribution of impact levels by gender and marital status, age-restricted between 25 to 45 years old. Comparing single men and married men, there are around 9% fewer married men in high impact, with around 9% more in middle impact, indicating that married men may be less vulnerable than single men. For women, the difference occurs at low and middle impact, with around 17% less share of married women in low impact and more married women in middle impact, suggesting that single women suffer less from COVID-19. The results show a different picture for men and women, in that marriage may protect men but hurt women in the COVID-19 crisis.

Table 4. Impact of COVID-19 by Gender and Marital Status

Impact level	Single men	Married men	Single women	Married Women
Low	12.59%	12.76%	30.93%	13.95%
Mid	50.43%	59.53%	39.66%	58.58%
High	36.98%	27.72%	29.41%	27.25%

Source: Authors' calculations.

In addition to different sectoral and occupational composition of the employment of men and women, the work and childcare arrangements amongst married couples may contribute to the outcome as well, with married women providing more childcare than men. As suggested by Alon et al. (2020b), married women spend much more time than married men on childcare and more women are unable to work during COVID-19 due to extra childcare work.

5.3. The impact of COVID-19 by working sectors

Workers in the Asia–Pacific region's informal sectors are most severely impacted by the crisis, with an average earnings decrease of 22% at the beginning of 2020, leading to an anticipated increase in the unemployment rate (ILO, 2020c).

Table 5 shows the COVID-19 impact by workers in formal and informal sectors. Comparing men and women of different marital status, women in the informal sector have a higher share of high impact than men in both single and married status, while, in the formal sector, it is the other way around, indicating that women in the informal sector are more vulnerable than men. In the formal sector, single men experience a higher impact than married men, while single women experience a lower impact than married women. The pattern is consistent with Table 3. In the informal sector, marital status does not change much of the fraction in the impact levels for men, but there are more married women experiencing middle impact and having less of a share of high impact than single women.

Table 5. Impact of COVID-19 by Working Sectors

	Low	Mid	High
Formal sector			
Single men	20.11%	29.89%	50.01%
Married men	28.41%	30.71%	40.87%
Single women	45.51%	28.70%	25.79%
Married women	34.99%	30.67%	34.33%
Informal sector			
Single men	4.60%	73.16%	22.24%
Married men	4.23%	75.93%	19.84%
Single women	7.73%	56.66%	35.61%
Married women	3.10%	73.28%	23.63%
Public sector			
Single men	75.74%	22.01%	2.24%
Married men	77.18%	21.48%	1.34%
Single women	94.78%	4.80%	0.42%
Married women	89.77%	9.42%	0.82%
Non-public sector			
Single men	6.25%	53.28%	40.47%
Married men	5.18%	64.00%	30.82%
Single women	14.70%	48.53%	36.78%
Married women	5.11%	64.56%	30.33%

Source: Authors' calculations.

Comparing each formal and informal subgroup, the informal sector shows a higher impact from COVID-19, with less than 8% of each group in low impact. However, the formal sector has a higher share in high impact, except for single women.

To further assess how workers of different status are exposed to COVID-19, we separate the sample into public and non-public sectors, with the public sector including only government employees and government enterprise employees. Table 4 shows that, in the public sector, the share of high impact is extremely low;

compared to the informal sector, the share of high impact in the non-public sector increases, which suggests that the rising impact from public to the formal sector is caused by the high impact from private employees. Government policy to protect people against the outbreak should not only pay close attention to informal sectors, but also to private employees.

5.4. The impact of COVID-19 by income levels

As discussed above, COVID-19 has had a severe impact on less-educated workers' employment and earning. In this section, we further investigate the impact on different income levels. Table 6 presents the distribution of impact of four income levels for men and women. For both males and females, the majority of the top 25% locates at the low impact level, with males at 62.72% and females at 77.46%. Conversely, the bottom 25% accounts for less than 10% in low impact for both men or women, 8.58% and 9.89%, respectively. While consistent with levels of education that less-educated workers have higher impact, the low-income group is more vulnerable to COVID-19 compared to the high-income group, while the middle-income group has the highest share in high impact. For males, more than half of the middle-income group, including both low- and high- middle income, is in high impact, which suggests that they are very vulnerable to the crisis. Females have an equivalent distribution in middle income, but still suffer more than other income groups.

Blundell et al. (2020) suggested that young and low-income workers are more likely to suffer from the COVID-19 crisis in the form of losing their job and reduction of earnings. The findings are consistent with the World Bank (2020b), which suggested that, due to the expected unemployment and decline of earnings, the middle class and poor in Thailand will be negatively impacted from COVID-19.

Table 6. Impact of COVID-19 by Income Levels

		Low	Mid	High
Male	Bottom Income (<25%)	8.58%	51.13%	40.29%
	Low middle Income (25%–50%)	11.98%	28.85%	59.16%
	High middle Income (50%–75%)	17.29%	30.38%	51.88%
	Top Income (>75%)	62.72%	22.98%	14.31%
Female	Bottom Income (<25%)	9.89%	54.09%	36.02%
	Low middle Income (25%–50%)	15.38%	29.85%	54.77%
	High middle Income (50%–75%)	35.97%	31.05%	32.98%
	Top Income (>75%)	77.46%	18.23%	4.30%

Source: Authors' calculations.

5.5. The impact of COVID-19 by residence area and regions

Previous crises have shown a diverse impact on Thai workers in various areas, such as the 1997 crisis, which affected workers in the north and northeast regions severely, while the 2008 crisis had a stronger impact on workers in Bangkok and the central region (Chandoevwit, 2010). To assess how COVID-19 has affected workers in different regions, Table 7 shows the distribution of impact levels by regions and residence areas. Despite a relatively higher share in low impact, urban residents have been affected by COVID-19 more severely than rural residents, which have a higher share in high impact and lower share in middle impact. Bangkok has the highest proportion in low impact, while rural residents concentrate in middle impact, especially for the north and northeast regions.

Table 7. Impact of COVID-19 by Residence Area and Regions

		Low	Mid	High
			Bangkok	
	Male	25.16%	40.42%	34.42%
	Female	30.31%	41.99%	27.69%
			Central	
Urban				
	Male	14.12%	41.10%	44.77%
	Female	19.65%	39.90%	40.45%
Rural				
	Male	9.73%	54.21%	36.06%
	Female	13.92%	51.63%	34.45%
			North	
Urban				
	Male	17.15%	50.15%	32.70%
	Female	20.69%	47.73%	31.58%
Rural				
	Male	7.90%	71.62%	20.48%
	Female	10.46%	68.27%	21.28%
			Northeast	
Urban				
	Male	14.56%	61.69%	23.75
	Female	17.64	59.51	22.84%
Rural				
	Male	8.07%	75.28%	16.65%
	Female	8.77%	75.20%	16.03%
			South	
Urban				
	Male	15.07%	50.03%	34.89%
	Female	21.49%	46.74%	31.77%
Rural				
	Male	7.77%	69.57%	22.66%
	Female	12.67%	66.32%	21.01%

Source: Authors' calculations.

The outcome is driven by both work and sectoral composition in different areas. On the one hand, occupations with higher flexibility are more available in Bangkok and urban areas, which provide more low-risk occupations. On the other hand, agriculture- dominated rural areas have a lower COVID-19 impact, as compared to manufacturing- and service-dominated urban areas.

A potential risk may arise with the disruption to tourism, since the percentage of households involved in tourism and related service sectors ranges from 18.8% in the northeast to 33% in Bangkok (World Bank, 2020b). Remittance income is expected to decline as well, and urban migrants may return to rural areas due to the loss of their jobs in urban areas. However, the ability of agriculture to absorb those unemployed workers is doubtful. According to NESDC (2020), agriculture has contracted by 5.7% in the first quarter of 2020 due to drought. The decline in demand for agricultural products due to COVID-19 may further worsen the situation for rural residents (ILO, 2020a).

5.6. The impact of COVID-19 by age groups

Table 8 shows the COVID-19 impact distribution by age group. Generally, the impact of COVID-19 on younger groups is higher than on older groups, with the youngest group (20 years old or below) having the highest share, around 42%, while older groups have a higher share in low and middle impact, which may indicate that younger workers are more vulnerable in the current pandemic than older ones. As those below 20 years old have fewer education attainments, they tend to be concentrated more in occupations with higher dependence on machinery and less ICT usage, which puts them at a higher risk level.

Table 8. Impact of COVID-19 by Age Groups

		Low	Mid	High
(A)				
Age<=20				
	Male	1.97%	55.58%	42.45%
	Female	4.97%	52.82%	42.21%
Age 21–30				
	Male	10.50%	46.73%	42.77%
	Female	23.29%	41.75%	34.95%
Age 31–40				
	Male	13.57%	50.21%	36.22%
	Female	24.32%	46.54%	29.14%
Age 41–50				
	Male	15.43%	56.10%	28.47%
	Female	16.18%	57.62%	26.20%
Age 51–60				
	Male	15.64%	62.67%	21.68%
	Female	13.61%	62.54%	23.85%
Age>60				
	Male	4.80%	75.33%	19.86%
	Female	3.09%	66.18%	30.73%
(B)				
Age<=20				
Urban				
	Male	2.70%	46.35%	50.95%
	Female	6.43%	49.95%	43.62%
Rural				
	Male	1.34%	63.56%	35.10%
	Female	3.41%	55.86%	40.72%
Age>60				
Urban				
	Male	6.66%	67.56%	25.78%
	Female	4.38%	58.35%	37.27%
Rural				
	Male	3.06%	82.61%	14.33%
	Female	1.61%	75.13%	23.26%

Source: Authors' calculations.

In addition, the adoption of social distancing working environments in Thailand for young workers is low compared to other ASEAN countries. According to the ASEAN Youth Survey (2020), youths from Thailand report one of the highest shares (76%) of remote working difficulties during COVID-19 compared to other ASEAN countries, while Singapore and Viet Nam have the highest share of youths successfully working remotely, 49% and 48%, respectively.

Comparing males and females, the impact is relatively equal for the youngest group, but is much higher for women over 60 years old than men, with 19.86% of males and 30.73% of females, respectively, in high impact. Females between 21 to 40 years old have lower impact than males, with a higher share in low impact and a lower share in high impact. However, as age progresses, this situation reverses, with women over 60 becoming more vulnerable than men. In panel (B), we present the impact for young and old workers in urban and rural areas. For young workers in urban areas, there is higher proportion having high impact compared to rural areas. There are more young male workers than female workers in high risk in urban areas, with the reverse in rural areas. For older workers, women are affected more than men in both urban and rural areas.

The COVID-19 crisis has had a disproportionately high impact on older women due to their lack of income (UN, 2020). Older persons are more likely to be unemployed or have decreased working hours during crises than prime-age workers (Lee and Cho, 2016). In addition, the working conditions are challenging for older women; since one of their major income sources is family support, the reduction of income for either themselves or their children during the pandemic will worsen their situation, especially those at or just above the poverty line (NSO, 2017).

6. Regular crises vs. COVID-19 pandemic

In developed countries, previous crises, such as the 2008 financial crisis, showed a disparity of negative impacts for males and females, where men were affected more strongly than women (Doepke and Tertilt, 2016; Albanesi, 2020). However, the COVID-19 pandemic is the other way round, with recent studies suggesting a 'she-cession', in that women experienced a heavier negative impact in labour markets than men due to their high concentration in affected sectors and the demand for childcare in developed countries (Del Boca et al., 2020; Alon et al., 2020b; Blundell et al., 2020).

In Thailand, there are some distinctive features revealing the impact of past crises; however, these have shown less of a gender-based impact. The 1997 financial crisis represented the worst employment situation in Thailand in recent history, with the GDP per capita growth rate being –3.90% in 1997 and –8.74% in 1998 (World Bank, 2019). According to the ILO (2007), the unemployment rate jumped from 0.9% in 1997 to 3.4% in 1998. While the impact on men and women is similar, the unemployment rate is much higher for young people than older ones.

The crisis has had a significant impact on the banking and financial sectors, causing over 2 million unemployed and the reorganisation of Thailand's capitalist structure (Hewison, 1999). While the share of agriculture in GDP has increased, the share of services has declined. The construction industry has been impacted most severely (UNESCAP, 2003). Many low-skilled workers lost their jobs in the formal sector and moved to the informal sector. During this time, the share of employment in agriculture has increased. Warunsiri (2011) suggested a distinct role played by the informal sector in the 1997 crisis by absorbing the unemployed workers.

The 2008 global financial crisis had much less impact than the 1997 crisis, with GDP per capita growth at 1.19% in 2008 and –1.19% in 2009 (World Bank, 2019). Unlike the temporary drop in female labour force participation in the 1997

crisis, the 2008 crisis had relatively less impact on the labour force participation rate of men and women, as well as less impact on the unemployment rate. The global crisis mainly affected manufacturing industries in Thailand, such as textiles, electronics and agriculture exports (Chandoevwit, 2010).

Compared to the previous crises, the COVID-19 pandemic shows an unprecedented picture. Because of COVID-19's high contagiousness, on the supply side, people's ability to work and firms' ability to produce have been reduced. On the demand side, the incentives for people to consume and firms to invest have dropped (Furman, 2020; Loayza and Pennings, 2020). The major difference from the previous crises is due to the impact of lockdown and social distancing measures on both industrial sectors and occupations. In the industrial aspect, agriculture is considered at a low risk, but its subsectors relating to exports may have a higher risk, while manufacturing is at a middle risk, and wholesale and retail trade, accommodation and food service activities are considered high risk. In the work flexibility aspect, plant and machine workers and agricultural workers are at the lowest flexibility, while professionals and managers are at the highest flexibility.

7. Policy relevance

Because COVID-19 relief and recovery policies need to be tailored to specific demographic groups and emphasise the vulnerable ones, the Thai government has implemented several response packages to support vulnerable groups, including temporary cash transfers to farmers in informal sectors, young people (up to age 6) and older people, and people with disabilities, along with unemployment benefits to formal workers. COVID-19 support packages accounted for 12.9% of GDP in Thailand, which is high compared to other ASEAN countries (World Bank, 2020b). The cash transfer of B5,000 per month for 3 months targets farmers, and B1,000 per month for 3 months was approved by the Cabinet in May 2020 for the elderly,

young children and disabled people. In September, the government gave B3,000 cash handouts to 15 million people that have been affected by the pandemic (Office of National Economic and Social Development Council, 2020).

Our study has highlighted several policy implications for efficient assistance and longer-term social protection for subsequent crises. First, although the government has provided some assistance to informal workers, our results suggest the need for the government to pay more attention to private employees as well, especially those in high-risk sectors. Second, our results show that COVID-19 may worsen pre-existing inequality amongst vulnerable groups, such as older women, less-educated workers and informal workers, whereas the effectiveness of current support to reach those groups can be strengthened. An inability to receive cash transfers arises due to issues such as payment measures, Social Security registration and eligibility of supporting programs. Third, considering the difficulties of remote working in Thailand and the vulnerability of younger workers, support for younger workers' digital skills, improving local digital infrastructure, especially in rural areas and increasing internet accessibility and quality are recommended. Last, in terms of longer-term protection, it is important for governments to consistently promote education.

8. Conclusion

The COVID-19 response measures have disrupted the economy severely. Although economic activities have resumed and measures will be lifted gradually later this year, Thailand's future remains uncertain (NESDC, 2020). While recent studies have focused on evaluating the occupational exposure and industrial impact relating to the COVID-19 crisis, we amalgamate them and adjust to the Thailand context. Our results indicate that the impact of COVID-19 is highly unequal across demographic groups. We show that the pandemic may further worsen the pre-

existing inequality in the labour market, resulting from the different impact by the composition of industrial sectors and occupations. We find education attainments, as well as income levels, play a significant role in protecting individuals from the current crisis, where those with higher education and top earners are affected much less. This result highlights the important contribution of human capital, which requires further study. We also find a discrepancy in marital status regarding the impact of COVID-19 for men and women, where married men are better off and married women are worse off. Moreover, we highlight the need for government support that targets vulnerable groups, including workers with low education, informal workers, private employees, older women, and the young that are more likely to be affected by COVID-19.

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Appendix

Table 1A. Composition of Education by Gender

	Men	Women
Low education	24.86%	27.50%
Primary	24.07%	21.66%
Secondary	16.85%	12.73%
High school	22.30%	19.02%
Higher education	11.91%	19.08%

Source: Authors' calculations.

Table 2A. Selected Work Context Questionnaire and Generalised Work Activities Questionnaire

Work Context Questionnaire (WCQ)
WCQ 1. How often does your current job require face-to-face discussions with individuals and within teams?
WCQ 2. How frequently does your current job require public speaking (one speaker with an audience)?
WCQ 3. How frequently does your current job require telephone conversation?
WCQ 4. How frequently does your current job require electronic mail?
WCQ 6. How much contact with others (by telephone, face-to-face, or otherwise) is required to perform your current job?
WCQ 7. How important are interactions that require you to work with or contribute to a work group or team to perform your current job?
WCQ 10. How responsible are you for the health and safety of other workers on your current job?
WCQ 17. How often does your current job require you to work outdoors, exposed to all weather conditions?

WCQ 18. How often does your current job require you to work outdoors, under cover (like in an open shed)?
WCQ 21. How physically close to other people are you when you perform your current job?
WCQ 37. How much time in your current job do you spend walking or running?
WCQ 48. In your current job, how much freedom do you have to make decisions without supervision?
WCQ 52. How much freedom do you have to determine the tasks, priorities, or goals of your current job?
WCQ 55. How important to your current job is keeping a pace set by machinery or equipment?
Generalised Work Activities Questionnaire (GWAQ)
GWAQ 4. Inspecting Equipment, Structures, or Material
GWAQ 8. Processing Information
GWAQ 9. Analysing Data or Information
GWAQ 11. Thinking Creatively
GWAQ 16. Performing General Physical Activities
GWAQ 17. Handling and Moving Objects
GWAQ 18. Controlling Machines and Processes
GWAQ 19. Working with Computers
GWAQ 20. Operating Vehicles, Mechanised Devices, or Equipment
GWAQ 22. Repairing and Maintaining Mechanical Equipment
GWAQ 23. Repairing and Maintaining Electronic Equipment
GWAQ 24. Documenting/Recording Information
GWAQ 29. Assisting and Caring for Others
GWAQ 32. Performing for or Working Directly with the Public

Source: https://www.onetonline.org/find/descriptor/browse/Work_Activities/
https://www.onetonline.org/find/descriptor/browse/Work_Context/

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