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THE POTENTIAL SCARRING EFFECTS OF CLOSURE EXPERIENCE AND SECTORAL VULNERABILITY DURING THE COVID-19 PANDEMIC ON BUSINESS INVESTMENTS AND LABOR DEMAND BY FIRMS IN INDONESIA

Ridho Al Izzati, Fauzan Kemal Musthofa, Palmira Permata Bachtiar, Asep Suryahadi

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Editor
Mohammad Gabriell Firdausy Erfan

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The Potential Scarring Effects of Closure Experience and Sectoral Vulnerability during the COVID-19 Pandemic on Business Investments and Labor Demand by Firms in Indonesia

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Abstract

The Potential Scarring Effects of Closure Experience and Sectoral Vulnerability during the COVID-19 Pandemic on Business Investments and Labor Demand by Firms in Indonesia

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The COVID-19 pandemic in Indonesia has resulted in a significant slowdown in business and investment activities, leading to widespread layoffs and unpaid leaves, and forcing some businesses to suspend their operations. We find that, during the pandemic, firms in the high-vulnerability sectors experienced significantly lower levels of investments and labor demand than those in the low-vulnerability sectors. Our findings also show that firms experiencing a closure during the early stages of the pandemic decreased their labor demand significantly compared to those that did not experience a closure. Furthermore, the effects are larger for firms with a longer duration of closure. These negative effects on investments and labor demand persisted even two years after the beginning of the pandemic.

To address these challenges, the Government of Indonesia implemented several policies to support firms in facing the difficulties brought by the pandemic and government-imposed restrictions aimed at containing the spread of the virus. Unfortunately, we find that only the tax deferral program had a significant effect to counter the negative effects of high sectoral vulnerability on firms' labor demand. Similarly, we find that firms' investments in digitalization and machinery had significant effects to counter the negative effects of high sectoral vulnerability on firms' labor demand.

Firms' appetite for physical and labor investments are essential factors that will shape the economic outlook in the coming years. We find that during the early period of the pandemic, the average number of hired workers was significantly lower than the average number of layoffs. However, this trend began to reverse in the last quarter of 2020. Nevertheless, our qualitative investigation reveals that the business community continues to hold a neutral or pessimistic view on their investment appetite due to unfavorable external and internal factors.

These findings carry several important policy implications. First, to prevent the scarring effects on firms, it is very crucial for the government to support firms during a crisis to avoid closures in the first place. Second, if a firm closure does occur, to limit the scarring effects, firms need to be assisted to reopen as quickly as possible. Third, to accelerate recovery, firms' investments in machinery and technologies should be encouraged and facilitated.

Keywords: scarring effects, employment, investment, firms, COVID-19

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List of Abbreviations

ASEAN		The Association of Southeast Asian Nations
BPS	Badan Pusat Statistik	Statistics Indonesia
B2B		business-to-business
B2C		business-to-consumer
CCI		Consumer Confidence Index
COVID-19		coronavirus disease 19
FGD		focus group discussion
GDP		gross domestic product
IDX		Indonesia Stock Exchange
IPW		inverse probability weighting
LBS		Longitudinal Business Survey
OECD		Organisation for Economic Co-operation and Development
PMI		Purchasing Managers' Index
Q1		1st quarter (January–March)
Q2		2nd quarter (April–June)
Sakernas	Survei Tenaga Kerja Nasional	National Labor Force Survey
US		United States
VAT		value-added tax

Executive Summary

This report investigates the potential long-term scarring effects of closure experiences and sectoral vulnerability during the COVID-19 pandemic on business investments and labor demand among firms in Indonesia. Utilizing various datasets, we estimated these effects through a difference-in-differences (DiD) method, complemented by qualitative investigations to enrich our analysis.

Our findings reveal that both early closure experiences and sectoral vulnerability have significant and lasting negative impacts on the levels of business investments and labor demand. Even two years after the initial shock, these adverse effects continue to create divergent paths of recovery among firms, depending on their closure experiences and sectoral vulnerability.

Furthermore, the study assesses the role of government policies in mitigating these negative effects. While wage subsidies and tax deferrals show some positive influence, their impact remains limited in offsetting the overall negative consequences of the pandemic. This underscores the complexity of the challenge at hand and suggests that additional strategies may be required to effectively support business recovery and labor demand.

This report identifies a promising avenue for firms to bolster their labor demand amid these challenges. Adjustments undertaken by firms, including investments in digitalization and machinery during the crisis, emerged as positive factors in sustaining labor demand. This highlights the importance of adaptive strategies and innovation in maintaining business operations and employment levels during times of significant disruption.

Our analysis of firms' capacity and appetite toward physical and labor investments yields critical implications for the future economic outlook. The influence of firms' investment decisions on labor demand is evident from the data, revealing a shift in hiring practices during the pandemic. While the average number of laid-off workers initially surpassed new hires, the trend shifted in late 2020, reflecting firms' increased appetite for labor investments as recovery progressed.

Qualitative findings reveal three investment viewpoints: optimism, neutrality, and pessimism. Government officials and some business figures expressed optimism, citing sector-specific investment increases and favorable indexes, such as the Purchasing Managers Index and Consumer Confidence Index. However, many business players adopted a cautious "wait and see" stance, seeking stability before expansion. Pessimistic perspectives emerged from firms facing external challenges, such as global recession and war, which impact export-oriented sectors negatively. Regulatory and institutional issues further tempered optimism, as some policies hindered recovery efforts. In sum, the diverse investment appetites of firms reveal a complex interplay of factors shaping the economic landscape.

In conclusion, this study underscores the lasting implications of closure experiences and sectoral vulnerability to the pandemic on Indonesian firms' business investments and labor

demand in the aftermath of the COVID-19 pandemic. While government policies have exhibited some efficacy, a comprehensive approach that includes both policy support and proactive firm-level adaptations appears crucial in navigating the road to recovery. These findings contribute to a deeper understanding of the dynamics between external shocks, business behavior, and labor market outcomes, offering valuable insights for policymakers, business leaders, and stakeholders aiming to foster resilience and growth in the Indonesian business landscape.

I. Introduction

The COVID-19 pandemic has had a profound and unprecedented impact on both public health and the economy. Indonesia, like many other countries, has experienced the direct consequences of the pandemic, resulting in a significant slowdown in business and investment activities. This has had a direct and significant impact on the country's economic performance and the welfare of its people, as business and investment activities are key drivers of economic growth and sources of employment and income.

The first case of COVID-19 in Indonesia was identified on 2 March 2020. Since then, the virus spread rapidly across the country and remained a challenge for the following three years. By mid-2020, Indonesia experienced a 5% contraction in gross domestic product (GDP) and a 2-percentage-point increase in unemployment—equivalent to approximately 3 million workers. The labor market was severely impacted, with widespread layoffs, unpaid leave, and some businesses being forced to halt operations.

While the economy showed signs of recovery two years after the initial shock, the recovery trajectory has been uneven across firms, industries, and sectors. These unequal recovery paths may potentially cause lasting damage to the economy. Scars on some firms due to the COVID-19 pandemic may reflect fundamental weaknesses that are difficult to remedy, even in the long run.

This study aims to investigate how the COVID-19 pandemic has affected firms' investment and labor demand decisions, and to provide policy recommendations to mitigate any scarring effects. Specifically, this study has four objectives: (i) to assess the potential scarring effects of the COVID-19 pandemic on firms' business investments (physical capital) and labor demand; (ii) to assess the role of government policies in mitigating the adverse effects of the pandemic; (iii) to investigate the effects of firms' investments in machinery and digitalization; and (iv) to assess the performance forces that enabled a firm to survive—or even thrive—during the pandemic.

This study uses data from the National Labor Force Survey (Sakernas), the Longitudinal Business Survey, and Indonesia Stock Exchange. We apply the difference-in-differences (DiD) method to estimate the impact of early business closures on the number of employees and capital expenditure. We also estimate the effects of sectoral vulnerability to the pandemic on both outcomes.

We find that early closure experiences and sectoral vulnerability have had significant negative effects on subsequent business investments and labor demand by firms. These effects persist two years after the initial shock, indicating divergent business recovery paths among firms based on their closure experiences and sectoral vulnerability.

We also find that the role of government policies in mitigating the adverse effects has been limited despite the positive impact of wage subsidies and tax deferrals. Meanwhile, firm-level adjustments in the forms of investments in digitalization and machinery during the crisis had a positive effect on maintaining labor demand.

The remainder of this report is structured as follows. Chapter II reviews the literature on the effects of COVID-19 on firms. Chapter III outlines the empirical strategy used to estimate the pandemic's effects on business investments and labor demand by firms. Chapter IV presents and discusses the study's findings. Finally, Chapter V concludes the report and provides policy recommendations based on the analysis.

II. Literature Review

The COVID-19 pandemic has had widespread and different forms of negative consequences across various dimensions and geographical areas. In the context of labor supply, the pandemic led to a rise in unemployment, along with reductions in working hours and labor force participation (Béland *et al*., 2020). These effects, however, may not be equal across all groups. For instance, in the United States (US), young people were disproportionately affected by higher rates of unemployment (Cho & Winters, 2020). The same study also mentioned that individuals with lower income and education levels were associated with higher unemployment rates than their counterparts.

Meanwhile, on the labor demand side, firm performance during economic shocks—including the COVID-19 crisis—has often been linked to workforce reductions (Reynaud, 2013). Studies have shown that the COVID-19 pandemic has affected firms in various ways, most notably through significant revenue declines (Shen *et al*., 2020). These impacts were also significantly uneven across sectors. In China, for example, firms in tourism, catering, and transportation experienced more significant declines in performance compared to other sectors (Shen *et al*., 2020). Similarly, Indonesia appears to have faced comparable impacts, as reflected in the economic growth figures across different sectors. In Q2 2020, Indonesia's transportation, storage, accommodation, and restaurant sectors were among the hardest hit, largely due to their heavy reliance on physical contact (Badan Pusat Statistik[1], 2020).

There are only a few studies that have explored the potential scarring effects of the COVID-19 pandemic, given it has been only three years since its onset. However, some literature has pointed to possible scarring effects in labor supply and demand. A study shows that in Indonesia, not all individuals who were employed in 2019 had returned to work by 2022. This was not solely due to the direct impact of the COVID-19 pandemic; some individuals reported that they stay out of the work due to increased domestic chores brought on by physical restrictions (UNICEF *et al*., 2022). In addition, firms' behavior in adapting to the COVID-19 pandemic may hinder the recovery of labor demand. When the shock hits, firms also reduce investments in capital, technology, or research and development (Cerra *et al*., 2021). Such phenomenon may hinder firms in pursuing future profitable projects, hence slowing their growth.

Scarring effects are not unique to the COVID-19 pandemic. Similar phenomena have been observed following past shocks at the global, national, and local levels. A study shows that individuals who graduate and enter the labor market during a recession will experience a scarring effect related to their wage rate up to ten years, although this effect is generally lower for highly educated individuals (OECD, 2020). In addition, economic shocks can potentially reduce labor demand through several channels. First, a relatively tighter credit market means that firms will have a very limited access to financing. This causes potentially promising new businesses to close prematurely (Ouyang, 2009). Second, firms

[1]Statistics Indonesia (BPS)

tend to hire people more selectively during recessions, forcing some workers to take lower-skilled jobs (Huckfeldt, 2022).

III. Empirical Strategy

3.1 Data

This study draws on various datasets from several sources. First, we use a nationally representative labor force survey (Sakernas). Second, we utilize the Longitudinal Business Survey (LBS). Third, we use quarterly reports of listed firms from the Indonesia Stock Exchange (IDX). Lastly, we collect quarterly GDP data from Statistic Indonesia's (BPS) website.

3.1.1 National Labor Force Survey (Sakernas)

Sakernas is Indonesia's official labor force survey and is nationally representative. It is conducted twice a year—February and August—by BPS. In this study, we use Sakernas data from 2017 to 2022, covering both rounds each year. The 2017–2019 data represents the prepandemic period, while the 2020–2022 data covers the pandemic period. We use August 2019 as the baseline. The survey includes, on average, around 450,000 individuals in the August round and 120,000 individuals in the February round every year. The February round has a smaller sample size than the August round because it is only representative at the provincial level, whereas the August round is representative at the *kabupaten* (district)/*kota* (city) level. From this dataset, we use the number of workers by sector as the main outcome variable.

3.1.2 Longitudinal Business Survey (LBS)

The LBS is a series of high-frequency phone surveys of firms, conducted jointly by the National Development Planning Agency (Bappenas), the World Bank, and Prospera. It aims to capture the dynamic conditions of firms throughout the COVID-19 pandemic. The survey was first conducted in June 2020, and the last wave was conducted in December 2022. Figure 1 shows the timeline of the LBS. Although the first wave was conducted in June 2020, it also collected information on firms' conditions in January 2020 to capture a baseline before the onset of the COVID-19 pandemic.

Figure 1. LBS Timeline

3.1.3 Publicly Listed Companies

We use quarterly data of publicly listed companies in Indonesia. As of this writing, we have compiled financial information of 765 public companies spanning from 2018 to Q1 2022. However, it should be noted the available data only covers companies that remained listed on the IDX through Q1 2022. Therefore, companies that were delisted prior to this period are not captured in this dataset.

3.1.4 GDP Data

We collected the GDP data (growth rates and levels) from the publicly available website of BPS. For this study, we use quarterly datasets for 17 sectors from 2018 to 2022.

3.2 Empirical Estimation

3.2.1 Treatment Status Definition

We categorized the samples into two groups based on their experience during the early shock of the COVID-19 pandemic in 2020. Firms that experienced temporary closure in 2020 were classified as the treatment group, while those that remained open formed the control group. Although some firms may have closed again in 2021 or 2022, this study focuses only on the lasting effects of the early shock.

Information on firms experiencing closure is only available in the LBS data. Alternatively, for the other data, we need to use a different indicator of the COVID-19 impact. For this, as explained later in the section, we developed an index of vulnerability to COVID-19 at the sectoral level, measured by calculating the gap between each sector's actual growth and the sector's predicted growth had the pandemic not occurred during the first two quarters of 2020. A larger growth gap indicates higher vulnerability to the impact of the COVID-19 pandemic.

3.2.2 The Effects of Business Closures and Vulnerability

Our main estimation approach follows a standard DiD strategy. We compared changes in labor demand and physical investments between the prepandemic and pandemic periods across two sets of comparisons: (i) firms that experienced closure in 2020 versus those that did not, and (ii) firms operating in highly vulnerable sectors versus those in less vulnerable sectors.

a) Average Static Effects

We estimated the following model:

$$Y_{it} = \alpha + \beta(D_i \times t_t) + \gamma X + t_t + \mu_i + \varepsilon_{it} \quad (1)$$

where Y_{it} is the outcome (labor demand or investment) for firm i at time t. The variable D_i indicates either an early closure experience or vulnerability level, while t is a dummy variable for a period during the pandemic (Waves 2 to 5 for LBS; 2020 to 2022 for IDX; and

national data). We control the time-invariant unobserved characteristics by including firm fixed effects (μ_i). We also control common shocks for all firms with time fixed effects (t_t). Meanwhile, X is a vector of control variables, such as the share of female workers, formal business, low value-added sector, and year of establishment. These control variables are measured at the baseline period; therefore, we interact them with the time variable. Finally, β captures the average effect of early closure experience or sectoral vulnerability level on firms' labor demand and investments. The magnitude of β indicates the potential scarring effects of the COVID-19 pandemic on firms' labor demand and investments.

b) Average Static Effects of Business Closures Measured as an Intensity

Equation 1 estimates the average effect. In addition, instead of a dummy variable, we also estimated the effect of closure as a continuous treatment. In Equation 2, we use the variable $Intensity$ to measure the duration of closure (number of weeks) in 2020. In this model, β captures the average effect of each week of closure on the outcomes.

$$Y_{it} = \alpha + \beta(Intensity_i \times t_t) + \gamma X + t_t + \mu_i + \varepsilon_{it} \quad (2)$$

c) Dynamic Effects

In addition to the average effect, we also estimated the dynamic effects that may vary across periods during the pandemic.

$$Y_{it} = \alpha + \sum_{j=n}^{m} \beta_j D_i \times 1(t = j) + \gamma X + t_t + \mu_i + \varepsilon_{it} \quad (3)$$

Equation 3 is similar to Equation 1, but the effect is estimated for each time period (wave or quarterly). Subscript n refers to the prepandemic period and m to the pandemic period. The dynamic effects are estimated for Waves 2 to 5 of the LBS dataset, with Wave 1 serving as the base period, as it captures the outcome measured in January 2020. . Meanwhile, the model is estimated from 2018 to 2022 for the IDX and Sakernas datasets, with 2019 as a baseline period. The coefficient β_n is expected to be insignificant or not statistically different from zero (especially for the IDX data), as we rely on parallel trend assumption. Meanwhile, any effects shown by coefficient β_m will measure the dynamic effects of early closure experience or vulnerability level on the outcomes. In addition, β_m will also indicate the divergent (negative effects) or convergent (positive) trend between treated and control firms. The potential of scarring effects would be indicated by the negative effects throughout the period included in the data.

d) Robustness Check

There are several issues that may bias our estimation. For each issue, we conducted a robustness test. First, some firms could not be interviewed or contacted, leading to sample attrition. A balanced panel is not preferable because it will drop many samples. Therefore, we prefer to use an unbalanced panel to utilize a larger sample size and increase the statistical power. To check the robustness of our estimation, we adjusted Equation 1 by using inverse probability weighting (IPW) for attrition.

Second, one may argue that the firms experiencing closures in 2020 have different characteristics than those that kept operating in 2020. Likewise, the firms in high-

vulnerability sectors may have different characteristics from those in low-vulnerability sectors. In the main estimation, we have included a set of control variables assuming a conditional parallel trend. In addition, we estimated Equation 1 using IPW estimator to ensure a balance.

3.2.3 Testing Parallel Trend Assumptions Using National Account and Survey Data

A key assumption of the DiD estimation is the parallel trends assumption. This assumption posits that, in the absence of the COVID-19 pandemic, outcomes for firms that experienced closures and those that remained operational would have followed similar trends. The same logic applies when comparing firms in high- and low-vulnerability sectors. While this is an untestable assumption, we used a statistical approach to validate it. We estimated the effect of sectoral vulnerability on GDP levels and growth, and on the number of employees using dynamic effect (Equation 3). For this purpose, we utilized the GDP data and Sakernas from BPS at the national level. The estimated coefficient from the model for prepandemic period is expected not to be different from zero as a null hypothesis.

3.2.4 Proxy for Sectoral Vulnerability Indicators

We define vulnerability for each sector as the gap between the forecasted GDP growth—assuming no pandemic—and the actual growth in the first two quarters of 2020. A larger gap indicates higher vulnerability, while a smaller gap suggests lower vulnerability to the pandemic. To calculate this, we used the 17 groups of sectors and forecasted the growth using the following model:

$$GDPGrowth_t = \alpha + \beta T_t + \varepsilon_t \quad (4)$$

We regressed growth on a time trend (T_t) using quarterly data spanning from 2010 to 2019, representing the prepandemic period. We used three trend models: linear, exponential, and logarithmic to predict subsequent growth in the first two quarters of 2020. We consider the first two quarters (Q1 and Q2) of 2020 as an early-shock period, during which the COVID-19 pandemic escalated rapidly and was not well-anticipated. Next, we took an average predicted growth from the three models and then subtracted it with the actual growth. Finally, we averaged the two gaps for Q1 and Q2 to get a single measure of vulnerability.

3.2.5 The Average Effect of Government Assistance on Labor Demand Using LBS

To address the third research objective regarding the role of government policies, we estimated the following model:

$$Y_{it} = \alpha + \sum_{j=1}^{6} \beta_j \left(Assistance_{jt} \times D_i\right) + \gamma X + t_t + \mu_i + \varepsilon_{it} \quad (5)$$

Equation 5 interacted early closure experience or vulnerability level with the government assistance received by firms during the pandemic. Government assistance programs were first implemented during Wave 2 of the LBS, and thus there are no recipients in the

baseline period. The coverage of these programs gradually expanded through Wave 5. LBS collects information on several government policies that assisted firms during the pandemic. We included all six programs as a vector of variables. The list and coverage of the programs from our sample are shown in Figure 16.

3.2.6 Average Effects of Investment in Machinery and Digitalization on Firm Employees

Regarding the fourth research objective, we estimated the following model:

$$Y_{it} = \alpha + \sum_{j=1}^{2} \beta_j \left(Investment_{jt} \times D_i\right) + \gamma X + t_t + \mu_i + \varepsilon_{it} \quad (6)$$

Similar to Equation 5, this model interacts early closure experience or vulnerability level with firms' investment activities during the pandemic. In this case, the investments refer specifically to machinery and digitalizations, both of which represent COVID-19 related adjustments. Therefore, these activities are only observed during the pandemic.

3.3 Qualitative Investigations

Qualitative information was collected through in-depth interviews and focus group discussions (FGDs). Among various sectors, manufacturing was spesifically selected due to its significant contribution to both GDP and employment. Within the manufacturing sector, three subsectors were chosen: garments, food and beverages, cosmetics and traditional medicines and herbs. A total of nine respondents representing firms of different scales—micro, small, medium, and large—were interviewed from these subsectors.[2]

The in-depth interviews involved the following informants: (i) a representative from an industrial town, MM 2100, located in Cibitung, West Java; (ii) a representative from the Indonesian Chamber of Commerce and Industry (KADIN); (iii) a representative from the Indonesian Employers' Association (Apindo); and (iv) government officials from line ministries, which include the Ministry of Industry (Kemenperin), Coordinating Ministry for Maritime Affairs and Investment, and Coordinating Ministry for Economic Affairs.

To complement data and information, two FGDs were conducted. The first FGD involved representatives from business associations, including food and beverages, cosmetics, furniture, and footwear. The second FGD engaged provincial and local government representatives with a high concentration of manufacturing industries. In total, 42 individuals participated in the qualitative data collection. Detailed information on all informants and respondents is provided in Appendix 1 to 3.

[2]In the qualitative analysis, we refer to *respondents* as the research participants who give information about themselves. Meanwhile, *informants* are the participants who know and can give insights about the context and the nature of the problems. They are usually formal or informal leaders and officials.

IV. Results

4.1 Business Closure Experience and Sectoral Vulnerability to the Pandemic in Early 2020

The COVID-19 pandemic was an unforeseen shock, catching virtually all sectors off guard, including the busines community. Many firms were unprepared to navigate the immediate disruptions in the beginning. The combined effects of the virus outbreak and the government-imposed restrictions aimed at containing it forced a number of firms to shut down during the early period of the pandemic for various reasons. Later, some of them managed to reopen and resume operations. This phenomenon is captured in the sequential waves of the LBS data. We used this closure experience of firms in the early pandemic period in 2020 as a severity indicator of the pandemic's impact on some firms. We then examined this closure experience's impacts on firms' investment and labor demand during and after the pandemic.

Figure 2 shows that 16.5% of the 1,565 firms in the LBS sample experienced a temporary closure in 2020. The remaining 83.5% never experienced a closure throughout all five waves of the LBS conducted from 2020 to 2022. The sectoral distribution of firms that experienced temporary closure, shown in Figure 3, shows that over 80% of firms in the education services sector were affected, followed by approximately 30% firms in the accommodation and restaurant sector. Figure 4 shows the distribution by business size, indicating, indicating that smaller firms experienced higher rates of closure. Nearly 20% of micro firms experienced closure, compared to around 15% of small and medium-sized firms, and less than 13% of large firms.

Figure 2. Proportion of Firms That Experienced Temporary Closure in 2020

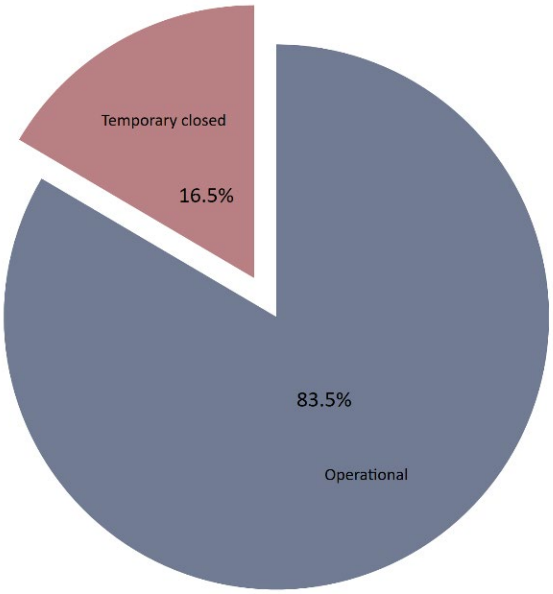


Figure 3. Proportion of Firms That Experienced Temporary Closure in 2020 by Sector

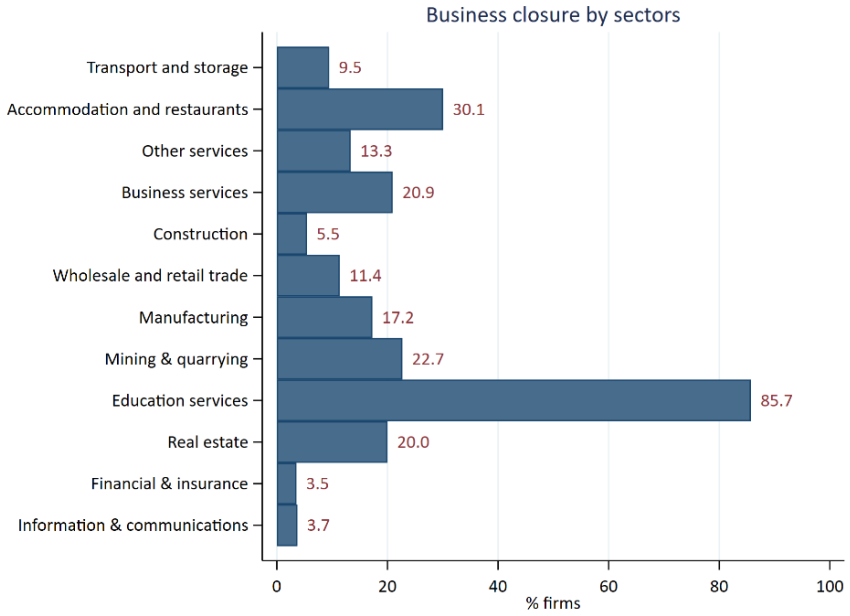


Figure 4. Proportion of Firms That Experienced Temporary Closure in 2020 by Business Size

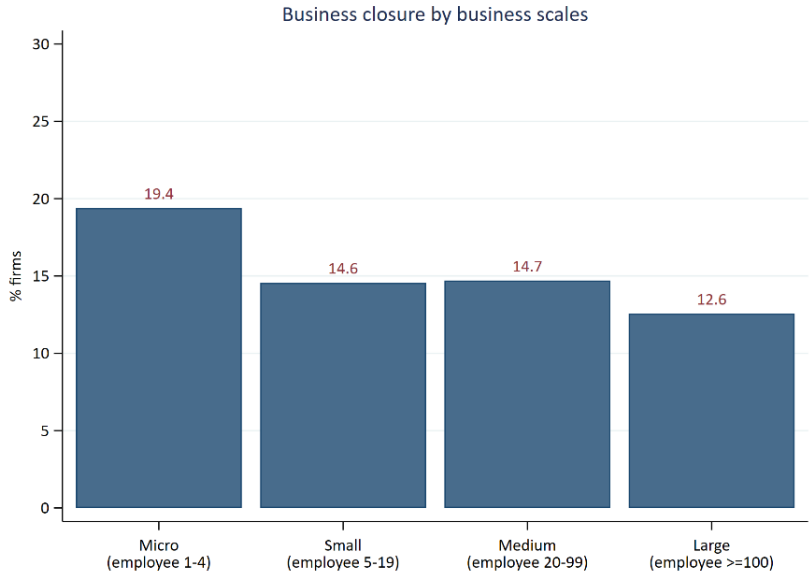


Table 1 shows that the transport and storage sector emerges as the most vulnerable, with a growth gap exceeding 20 percentage points, followed by the accommodation and restaurant sector with a gap of around 15 percentage points. In contrast, the information and communications sector shows the lowest vulnerability. Its positive growth gap indicates that this sector performed better during the pandemic than it would have under normal conditions without the pandemic.

Table 1. Sectoral Vulnerability Indicators Measured by Growth Differences

Sector	Average Predicted Growth (Q1–Q2, %)	Average Actual Growth (Q1–Q2, %)	Difference (%)	Rank	Vulnerability [log(difference)x -1]
Information and communications	8.2	10.3	-2.1	1	-1.50
Health and social activities	6.7	7.0	-0.3	2	-0.30
Financial and insurance	5.7	5.8	-0.2	3	-0.19
Real estate	3.5	3.1	0.4	4	0.43
Education services	4.5	3.5	1.0	5	0.86
Mining and quarrying	0.2	-1.1	1.3	6	1.09
Water and waste disposal	5.9	4.4	1.5	7	1.19
Agriculture	3.5	1.1	2.4	8	1.59
Electricity and gas	3.0	-0.8	3.8	9	2.04
Government administration	3.8	0.0	3.8	10	2.05
Manufacturing	3.7	-2.1	5.7	11	2.44
Wholesale and retail trade	3.4	-3.1	6.5	12	2.57
Construction	5.5	-1.2	6.7	13	2.61
Business services	8.9	-3.4	12.2	14	3.20
Other services	9.8	-2.8	12.5	15	3.22
Accommodation and restaurants	5.0	-10.0	15.1	16	3.41
Transport and storage	6.9	-14.8	21.7	17	3.77

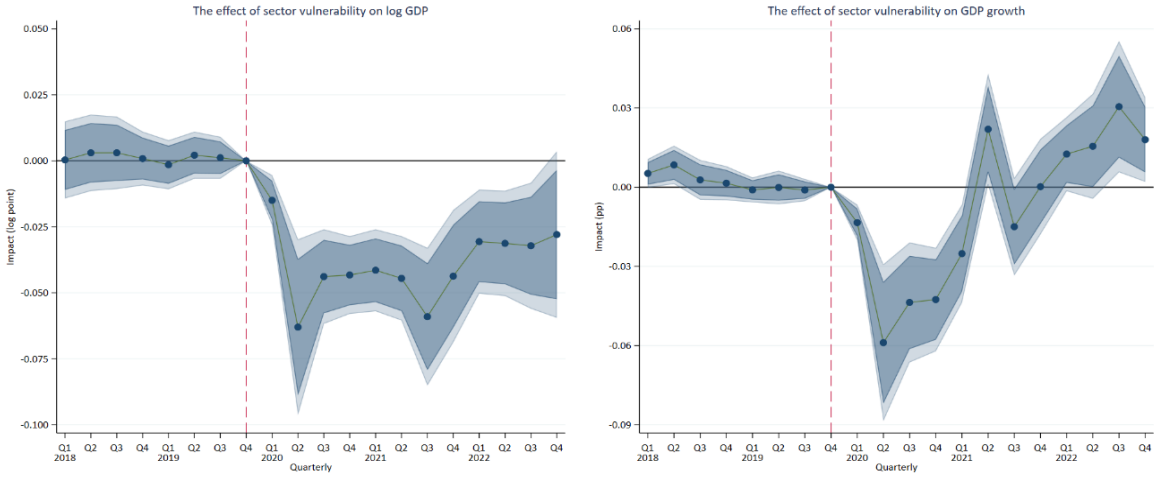
Comparing Table 1 with Figure 3 reveals both similarities and differences between the sectors with the highest firm closure rates and vulnerability index. The accommodation and restaurants sector ranks high in both firm closure rates and vulnerability index. However, the education services sector experienced a high rate of firm closures but recorded a low vulnerability index. Conversely, the transport and storage sector, which has the highest vulnerability index, saw a relatively low rate of firm closures. This indicates that firm closures are not only driven by a negative growth gap; other factors could be at play. For example, widespread closures in the education services sector were largely driven by government-imposed bans on face-to-face learning and temporary school closures, hence the very high rate of firm closure but relatively small growth gap.

4.2 The Effects of Sectoral Vulnerability on GDP and Employment

First, we estimated the effects of sectoral vulnerability on GDP and employment. Figure 5 shows the dynamic effects of vulnerability on the level of GDP (left figure) and GDP growth (right figure). Meanwhile, Figure 6 shows the corresponding effects on the absolute number of employees (top figures) and log number of employees (bottom figures) for formal (left figures) and informal employment (right figures). The figures indicate that, prior to the pandemic, there were no differences in GDP or employment trends between high- and low-vulnerability sectors. This confirms that the parallel trends assumption holds.

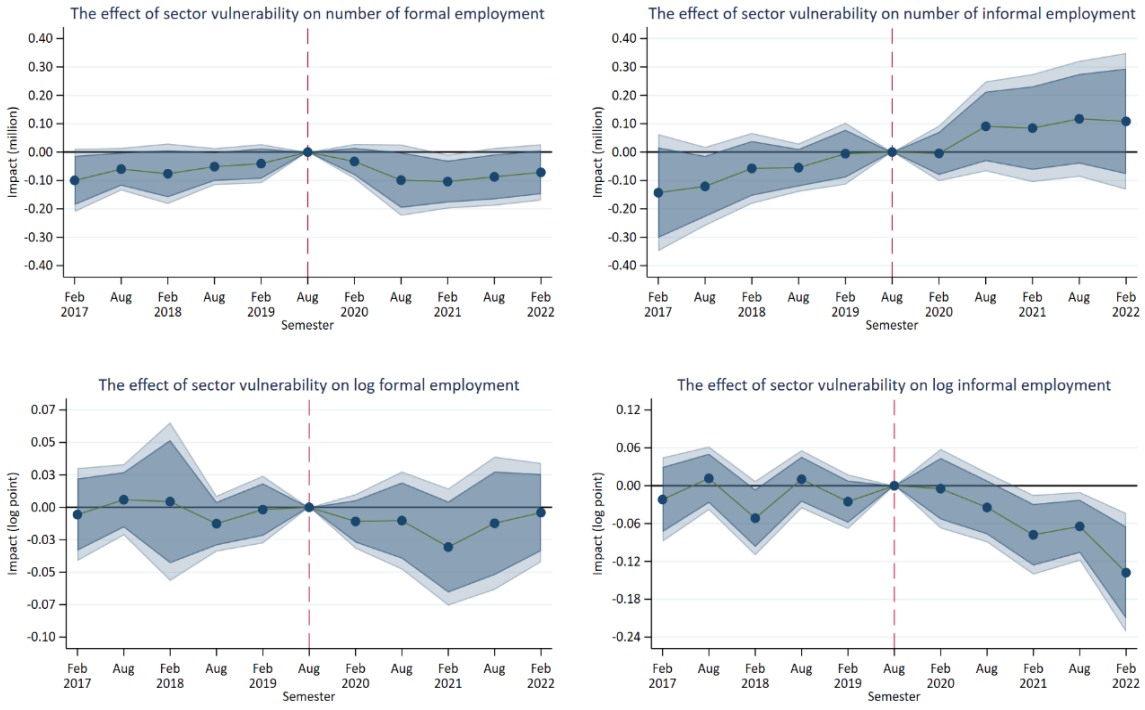
Figure 5 confirms that, during the pandemic, high-vulnerability sectors experienced lower GDP levels and slower GDP growth compared to low-vulnerability sectors. The most pronounced effects of vulnerability occured in the second quarter of 2020. While the negative effect on GDP levels persisted through the last quarter of 2022, the effect on GDP growth began to recover in the second quarter of 2021.

Figure 5. The Effects of Sectoral Vulnerability on GDP Level and Growth



Meanwhile, Figure 6 provides evidence of the negative effect of high vulnerability on the absolute number of employees in the formal sector during the pandemic in both absolute and log estimation, although the latter was not statistically significant. Moreover, we find that the high-vulnerability sectors saw an increasing absolute number of informal workers (positive, albeit insignificant), but decreasing relative percentage of informal workers in log estimation compared to the low-vulnerability sectors.

Figure 6. The Effects of Sectoral Vulnerability on Employment



4.3 The Effects of Sectoral Vulnerability on Investment: Findings from the Indonesia Stock Exchange Data

4.3.1 Static Effects

To examine the effect of sectoral vulnerability on firm investment, we estimated Equation 1 using data from IDX. The results are presented in Table 2. We find that, during the pandemic (Q1-2020 to Q1-2022), firms in the high-vulnerability sectors invested 12.5% less compared to those in the low-vulnerability sectors. This indicates that the COVID-19 pandemic dampened investment activites of firms in the high-vulnerability sectors. This decline in investments is attributed to the 7.6% lower revenue, 5% lower cash equivalent, and 6.3% lower market capitalization of firms in the high-vulnerability sectors than those in the low-vulnerability sectors during the pandemic.

Table 2. Average Effects of Pandemic Vulnerability on Business Investments

	Log Capital Expenditure	Log Revenue	Log Cash Equivalent	Log Market Capitalization
Vulnerability x pandemic period	-0.125***	-0.076***	-0.050**	-0.063***
	(0.033)	(0.021)	(0.023)	(0.019)
Observations	7,968	9,050	9,110	9,725
Firm fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes

	Log Capital Expenditure	Log Revenue	Log Cash Equivalent	Log Market Capitalization
Vulnerability x pandemic period	-0.125***	-0.076***	-0.050**	-0.063***
	(0.033)	(0.021)	(0.023)	(0.019)
Number of businesses	584	589	590	602
Mean dependent variable	8.439	11.88	11.16	15.01

Note: Robust standard errors in parentheses, clustered at the firm level

*p<0.1

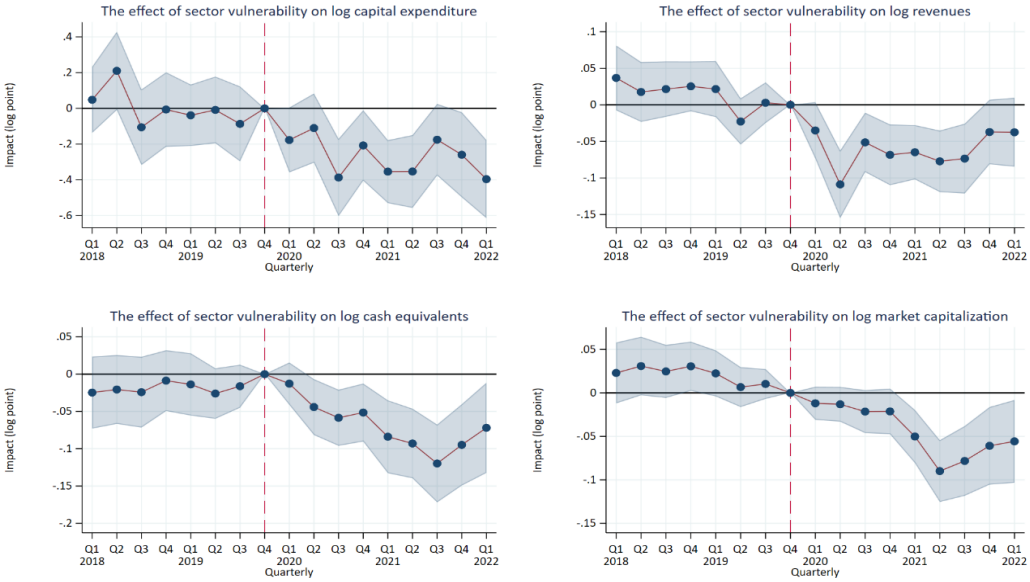
**p<0.05

***p<0.001

4.3.2 Dynamic Effects

To examine the duration of the negative effect of high sectoral vulnerability on firm investment, we estimated Equation 2. The results are presented in Figure 7. The top-left figure shows that firms in high-vulnerability sectors had had significantly lower investments than those in low-vulnerability sectors since the first quarter of 2020. The largest negative effect occurred in the third quarter of 2020, with investment level approximately 40% lower. This significant negative effect on investment persisted through the end of the observation in the first quarter of 2022. Similar scarring effects are also observed in revenue, cash equivalent, and market capitalization. However, the trends for these indicators showed signs of recovery from the third quarter of 2021.

Figure 7. Dynamic Effects of Pandemic Vulnerability on Business Investments



4.4 The Effects of Business Closure and Sectoral Vulnerability on the Number of Employees

This section discusses the estimation results based on the LBS data. The primary outcome is the log number of employees, while the additional outcomes include business operations and the appetite to invest in human capital. The main explanatory variables are the business closure experience and sectoral vulnerability.

4.4.1 Average Static Effects

Table 3 shows the estimations results of Equation 1 to examine the average effects of experiencing a business closure during the early pandemic on the log number of employees. On average, firms that experienced an early closure saw a 21% reduction in their number of employees ([exp(-0.235)-1]x100), a result that is statistically significant at 1% level. These estimates remain robust after the inclusion of control variables. Meanwhile, Table 4 reports the average effects of sectoral vulnerability on the log number of employees. Firms in higher vulnerability sectors experienced, on average, a 6.4% reduction in employment ([exp(-0.066)-1]x100) for each 1% increase in the growth gap. The results from both estimations are consistent.

Table 3. Average Effects of Experiencing a Business Closure on Labor Demand

	Log Employees	
	Without Controls	With Controls
Business closure in 2020 x pandemic period	-0.246***	-0.235***
	(0.054)	(0.054)
Observations	5,448	5,448
Firm fixed effects	Yes	Yes
Wave fixed effects	Yes	Yes
Control variable	No	Yes
Number of businesses	1,359	1,359
Mean dependent variable	2.051	2.051

Note: Robust standard errors in parentheses, clustered at the firm level

*p<0.1

**p<0.05

***p<0.001

Table 4. Average Effects of Vulnerability during the Pandemic on Labor Demand

	Log Employees	
	Without Controls	With Controls
Vulnerability x pandemic period	-0.064***	-0.066***
	(0.015)	(0.019)
Observations	5,956	5,476
Firm fixed effects	Yes	Yes
Wave fixed effects	Yes	Yes
Control variable	No	Yes
Number of businesses	1,524	1,373
Mean dependent variable	1.993	2.049

Note: Robust standard errors in parentheses, clustered at the firm level

*p<0.1

**p<0.05
***p<0.001

4.4.2 Dynamic Effects

Figure 8 shows the dynamic effects of experiencing a business closure during the early stage of the crisis on the log number of employees. The negative effect persists for up to two years following the onset of the pandemic. Similarly, Figure 9 illustrates the dynamic effects of sectoral vulnerability on the log number of employees. Firms that are more vulnerable also exhibit a diverging trend that continues two years after the early shock.

Figure 8. Dynamic Effects of Experiencing a Business Closure on Labor Demand

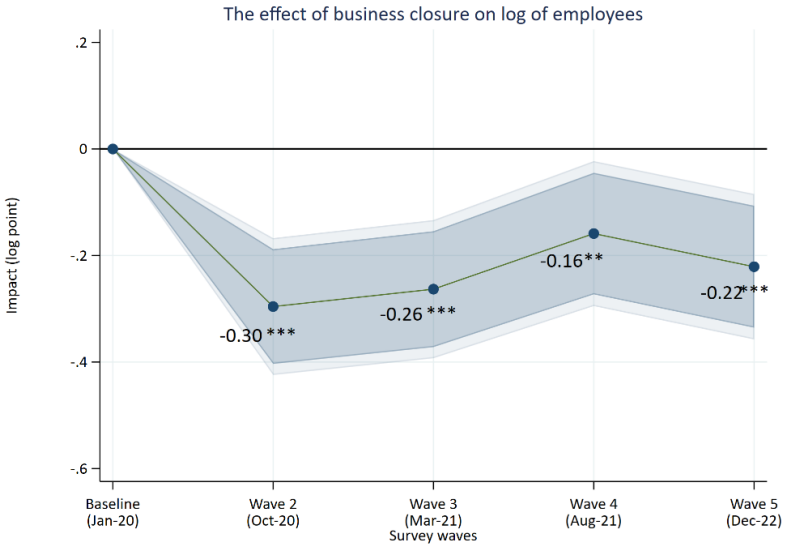
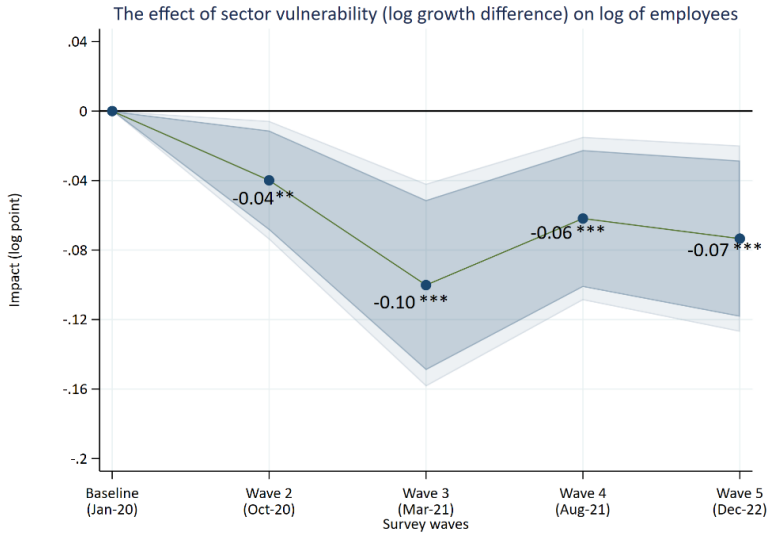


Figure 9. Dynamic Effects of Pandemic Vulnerability on Labor Demand



4.4.3 The Effects of Closure Intensity

As an alternative to using a dummy variable for whether a firm experienced a closure in 2020, we also estimated Equation 1 using a continuous treatment variable—specifically, the number of weeks a firm was closed in 2020. On average, firms experienced two weeks of closure, with a standard deviation of six weeks.

The estimation results, shown in Table 6, are consistent with the previous estimation using a dummy variable. On average (static), each additional week of closure reduces the number of employees by 1% ([exp(-0.011)-1]x100), or 6% for every one standard deviation. This implies that the effect is more pronounced for firms that experienced longer closures. Meanwhile, the dynamic effects show that the larger reductions in employment occurred in the early stages of the pandemic. However, the negative effect remains persistent up to two years after the early crisis.

Table 5. The Effect of Closure Intensity on Labor Demand

	Log Employees	
	Static	Dynamic
Business closure in 2020 (week) x pandemic period	-0.011**	
	(0.004)	
Business closure in 2020 (week) x Wave 2		-0.013**
		(0.006)
Business closure in 2020 (week) x Wave 3		-0.015**
		(0.005)
Business closure in 2020 (week) x Wave 4		-0.008*
		(0.004)

	Log Employees	
	Static	Dynamic
Business closure in 2020 (week) x Wave 5		-0.009*
		(0.005)
Observations	5,178	5,178
Firm fixed effects	Yes	Yes
Wave fixed effects	Yes	Yes
Control variable	Yes	Yes
Number of businesses	1,291	1,291
Mean dependent variable	2.060	2.060

Note: Robust standard errors in parentheses, clustered at the firm level

*p<0.1

**p<0.05

***p<0.001

4.4.4 Robustness Check

Next, we estimated Equation 1 with two adjustments for robustness check. The first adjustment is balancing characteristics between the treatment and control groups by applying the IPW method. The second is adjustment by estimating the propensity score of being attrited and using its inverse in the estimation. The results are shown in Table 7. Both adjustments show similar results to the main estimation. Based on these results, we are confident that our estimates are robust.

Table 6. Robustness Check

	Log Employees			
	IPW	Attrition Adjustment	IPW	Attrition Adjustment
Business closure in 2020 x pandemic period	-0.244***	-0.208***		
	(0.054)	(0.054)		
Vulnerability x pandemic period			-0.052**	-0.058**
			(0.022)	(0.019)
Observations	5,448	5,445	5,476	5,473
Firm fixed effects	Yes	Yes	Yes	Yes
Wave fixed effects	Yes	Yes	Yes	Yes
Number of businesses	1,359	1,358	1,373	1,372

	Log Employees			
	IPW	Attrition Adjustment	IPW	Attrition Adjustment
Mean dependent variable	2.027	2.051	2.058	2.049

Note: Robust standard errors in parentheses, clustered at the firm level

*p<0.1

**p<0.05

***p<0.001

4.5 Heterogeneity Effects

To explore whether the negative effects of closure experience and sectoral vulnerability on firms' number of employees differ across sectors, we estimated Equation 1 separately for for each sector using the LBS data. The results are presented in Figure 10 for closure experience and Figure 11 for sectoral vulnerability.

Figure 10. Heterogeneity Effects of Business Closure on Labor Demand by Sector

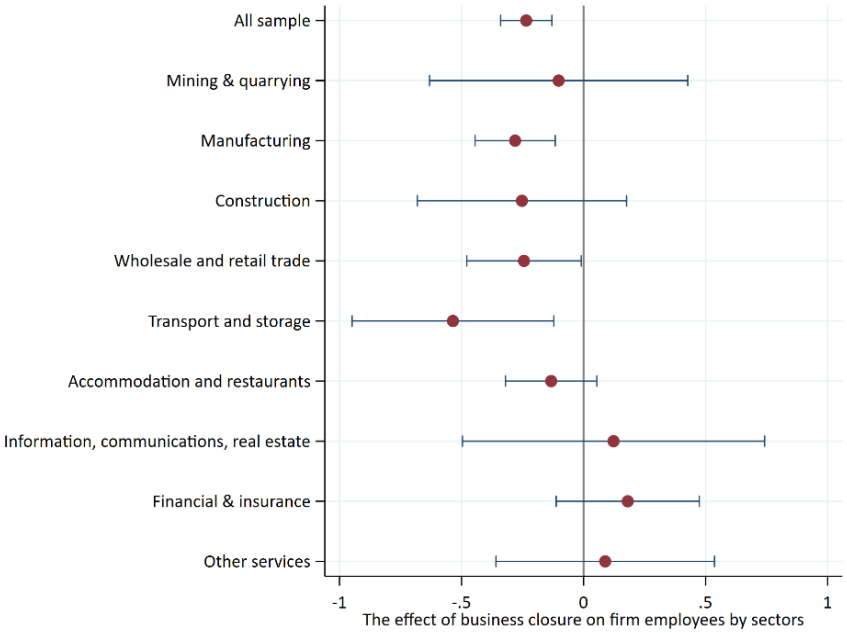


Figure 11. Heterogeneity Effects of Vulnerability on Labor Demand by Sector

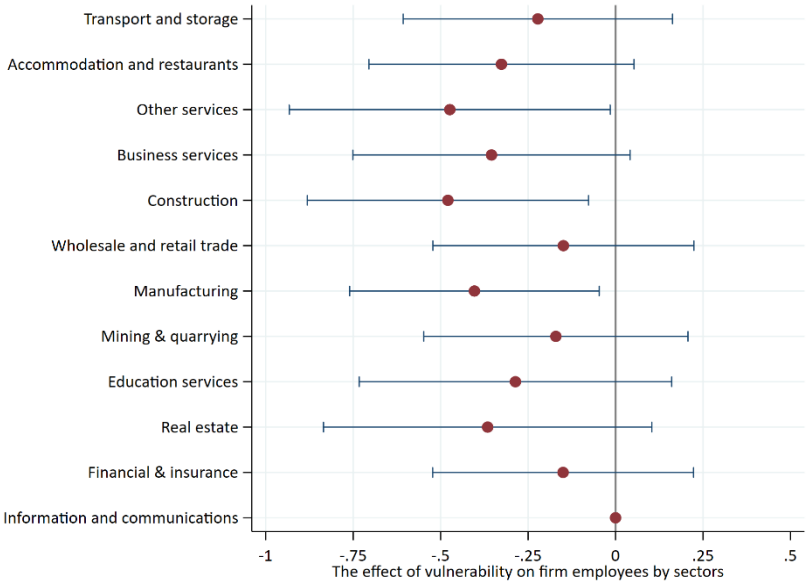


Figure 10 indicates that the negative effects of business closure on the number of employees occured in the manufacturing, wholesale and retail trade, and transport and storage sectors. For other sectors, however, the effects are not statistically significant. Figure 11 shows that the negative effects of sectoral vulnerability on the number of employees occured in the other services, construction, and manufacturing sectors, while the effects in the remaining sectors are not statistically significant.

In addition to the sectoral heterogeneity, we also checked whether the effects vary by firm characteristics. The corresponding results are presented in Figure 12 and Figure 13, both of which also used the LBS data.

Figure 12. Heterogeneity Effects of Business Closure by Firm Characteristics

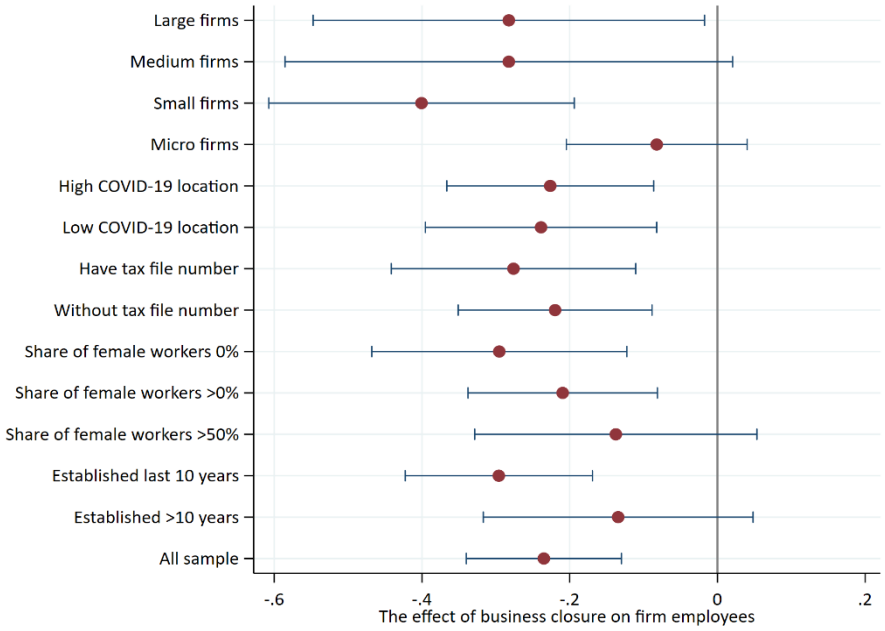


Figure 13. Heterogeneity Effects of Vulnerability by Firm Characteristics

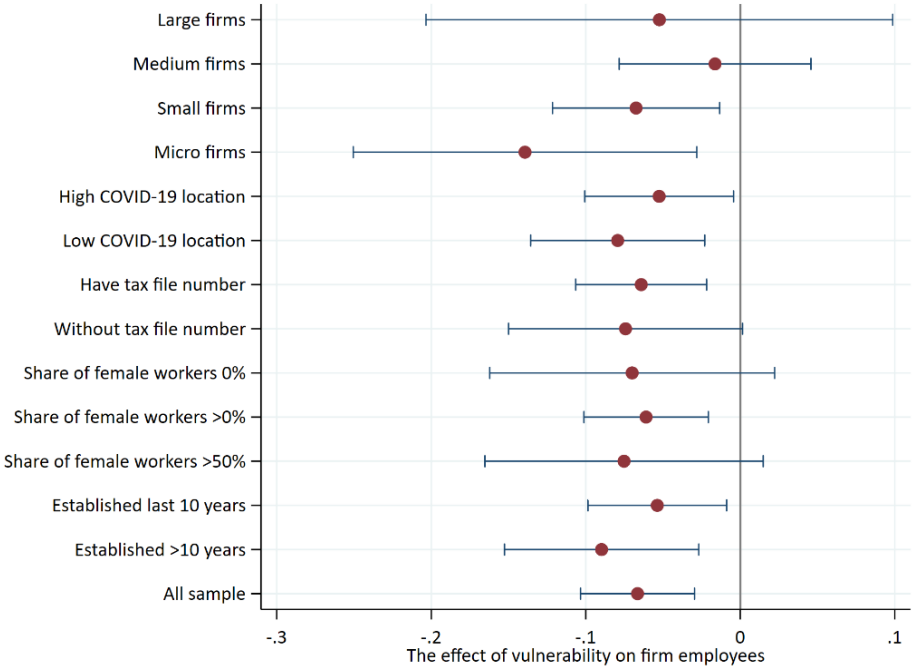


Figure 12 shows that the negative effects of closure experience on the number of employees is evident across several firm characteristics. The effect holds for both large and small firms, firms located in areas with both low and high COVID-19 infection rates, firms with and without taxpayer identification numbers (NPWP), firms without female workers and those with a female workforce share below 50%, as well as firms established within the past ten years. Similarly, Figure 13 indicates that the negative effects of sectoral vulnerability on the number of employees occured for small and micro firms, firms located in areas with both low and high COVID-19 infection rates, firms with and without tax file numbers, firms with a female workforce share below 50%, and firms established both within the past ten years and more than ten years ago.

4.6 Mechanism: The Effects of Business Closure and Sectoral Vulnerability on Business Operations

To understand the mechanisms through which business closure and sectoral vulnerability reduce firms' employee size, we examined their effects on business operations. Figure 14 presents the effects of closure experience on business operations, while Figure 15 shows the effects of sectoral vulnerability, both based on the LBS data.

Figure 14. The Effects of Business Closure on Business Operations

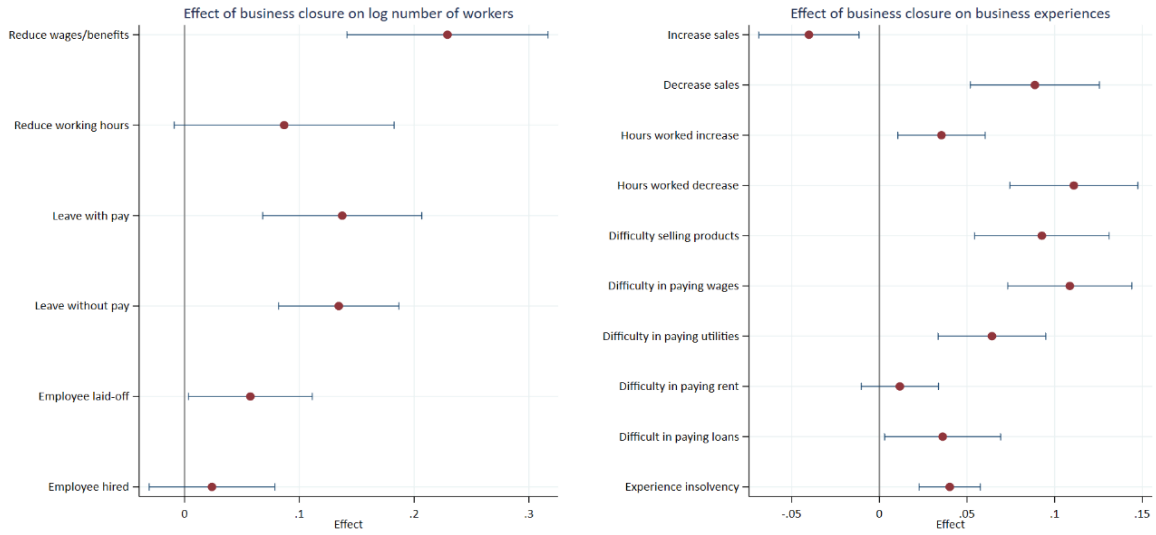
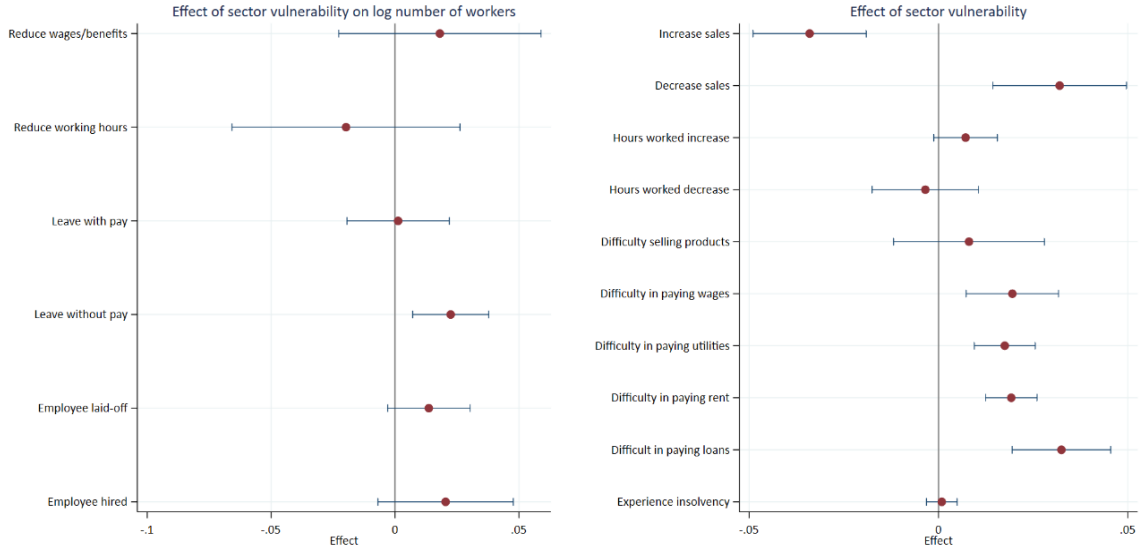


Figure 15. The Effects of Vulnerability on Business Operations



The left panel in Figure 14 shows that firms that experienced business closure—and subsequently reported significant reductions[3] in employment—also had a larger proportion of workers who faced wage and benefit cuts, paid leave, unpaid leave, and layoffs during the pandemic. Meanwhile, the right panel indicates that these firms were less likely to report an increase in sales and more likely to report a decline. They also experienced more fluctuations in working hours, greater difficulties in selling products, and more challenges in meeting financial obligations, such as wage payments, utility bills, loan repayments, and faced a higher risk of insolvency.

In Figure 15, the left panel shows that firms in high-vulnerability sectors—those also experiencing significant negative effects on their number of employees—had a larger

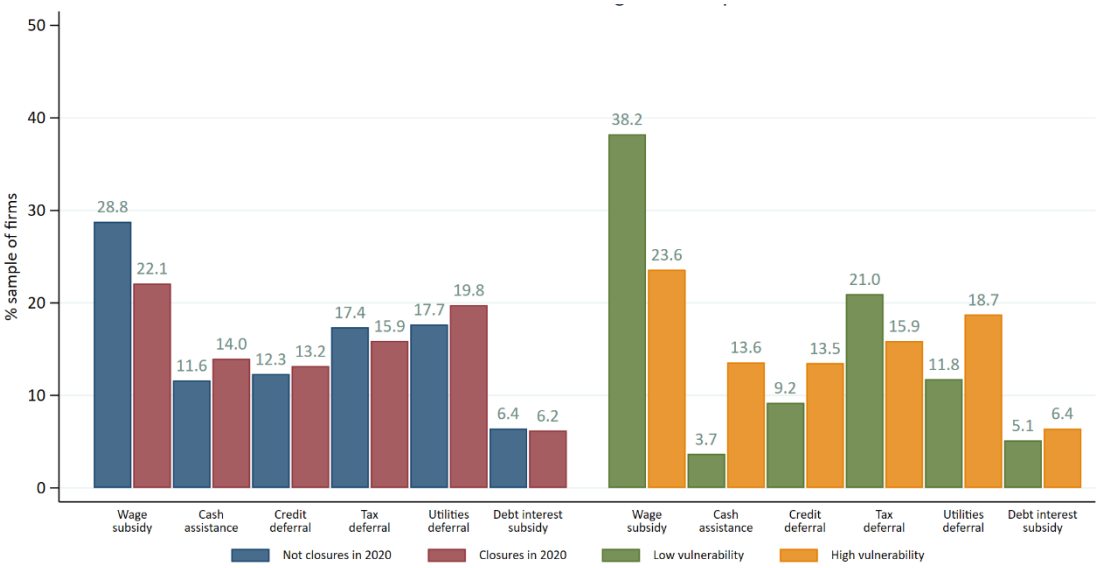
[3]Since the variables in the left panel in Figure 14 measure a negative outcome, the positive coefficient means that the firms experience a larger adverse effect.

share of workers placed on unpaid leave during the pandemic. The right panel reveals that these firms reported less increase in sales, but more decreased sales compared to those that did not experience closures. They also faced more difficulties in paying wages, utilities, rents, and loans.

4.7 The Effects of Government Assistance during the Pandemic on Firm Employment

During the COVID-19 pandemic, the Government of Indonesia implemented several policies to support firms in coping with the difficulties cause by the health crisis as well as the public restrictions enacted to curb the spread of the virus. Figure 16 shows the proportion of firms in the LBS data that received government assistance during the pandemic, differentiated by closure experience and sectoral vulnerability.

Figure 16. Government Assistance during the COVID-19 Pandemic by Treatment Status



The figure indicates that the wage subsidy program was the most widely received form of government assistance. However, the proportion of recipients among firms that did not experience closure (28.8%) was larger than those that did (22.1%). Similarly, 38.2% of firms in low-vulnerability sectors received the subsidy, significantly more than the 23.6% in the high-vulnerability sectors. Meanwhile, the debt interest subsidy had the lowest uptake, with only around 6% of firms in the sample benefiting from this program.

To estimate the effects of these government assistance programs on firms' labor demand, we estimated Equation 5. The results are presented in Figure 17 for business closure experience and Figure 18 for sectoral vulnerability, both using the LBS data.

Figure 17. The Effects of Government Assistance on Log Employees Differentiated by Closure Experience

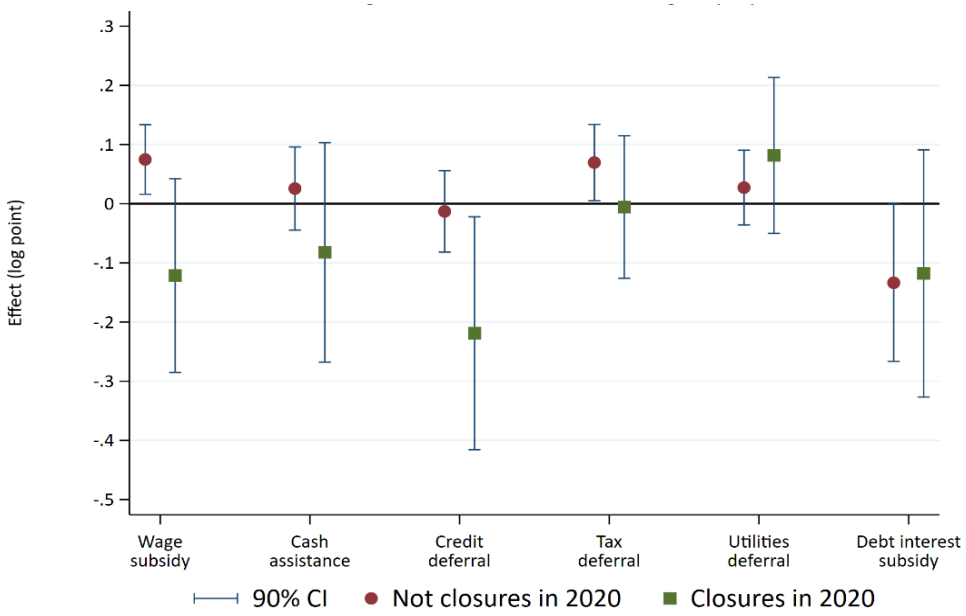


Figure 18. The Effects of Government Assistance on Log Employees Differentiated by Vulnerability Status

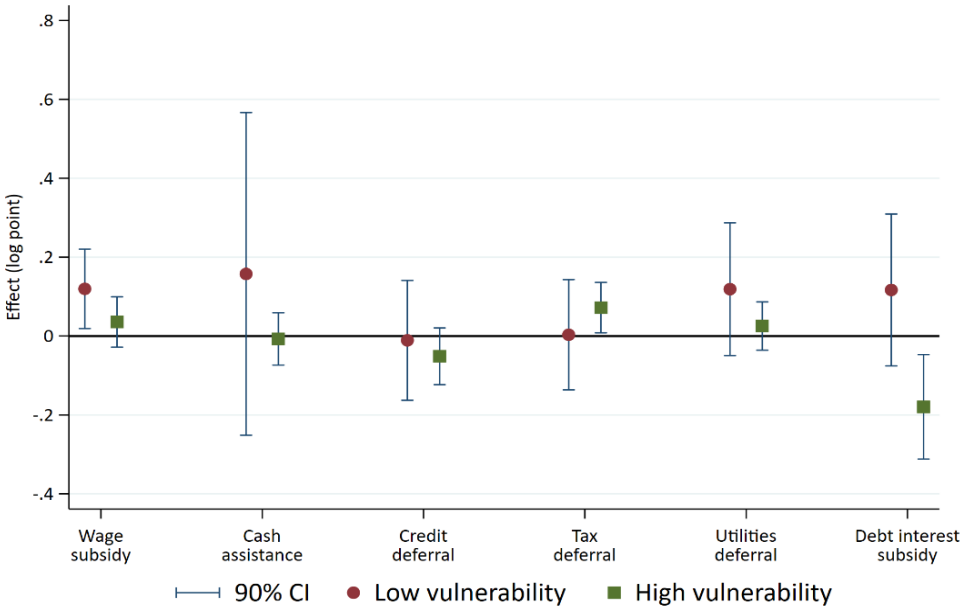


Figure 17 shows that only the wage subsidy and tax deferral programs had positive significant effects on the number of employees. However, these positive effects are found exclusively among firms that did not experience closure. This suggests that the government assistance programs did not have significant effects to counter the negative effects of closure experience on firms' labor demand.

Similarly, Figure 18 indicates that the wage subsidy and tax deferral programs were the only two with positive significant effects on the number of employees. While the positive

effect of the wage subsidy program is found among firms in low-vulnerability sectors, the positive effect of the tax deferral program is found among firms in high-vulnerability sectors. This means that the tax deferral program had significant effects to counter the negative effects of high sectoral vulnerability on firms' labor demand.

In the qualitative data collection, opinions on government assistance varied widely. Several key conclusions can be drawn. First, due to unavailability of data, government may have missed the firms most in need of the assistance. For example, wage subsidy could only be given to firms registered with the National Employment Social Security Implementing Agency (BPJS TK).

> Our firm did not receive any government assistance. I don't know why. Probably, we are not eligible. However, our employees received a wage subsidy of Rp600,000 from BPJS TK. And when I checked, I also got it. Although we are a micro-scale business, we pay for accident insurance to BPJS TK because there is always a risk of workplace accidents. (Interview respondent No. 5, female, 28 June 2023)

Second, information on government assistance was not widely disseminated, especially to micro business owners. Concerns about the mistargeting of assistance also persist.

> Grants for SMEs [small and medium enterprises] are accessible only to those who know how to obtain them. As for us, we lack the information and don't know the access points. As a result, the funds usually go to those who need them least, while those who could benefit the most are left out. (Interview respondent No. 1, female, 16 June 2023)

> No, I didn't get any assistance. The *kabupaten* Trade Agency opened registration for grants and I registered myself, but it was pointless. Those who don't even have a business got the money, but we—the business owners—didn't. (Interview respondent No. 8, male, 1 July 2023)

Third, the design of the credit deferral policy may not have been helpful to the needs of severely impacted firms.

> In my opinion, the credit deferral should be given longer than six months, as the lockdown lasted more than six months and was implemented many times. So, the impacts on us are long-term, and the government must consider this. (Interview respondent No. 4, male, 21 June 2023)

Fourth, the provincial and local governments played a critical role in helping SMEs stay afloat and mitigating closures. They ordered health-related goods produced by SMEs and boosted online sales.

> In Central Java, the provincial government ordered masks, sanitizers, and personal protective equipment. There was a mask project. Each firm received a production quota ranging from 20,000 to 200,000 pieces. (Interview respondent No. 3, female, 19 June 2023)

> To optimize online sales during the pandemic, we proposed that the Cooperative and SME Agency use its budget to cover the delivery costs. This would allow SMEs in Yogyakarta to sell their products without incurring delivery costs, giving a significant boost to their businesses. (FGD participant, female, 14 July 2023)

Fifth, for large firms both inside and outside industrial zones, the vaccination program was considered the most helpful form of government assistance. The Preemployment Card (Kartu Prakerja) program was also mentioned by large firms as beneficial.

> For labor-intensive factories, the free vaccination program enabled continued operations during lockdowns and social distancing measures. These factories needed to make sure that their workers were protected and their immunity maintained. Initially, firms were offered to pay for the vaccines. It costed a lot. Fortunately, the vaccines were later provided for free. Vaccination was helpful and easily accessible. (Participant, FGD with business associations, male, 13 July 2023)

> Big factories also used the Preemployment Card. The human resource development officer helped the laid-off workers get the card. (Participant, FGD with business associations, male, 13 July 2023)

4.8 The Effects of Investment in Machinery and Digitalization on Firm Employees

During the COVID-19 pandemic, some firms were still able to invest in digitalization and machinery. Figure 19 shows that the proportion of firms that made such investments was higher among firms that did not experienced closure, and among firms in the low-vulnerability sectors, compared to their counterparts.

To estimate the effects of these investments on firms' labor demand, we estimated Equation 6. The results are presented in Figure 20 for closure experience and Figure 21 for sectoral vulnerability, both using the LBS data.

Figure 19. Investments Conducted during the COVID-19 Pandemic Differentiated by Treatment Status

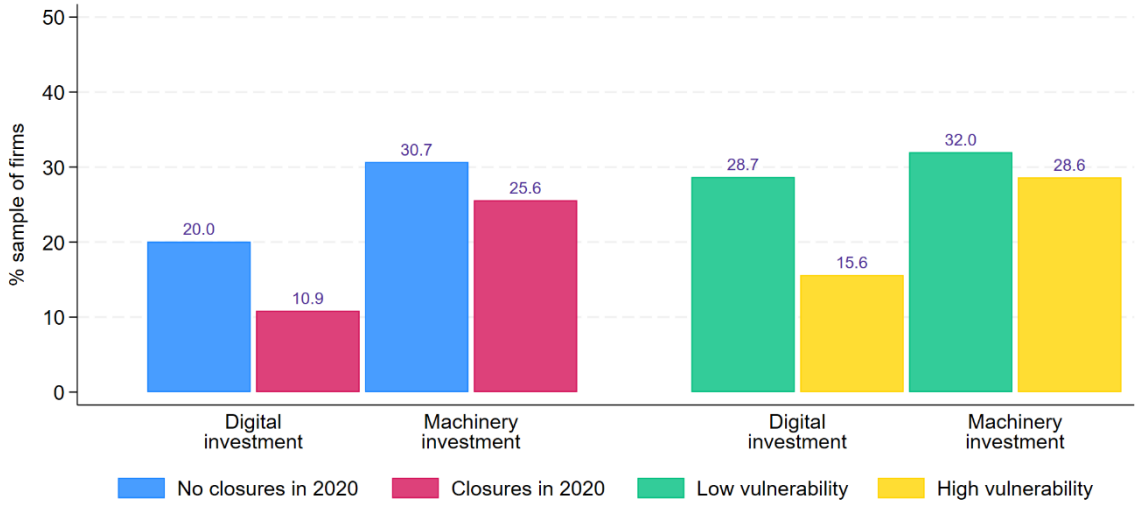


Figure 20. The Effects of Investment on Log Employees Differentiated by Closure Experience

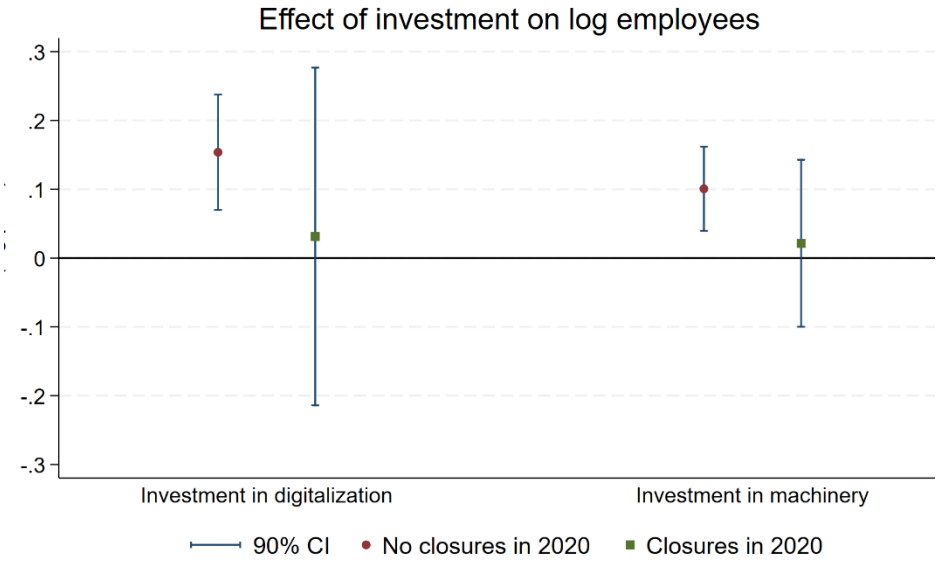


Figure 21. The Effects of Investment on Log Employees Differentiated by Vulnerability Status

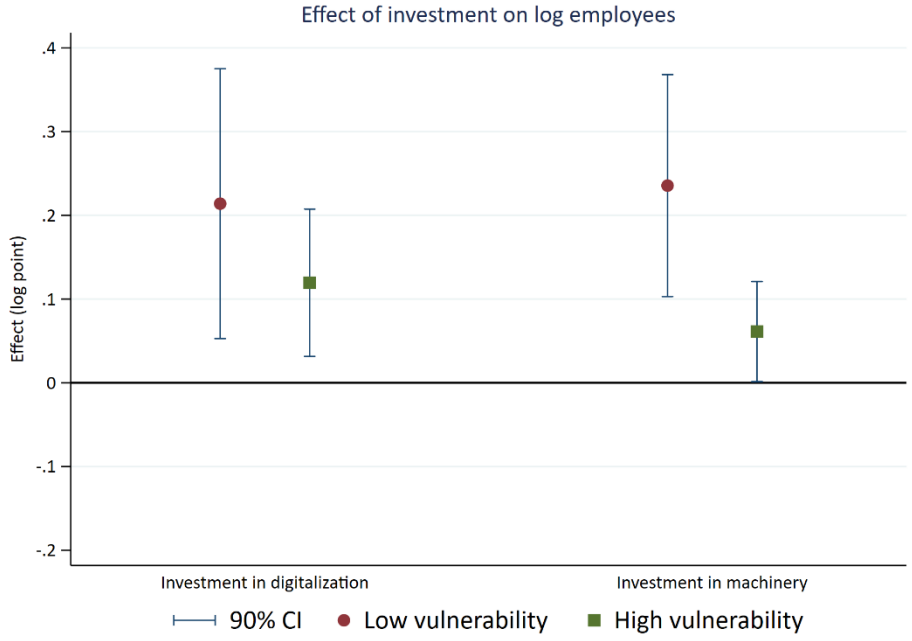


Figure 20 shows that both digitalization and machinery investments have significant positive effects on the number of employees, but only among firms that did not experience closure. This suggests that such investments did not have significant effects to counter the negative effects of closure experience on firms' labor demand.

Similarly, Figure 21 indicates that both investments have significant positive effects on the number of employees across firms in both low and high-vulnerability sectors. This means

that investments in machinery and digitalization have significant effects to counter the negative effects of high-sectoral vulnerability on firms' labor demand.

Through qualitative analysis, it becomes evident that beyond strong demand, firms with adequate capital were better positioned to adapt and leverage the challenges brought by the pandemic. One respondent, who manages a large business, shared how she effectively used the lockdown period for research and development (R&D) activities, as well as for securing production and distribution permits. During this time, she introduced a new perfume product, which quickly outperformed sanitizer in sales and became a bestseller. Recognizing the growing demand for socially distanced leisure activities during the pandemic, she also launched a new business unit. With travel restrictions in place, she identified "glamping" (glamorous camping) as an ideal solution for high-end customers seeking unique travel experiences while maintaining social distancing. Overall, she concluded that "the pandemic has strengthened the aromatic wellness industry ecosystem, with outdoor activities, food, nutrition, and wellness treatments now complementing existing businesses, like herbal products, aromatic museums, and garden tours." (Interview respondent No. 7, female, 30 June 2023)

Moreover, companies with sufficient capital were also able to initiate digital transformation efforts before the pandemic by creating promotional websites and entering marketplaces. A respondent who has a medium-size business was able to grow his business more rapidly during the pandemic, thanks to strong demand and digitalization. Apparently, the sanitizer and herbal drinks produced aligned well with the consumers' needs during the pandemic. He doubled production and hired twice as many workers, providing them with lodging near the factory to comply with social distancing protocols. As a result, he profited from both offline and online sales simultaneously.

Meanwhile, for some respondents with smaller businesses, the ability to adapt quickly was key to engaging in online sales. However, the age cohort of the owners and employees was an important determinant. Some respondents from micro and small enterprises, who are "nonmillenials", were not ready for digital transformation.

> Transformation is not easy, as our brand is not publicly known. We simply keep our long-time customers. They can resell the products online, but we cannot. (Interview respondent No. 4, male, 21 June 2023)

From an investment perspective, the majority of micro business owners are not in favor of credit-based investment due to risk aversion. Instead, they preferred to finance machinery and investment, such as property, from their own profits. This is in line with the survey conducted by Fillaili *et al.* (2022). Other micro business owners noted that the micro credit scheme does not align with their needs.

> The Micro Credit Program (KUR) is available, but they require us to get a higher amount of credit in the following rounds. The path progresses from [Rp]50 [million] to [Rp]75 [million], then to [Rp]100 [million]. But for me, above [Rp]50 [million] is too much. I won't be able to repay it, so it's better to turn it down. (Interview respondent No. 5, female, 28 June 2023)

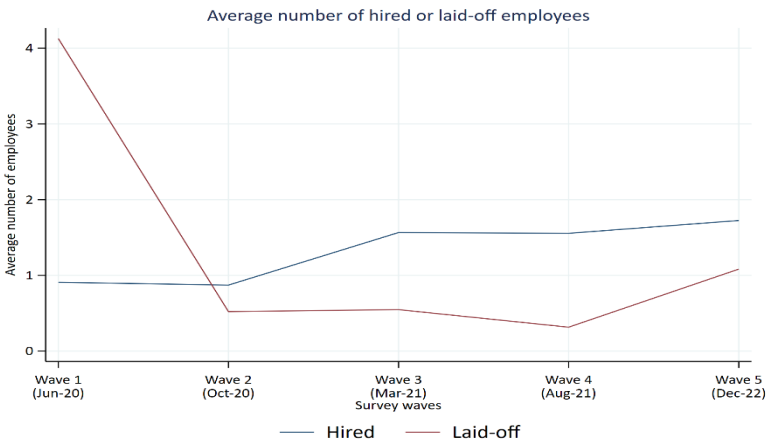
One respondent expressed regret over an investment decision he made just before the pandemic. This was seen as unfortunate timing due to the difficulties of repayment during the crisis.

> Prior to 2020, we had developed a partnership to expand the business by opening a new store. Only three days after the launch, the government announced the lockdown. So, the new store remained idle. It costed us a lot; we even broke the partnership. Had the expansion been made based on our own savings [rather than credit], we wouldn't have lost this much. (Interview respondent No. 4, male, 21 June 2023)

4.9 Firms' Capacity and Appetite (Behavior) toward Physical and Labor Investment Outlook

The appetite of firms for physical and labor investments are essential factors that will shape the economic outlook in the coming years. Firms' investment behavior will significantly impact economic growth. Data from LBS, presented in Figure 22, shows that during the early period of the COVID-19 pandemic, the average number of hired workers was significantly lower than the average number of laid-off workers. However, beginning in the last quarter of 2020, this trend reversed. It indicates that, as recovery progressed, firms' appetite for labor investments began to grow again and is expected to stabilize.

Figure 22. Average Number of Hired and Laid-Off Employees during the Pandemic



In the qualitative study, participants expressed three distinct perspectives on investment appetite: optimism, neutrality, and pessimism. Notably, optimistic views were predominantly expressed by government officials.

> Despite the pandemic, investments in certain sectors continued to increase. The data shows that investment realization in 2021 was even higher than in the period prior to the pandemic. This was possible because industries could still operate during the pandemic and, hence, investments were still possible. The only obstacle was the permit for foreign workers, as we completely banned their entry into the country. They were only gradually allowed to enter starting at the end of September 2021. (Interview informant No. 1, male, 26 June 2023)

> From 2020 until now, our exports of industrial goods have always exceeded imports. Investments in the industrial sector are also increasing. For example, our data shows that the industrial sector contributes 40% to total investments in the first quarter of 2023. Therefore, we are optimistic when it comes to investment and export targets. The industrial sector also contributes 30% to the tax revenue. (Interview informant No. 2, male, 27 June 2023)

> In terms of investment realization, the targets have been achieved in recent years, even during the pandemic. Therefore, President Jokowi has instructed us to raise the investment target for this year. We are also optimistic because we have enacted some policy reforms to ease investments, namely the Government Regulation No. 5 of 2021 [on Risk-Based Business Licensing] and Presidential Regulation No. 10 of 2021 [on Investment Business Fields]. (Interview informant No. 5, female, 12 July 2023)

The government officials who expressed optimistic views also referred to promising trends in several indexes, such as the Purchasing Managers' Index (PMI), which reflects the purchasing managers' perceptions of market conditions, and Consumer Confidence Index (CCI), which indicates consumer trust in the overall business conditions, including the labor market.

> Our PMI stands at 50, meaning that our manufacturing sector is expansive; if it drops below 50, it signals contraction. We can compare ours with that of other ASEAN countries, which always stay similar. (Interview informants No. 6, male and female, 27 June 2023)

> The recently released CCI by the Central Bank reflects consumer trust. This can be reflected in the rising sales of cars and motorcycles, which have surpassed prepandemic levels. We know that automotive sales are a leading indicator of consumption. (Interview informant No. 3 male, 4 July 2023)

This optimism was also shared by a businessman who produces herbal medicines. In fact, he recounted that he expected the revocation of the pandemic COVID status to take place at the end of 2022.

> I have some assets to sell. The market was negative during the pandemic. However, when the President finally ended the pandemic status recently [in June 2023], I told myself this is the time for business to thrive again. I'm hopeful to make transactions these days. (Interview respondent No. 6, male, 30 June 2023)

Regarding the neutral perspective, the majority of businesspeople are focused on seeking business stability. They feel hesitant to expand their businesses until they achieve the desired level of stability.

> To invest, it is necessary to wait until the market is stable, so that profits stay above the credit installment obligations. (Interview respondent No. 5, female, 28 June 2023)

> In general, the business sector's behavior is to wait and see. However, for big players, the optimal solution is probably to invest now and become market leaders once the economy fully recovers. (Interview informant No. 4, male, 5 July 2023)

> The investment data from the Coordinating Ministry for [Maritime Affairs and] Investment demonstrates vibrant growth even during the pandemic. However, after the war [in

> Ukraine], most business owners have adopted the "wait and see" attitude. (Participant, FGD with business associations, male, 13 July 2023)

Investment appetite is also influenced by the election.

> As we are approaching the election, investor confidence has declined, although only slightly. (Interview informant No. 5, female, 12 July 2023)

> Elections might not be very important for a market-based economy. They tend to be noisy only for some time, but afterwards, it's business as usual. Nevertheless, elections are very important for sectors whose market is strongly regulated, such as real estate, mining, palm oil, fisheries, and others related to natural resources. Players in those sectors will examine each candidate's policy stance. In fact, some might invest in a certain candidate or in all candidates. (Interview informant No. 4, male, 5 July 2023)

From a more pessimistic perspective, firms and industry associations believe that investment appetite may not increase due to both external and internal factors. For export-oriented manufacturing firms, external factors, such as the global recession and the war in Ukraine, have significantly disrupted their market in the US.

> The year 2023 has been marked with plummeting demand for furniture from overseas markets. Local demand is also influenced by the recession. The impact of the recession is far worse than that of the pandemic. In fact, we enjoyed growing demand during the pandemic but were hit hard afterwards. (Participant, FGD with business associations, male, 13 July 2023)

> In 2023, the garment and footwear industries experienced a 40%–50% drop in demand. This micro data is in contrast with the macro data from the Ministry of Finance [Kemenkeu], which reveals a promising trend. Probably, the data from the Ministry of Labor [Kemenaker] does not fully represent actual layoffs. We needed to check the claim of old-age insurance from the BPJS TK. It could reach one million people. (Interview informant No. 4, male, 5 July 2023)

Pessimism was also shared by firms that previously benefited from fiscal incentives during the pandemic. At the time, the government implemented safeguard policies to protect labor-intensive local industries from cheaper imported textiles, primarily from China. During the pandemic, to address raw material shortages, import restrictions on materials, including textiles, were relaxed. However, this relaxation policy was revoked in 2023.

> Unlike large industries with secure supply chains, small industries suffer so much. We can hardly get textile from our suppliers in China and Vietnam, whose products are of good quality thanks to their advanced technology—far better than local products. So, a safeguard policy was applied although local industries were not ready to supply us with textiles of the same quality. If we placed orders to textile firms, they would reject orders below 10,000 yards. We are only small firms; we can't afford it. (Interview respondent No. 2, male, 19 June 2023)

There are also institutional challenges that hindered efforts to fully facilitate firms' recovery from the pandemic.

> The government has planned to increase VAT [value-added tax] to 12% this year or probably next year. Moreover, carbon tax will add more burden to us. It is funny that we are

asked to move towards solar panel, yet no subsidies are provided for the transition. Even worse, the use of solar energy is restricted [by the National Electricity Company] only to a certain percentage. (FGD participant, male, 13 July 2023)

According to the proposed Health Bill, some raw materials of cosmetics must comply with the standards of pharmaceutical goods, which will drive up the price of local cosmetic products. [As a result,] SMEs' products will not be able to compete with foreign products. (FGD participant, male, 13 July 2023)

We have seen the uphill struggle to enact the Omnibus [Job Creation] Law. In terms of employment, the rules have been relaxed. For example, there is no restriction on using outsource workers. This is in line with the needs of the business sector. However, with the issuance of Government Regulation in Lieu of Law No. 2 of 2022, we go back to the spirit of the old regime of Law No. 13 of 2003, which restricts outsource to only five noncore activities. (Interview informant No. 4, male, 5 July 2023)

4.10 Other Qualitative Findings: Business Expectations for Speedy Recovery

Entering the endemic phase, government should alleviate the scarring effects of the pandemic on business investment and employment. We asked our informants and respondents what government actions would support faster business recovery after pandemic. In general, their responses can be grouped into eight categories.

a) Demand Creation

During the pandemic, the central and local governments innovatively facilitated the establishment of open-air cafés and recreational areas, where business activities could continue while maintaining social distancing. Additionally, they helped stimulate demand for firms' products by organizing promotional events in malls.

The economic growth in Yogyakarta depends entirely on human activities, particularly tourism and education. We diverted our spending toward holding promotional events and festivals, so that sellers and buyers can meet while maintaining social distancing. (Participant, FGD with provincial government, female, 14 July 2023)

The government's efforts to open new markets for firms' products can also be an alternative for demand creation. However, the impacts of promotional events tend to be long-term, rather than immediate.

From 2021 onward, we were invited to take part in exhibitions in Jakarta and join overseas missions. We also participated in the G20 event. These were all efforts to boost demand. Although the impacts are yet to be seen, at least it serves as free advertisement. (Interview respondent No. 7, female, 30 June 2023)

The Cooperative and SME Agency brought our products to foreign embassies, like Turkey, Canada, and Australia. In terms of prestige and branding, this is good. However, right now, local buyers remain our priority. (Interview respondent No. 1, female, 16 June 2023)

Moreover, market expansion should start domestically. In fact, demand creation must not disregard the urgency to raise awareness of local products.

> Supports should be initiated by the leaders. They should encourage people, for example civil servants, to buy locally from nearby shops. (Participant, FGD with business associations, male, 13 July 2023)

> I should mention the so-called "Proud of Indonesian" products as one of the most important government interventions. It needs to continue. (Interview informant No. 3, male, 4 July 2023)

b) SMEs' Digital Transformation

Digital transformation can significantly boost demand creation for SMEs. However, this transformation often poses challenges, especially for businesses whose owners or most of its employees are from the older generation. As an entry point to digitalization, SMEs can utilize social media platforms, such as WhatsApp, Instagram, or Facebook for buying and selling. A more advanced step involves adopting e-commerce and marketplace platforms.

Digitalizing SMEs has been the most popular government intervention at both central and local levels. This has to do with the Ministry of Cooperatives and Small- and Medium-Scale Enterprises' (Kemenkop UKM) target to assist 30 million enterpreneurs in going online by 2024 (Kamalina, 2023). To achieve this target, policies on digitalization should ideally address several aspects. To begin with, the internet quality needs to be improved, particularly outside Java. Moreover, internet security is critical to ensuring a smooth digital transformation. Encouraging enterpreneurs to go online should be accompanied by efforts to urge consumers to use digital products and services. However, it requires strong guarantees of digital security guarantee to win their trust.

> Sometimes, I notice that people are hesitant to make digital transactions simply because they fear data breaches or being hacked. (Interview informant No. 3, male, 4 July 2023)

Finally, improving efficiency through digitalization must go beyond marketing and sales. While digitalization may begin with marketing aspects, it should not stop there. Therefore, training programs should cover digitalization in business management as well as introducing access to financial technology (fintech) for an alternative source of financing.

Box 1. Online Loans: Blessing or Curse?

While fintech can support unbanked SMEs, its services are often met with intense disapproval. Most SME respondents voiced their concerns about the growing number of online loan victims. They insisted that the government should ban fintech operations for several reasons: excessively high interest rates, lack of transparency in administrative fees, and unethical debt collection practices. It is not uncommon for those trapped in debt to lose their jobs and career, commit crimes, or, in extreme cases, take their own lives.

One respondent shared his experience of warning his employees against using online loans. He encouraged them to speak with him if they needed financial assistance, so that they could find a solution together. His policy stemmed from an experience, in which his employee borrowed Rp4 million, but only received Rp3.8 million in disbursement. Meanwhile, he was required to repay total of Rp6 million within three months. He considered this burden unreasonably high.

Source: Interview respondents, female and male, 19 June 2023

c) Policies on Machinery

Machinery was mentioned as one of the important lessons learned from the pandemic, not only for the large manufacturing firms.

> Pandemic has taught us to accelerate the use of machinery. Unlike humans, machines do not get infected or fall ill. They are also much easier to deal with compared to human labor. Factories should be more intensively mechanized and digitalized … but larger firms are more prepared for mechanization than smaller ones. (Interview informant No. 4, male, 5 July 2023)

Accordingly, interventions from Kemenperin and Kemenkeu are relevant, particularly in the form of subsidies for SMEs. This is especially important for sunset industries, such as textiles and footwear. Firms can submit proposals to Kemenperin. If approved, they are eligible to receive a 25% subsidy for locally produced machinery and a 10% subsidy for imported machinery.

> The machinery renewal program is aimed at improving production processes. Local firms could not compete with overseas competitors if they still use inefficient old machines. With old machines, the firms bear high costs and longer times. New, digitalized machines can produce products of higher quality. (Interview informant No. 2, male, 27 June 2023)

d) Policies on Finance

Aside from demand creation and market access, access to credit is also important. Although some business owners prefer not to rely on loan and instead depend on their accummulated savings, there is a clear aspiration for easier access to financing in the hope of faster recovery from the pandemic. Firstly, to some micro and small business owners, credit is still perceived as difficult to access, unless they have personal connections within the bank.

> Banks would think twice before lending to us, unlike to medium and large enterprises. (Interview respondent No. 1, female, 16 June 2023)

> Securing a KUR [People's Business Credit] loan of Rp300 million is much easier if one has connections with an "insider" at the bank. (Interview respondent No. 2, male, 19 June 2023)

Secondly, there is a need for better dissemination of information to SMEs regarding collateral requirements under the KUR program. For instance, a respondent from a micro-sized factory was unaware that a purchase order could serve as collateral. In contrast, a respondent from a medium-sized factory noted that borrowers seeking credit of up to Rp50 million could use purchase contracts as collateral, although he acknowledged that many business owners were unaware of this provision. This contrasts with what was reported in the newspaper, which states that KUR loans below Rp100 million require no collateral (Walfajri, 2023).

Thirdly, the KUR program needs to refine its targeting to better reach the underserved micro and small business owners. In fact, it is widely acknowledged that "KUR is not effective in targeting the right groups." (Interview respondents, male, 19 June 2023)

> The most common practice of KUR among the channelling bank is simply shifting their existing clients from regular credit schemes to KUR in order to access the subsidy. (Interview informant No. 3, male, 4 July 2023)

Fourthly, high interest rates for commercial loans remain a major barrier to business growth, affecting not only micro-sized business owners, but also larger firms.

> If I need credit, I borrow from moneylenders and repay weekly. For example, a Rp1 million loan requires a weekly repayment of Rp100,000 over 12 months. If I need Rp5 million, I must borrow from five different lenders, paying Rp500,000 per week, or approximately Rp2 million per month. In comparison, with the KUR program, a Rp10 million loan requires only a monthly installment of Rp500,000. However, I don't have the courage to approach a bank. (Interview respondent No. 9, male, 2 July 2023)

> Currently, commercial interest rates are too high for us to compete with products from other countries. For example, in China, the interest rate is only 5% per year, while here we face rates of 11%–12% per year. (Participant, FGD with provincial government, male, 14 July 2023)

Box 2. KUR: Should It Encourage SMEs to Graduate, or Be Based on Need?

One respondent expressed concerns about the rigidity of the KUR program, noting that it forces borrowers to take on larger loans in subsequent cycles. In contrast, another informant argued that KUR should focus on helping clients grow and graduate to more advanced levels of business success. He emphasized that supporting clients who merely survive without any incentive to expand is a missed opportunity for a subsidized credit scheme. This diminishes the overall quality of the program. He suggested that KUR focus on expanding its client base by targeting new clients who have never received credit before. In order for the country to have strong entrepreneurs, he argued that both the quality and quantity of the KUR program must be improved.

Source: Interview informant No. 3, male, 4 July 2023

e) Capacity Building for SMEs

Several good practices that emerged during the pandemic can be adopted in the postpandemic period. One notable example is the effective linkage between capacity building and demand creation. For instance, training and workshops were often held in outdoor cafés or shopping centers to drive sales. The topics were simple yet practical, particularly for individuals who had been laid off or housewives. Examples included making soap, face masks, and other basic crafts. Additionally, there is a need for capacity building in digital skills for business owners. Many respondents expressed interest in reskilling and upskilling opportunities. This demand is reasonable, given that a significant portion of the labor force—54.4%—has only completed basic education (nine years or less) (BPS, 2024).

> So far, we only learn from experience. Sometimes we make right decision, sometimes not—it's fifty-fifty. We could misinterpret information if we only watch videos from YouTube or read from Google. Having a mentor would make learning much more effective. (Interview respondent No. 3, female, 19 June 2023)

Suggestions gathered during an FGD with business associations are worth considering for adoption by central or local governments, well as state-owned enterprises. For example, training programs in partnership with universities can be pursued through the Merdeka Belajar Kampus Merdeka (MBKM) and university community service programs. These collaborations would allow students to learn from SME enterpreneurs while also contributing by teaching digital literacy and basic digital marketing skills to the enterpreneurs. To reduce training costs, the sessions could be conducted online.

f) Policies on SME Formalization

Supporting the formalization of enterprises is essential for enabling small firms to advance and graduate. This will in turn contribute to the country's economic growth.

> Many small firms just want to remain informal forever. The government should be worried about this. Having high informality, Indonesia cannot become a developed country. The economies of Japan and Korea are also dominated by SMEs, but these are formal SMEs that industries can support and partner with. Here, industries can only back up the SMEs through CSR [corporate social responsibility] activities. However, this is not sustainable. (Interview informant No. 3, male, 4 July 2023)

However, significant resistance to formalization persists among business owners, largely due to concerns about taxation and compliance with labor regulations. Of the estimated 60 million SMEs, only 1.5 million (or 2.5%) submit their annual tax returns (Sandy, 2023). In reality, the income tax for SMEs is relatively low and considered final, as the government reduced it from 1% to 0.5% in 2018. This applies to businesses with an annual turnover below Rp4.8 billion. For example, a business owner with a monthly turnover of Rp10 million would only pay Rp50,000 in taxes per month.

There are some options for the government to support formalization. First, the benefits of being a formal enterprise should be well communicated. These include better access to financing, government procurement, and partnerships with big industries. Moreover, "being

formal enables business owners to directly communicate, consult, and express their opinions to the government via associations." (Participant, FGD with business association, female, 13 July 2023)

Furthermore, many business owners remain unaware of the simplified procedures for business registration. Therefore, guidance in this process should be well disseminated. The Job Creation Law introduces several provisions to facilitate formalization. For example, unlike large industries, SMEs can obtain Domestic Component Level (TKDN) certification simply by making a written declaration, without the need for field verification. This law also allows for formalization of private limited companies, even for individual or family-owned ventures. Furthermore, the minimum wage requirement for SMEs is set lower than that for larger companies. Unfortunately, "many SMEs are not aware of this new provision." (Participant, FGD with business associations, male, 13 July 2023)

Above all, the major obstacle of formalization may lie in the political narratives.

> Many politicians glorify informal enterprises in hopes of appearing populist. They forget that informality is not the mainstream economics. We never hear politicians say, "If elected, I will formalize informal enterpreneurs." Instead, they say, "If elected, I will provide more SME credit, I give this and that facilities." To me, this reinforces a comfortable zone for SMEs to remain informal. And to me, this is a wrong approach of development. (Interview informant No. 3, male, 4 July 2023)

g) Labor Flexibility

Labor issues are a very important aspect of postpandemic recovery for two reasons. Workforce reduction was cited by respondents as the primary coping strategy—not only to improve efficiency, but also to comply with the pandemic's technical procedure. As a result, layoffs occurred immediately. However, the rehiring process in the postpandemic period was far from immediate.

> We laid off 80% of the workers in 2020. Today, we are still struggling to make ends meet, let alone rehire them. (Interview respondent No. 2, male, 19 June 2023)

Changes in the labor market have taken various forms. A respondent illustrated the shrinking labor absorption in the hotel industry, which he believes reflects a broader trend.

> Prior to the pandemic, ten workers were assigned for every 100 hotel rooms; now, it's only six. (Interview respondent No. 4, male, 5 July 2023)

This is made possible as employers expand workers' roles to assign multiple tasks effectively, hence reducing the number of workers needed. Overall, the pandemic has accelerated the decline in the elasticity of labor demand with respect to investment, a trend that intensified during the three years of the pandemic.

The postpandemic period will witness even more common practice of outsourcing for irregular needs of labor.

> For the time being, we don't hire more workers. In time of need, we can reach out to the community. Members of the screen-printing community can help when we have big orders. It's also good to empower them. (Interview respondent No. 3, female, 19 June 2023)

Box 3. Outsourcing Is Not Always Bad

There is a stigma that outsourcing is a form of labor exploitation. In reality, outsourcing is simply a common practice whereby third parties are engaged to handle specific tasks. This practice often gives the impression that workers' rights to fair wages and social security are overlooked. If this is the case, employers must be held accountable. However, when the third party treats outsourced workers fairly, they should be supported. Outsourcing typically arises due to the high overhead costs of internalizing certain tasks. If small firms acting as a third party can perform the work more efficiently due to lower overhead costs, larger companies should consider outsourcing to them. Ideally, outsourcing benefits the employer, the third party, and the workers involved.

Source: Interview informant No. 4, male, 5 July 2023

Employers prefer to give hourly rather than daily—or let alone monthly—pay.

> My employees are housewives from the neighborhood. Their pay is adjusted between minimum wage and the [standards under the] Job Creation Law. For example, the minimum wage [for full-time workers] in Yogyakarta is about Rp2 million [per month]. Meanwhile, the housewives cannot afford to work eight hours daily, as they have to do domestic work and care for their children. So, I give them hourly pay, which is Rp10,000. (Interview respondent No. 5, female, 28 June 2023)

In some industries, employers share the same pool of casual workers.

> In the hotel industry, for example, an employer can borrow workers from another, especially casual workers with the same job roles. (Interview informant No. 4, male, 5 July 2023)

As the labor market grows increasingly flexible, with contract workers becoming more common than permanent employees, the government should consider the consequences. First, training programs for contract workers should be designed to cover a wide range of skills. This will enable them to handle multiple tasks, hence enhancing their employability. Second, social security for contract workers must be addressed. Many of these workers were once formal employees, but under the flexible labor market regime, they now fall somewhere between formal and informal employment, often working on a daily or even hourly basis. The government needs to create a formula for contributions from both employers and employees in this context.

h) Business Enabling Environment

Last but certainly not least, the business sector expects a conducive environment to support growth. This expectation is not new, yet it remains relevant, even after the enactment of the Job Creation Law.

Box 4. Positive Sentiment to Attract Investment Following the Job Creation Law

The implementing regulations were prepared immediately after the enactment of the Job Creation Law in October 2020. In February 2021, Presidential Regulation No. 10 of 2021 was issued. The tone of this regulation is very different from the previous Presidential Regulation No. 44 of 2016 on List of Business Fields. While the latter consisted solely of a negative investment list, the former is often referred to as a positive investment list.

In principle, the new regulation means that all business sectors are open 100% to foreign investments, unless it is subjected to a specific type of limitation. To compare the number of closed business fields under each regulation, Presidential Regulation No. 10 of 2021 in conjunction with Presidential Regulation No. 49 of 2021 only specifies nine business fields—such as narcotics, gambling, alcohol, and alcohol. These fields are far fewer than the 515 business fields identified in Presidential Regulation No. 14 of 2016.

Source: Interview informant No. 5, female, 12 July 2023; Ministry of Investment (2022)

Some informants noted that the Job Creation Law has facilitated the SME registration with simple business models. However, they reported that the challenges largely unchanged for medium and large enterprises.

> One major challenge in building a factory is land acquisition, as not all regions have designated industrial zones. Even when they have, land prices within these zones can be very expensive, especially for large factories that require 30–40 hectares. In our case, we decided to purchase land outside the industrial zone, but this came with its own set of challenges. Building a factory requires permits, like building approval and a certificate of occupancy, the latter of which had fees based on the building's size. In addition, we had to wait a year for the environmental impact assessment and traffic permits. Once those were ready, we had to secure an industrial permit. Finally, we faced a new issue: a regulation from the Ministry of Agriculture that prevents converting paddy fields into factories. This rule came to light after we had already invested, due to poor communication between the central and local governments. (Participant, FGD with business associations, male, 13 August 2023).

Marta (2023) noted that permits for medium and large enterprises have not become any easier under the Job Creation Law regime. For businesses classified as medium to high risk, the Online Single Submission Risk-Based Approach (OSS-RBA) has not been able to streamline the permit acquisition process as intended. The core issue lies in the lack of data synchronization across ministries, as well as between the central and local governments. Additionally, not all regions have incorporated their Detailed Spatial Plan (RDTT) into the OSS-RBA system. To make matters worse, many regions have yet to legalize their RDTR, further complicating the process of obtaining permits.

V. Conclusions and Policy Recommendations

5.1 Conclusions

The COVID-19 pandemic has resulted in a significant slowdown in business and investment activities in Indonesia. The labor market was heavily impacted, with widespread layoffs, unpaid leaves, and businesses closures. While the economy has shown signs of recovery two years after the initial shock, the recovery trajectory has been uneven across industries. Moreover, these unequal recovery paths may result in lasting damage to the economy in the future.

The COVID-19 pandemic was an unanticipated event. Many firms were unprepared to deal with it in the beginning. The severity of both the direct health impact and the government-imposed Restrictions aimed at containing the virus forced numerous firms to shut down for various reasons during the early period of the pandemic. Later, some of these firms managed to reopen and resume their operations. In this study, we utilized these firms' closure experience in the early pandemic period in 2020 as an indicator for the the COVID-19's impact severity. We examined the impact of such closure experience on firms' investment and labor demand during and after the pandemic.

In addition, we developed a sectoral-level index of vulnerability to COVID-19, measured by calculating the gap between each sector's actual growth and its predicted growth had the pandemic not occurred during the first two quarters of 2020. A larger growth gap indicates higher vulnerability to the pandemic's impacts. We find that during the pandemic, the high-vulnerability sectors experienced lower leves and slower growth of GDP compared to the low-vulnerability sectors. The most pronounced effects of vulnerability occured in the second quarter of 2020. The negative effects on GDP levels persisted through the last quarter of 2022. Meanwhile, the effects on GDP growth had started to recover by the second quarter of 2021. We also find that the high-vulnerability sectors saw an increasing absolute number of informal workers, but its relative percentage of informal workers decreased compared to the low-vulnerability sectors.

In terms of investment, we find that, during the pandemic, firms in high-vulnerability sectors made significantly lower investments than those in low-vulnerability sectors. This lower level of investments was driven by lower revenue, reduced cash equivalent, and diminished market capitalization. These significant negative effects on investments continued into early 2022.

Meanwhile, regarding labor demand, we find that firms experiencing closure during the early stages of the pandemic significantly reduced their workforce compared to those that did not experience a closure. Similarly, firms in high-vulnerability sectors reduced their number of employees compared to firms in low-vulnerability sectors. Furthermore, the effects are larger for firms that experience a longer duration of closure. These negative

effects of the pandemic on labor demand remained two years after the onset of the pandemic.

During the COVID-19 pandemic, the Government of Indonesia implemented several policies to support firms in facing the challenges due to the pandemic and the government-imposed restrictions to contain the spread of the virus. Unfortunately, we find that only the wage subsidy and tax deferral programs had significant positive effects on the number of employees. However, these effects were found only among firms that did not experience a closure. This means that government assistance programs did not have significant effects to counter the negative effects of closure experience on firms' labor demand. Similarly, we find that the wage subsidy program had positive effects among firms in low-vulnerability sectors, whereas the tax deferral program had positive effects among firms in high-vulnerability sectors. This indicates that the tax deferral program had significant effects to counter the negative effects of high sectoral vulnerability on firms' labor demand.

Despite the challenges during the pandemic, some firms managed to invest in digitalization and machinery. We find that investments in both digitalization and machinery had significant positive effects on the number of employees, but only among firms that did not experience a closure. This means that the investments did not have significant effects to counter the negative effects of closure experience on firms' labor demand. Nevertheless, we find that investments in both digitalization and machinery had significant effects to counter the negative effects of high sectoral vulnerability on firms' labor demand.

Firms' appetite for physical and labor investments are essential factors that will shape the economic outlook in the coming years. We find that during the early period of the COVID-19 pandemic, the average number of hired workers was significantly lower than the average number of laid-off workers. However, this trend began to reverse in the last quarter of 2020, indicating that as the recovery progressed, firms' appetite for labor investments started to rebound and is expected to stabilize. Unfortunately, our qualitative investigation reveals that the business community continues to hold a neutral or pessimistic outlook on their investment appetite due to both external and internal factors.

5.2 Policy Recommendations

The findings of this study yield several important policy implications. First, to prevent long-term scarring effects on firms, it is imperative for the government to support firms in staying afloat during a crisis. This can be done, for example, by assisting firms to secure their access to inputs, facilitate their access to product markets, reduce their wage bills and other operational expenses through subsidies, and deferring their loan repayment obligations.

Second, in cases where firm closures do occur, efforts must be made to prevent further scarring effects. Those firms need to be assisted to reopen as quickly as possible. This will necessitate the government to assess the causes of closure and address them effectively.

This may require the government to coordinate with the firms' stakeholders, including banks, other creditors, and suppliers.

Third, to accelerate recovery, firms' investments in machinery and technology should be encouraged and facilitated to enable firms to transform. There are several ways to achieve this. One approach is to persuade company leaders to invest in new technologies by emphasizing their benefits and improved analytics. Another is to maximize the returns from technology investments by lowering the associated costs and simplifying import procedures.

List of References

Badan Pusat Statistik (2020) Laju Pertumbuhan PDB Seri 2010 (Persen), 2020. <https://www.bps.go.id/indicator/11/104/4/-seri-2010-laju-pertumbuhan-pdb-seri-2010.html> [7 August 2023]

Badan Pusat Statistik (2024) Pendudukan Berumur 15 Tahun Ke Atas Menurut Pendidikan yang Ditamatkan dan Jenis Kegiatan Selama Seminggu yang Lalu, 2023. <https://www.bps.go.id/id/statistics-table/3/UTJOSk4zWnRUa1pTT0dwRmJYZzNkMHd3UWtoVVVUMDkjMw==/penduduk-berumur-15-tahun-ke-atas-menurut-pendidikan-tertinggi-yang-ditamatkan-dan-jenis-kegiatan-selama-seminggu-yang-lalu--2023.html?year=2023> [4 Maret 2025]

Béland, L.-P., Brodeur, A., & Wright, T. (2020) The Short-Term Economic Consequences of Covid-19: Exposure to Disease, Remote Work and Government Response. SSRN Electronic Journal. DOI: 10.2139/SSRN.3584922.

Cerra, V., Fatas, A., & Saxena, S. C. (2021) Fighting the scarring effects of COVID-19. Industrial and Corporate Change, 30(2), 459–466. DOI: 10.1093/ICC/DTAB030

Cho, S. J., & Winters, J. v. (2020) The Distributional Impacts of Early Employment Losses from COVID-19. SSRN Electronic Journal. DOI: 10.2139/SSRN.3602755.

Fillaili, R., *et al*. (2022) 'Men- and women-owned/led MSMEs and the COVID-19 policy responses in Indonesia', *The SMERU Research Institute*. <https://smeru.or.id/en/publication/men-and-women-ownedled-msmes-and-covid-19-policy-responses-indonesia> [27 February 2025].

Huckfeldt, C. (2022) Understanding the Scarring Effect of Recessions. American Economic Review, 112(4), 1273–1310. DOI: 10.1257/AER.20160449.

Kamalina, 2023, 'Pemerintah Optimistis Target 30 Juta UMKM Go Digital Tercapai pada 2024', *Ekonomi Bisnis*. <https://ekonomi.bisnis.com/read/20231204/9/1720793/pemerintah-optimistis-target-30-juta-umkm-go-digital-tercapai-pada-2024> [4 March 2025].

Marta, 2023, 'Lagu Lama Kendala Izin Berusaha Tematis Perppu'. <https://www.kompas.id/baca/ekonomi/2023/01/28/lagu-lama-kendala-izin-berusaha-tematis-perppu> [4 March 2025].

Ministry of Investment (2022) 'Kemudahan Regulasi Bidang Usaha Penanaman Modal', *Indonesia Retail Summit* <https://indonesiaretailsummit.com/shared-files/4797/?Kemudahan-Regulasi-Bidang-Usaha-Penanaman-Modal.pdf> [4 March 2025].

OECD (2020) The career effects of labour market conditions at entry. <https://www.oecd-ilibrary.org/economics/the-career-effects-of-labour-market-conditions-at-entry_29c11c75-en> [16 August 2023].

Ouyang, M. (2009) The scarring effect of recessions. Journal of Monetary Economics, 56(2), 184–199. DOI: 10.1016/J.JMONECO.2008.12.014.

Reynaud, B. (2013) Workforce reduction and firm performance: evidence from French firm data (1994–2000). Socio-Economic Review, 11(4), 711–737. DOI: 10.1093/SER/MWS017.

Sandi, F.B. (2023) 'Permasalahan UMKM' *Online Pajak* Shen, https://www.online-pajak.com/seputar-pph-final/permasalahan-umkm [4 March 2025].

Shen, H., Fu, M., Pan, H., Yu, Z., & Chen, Y. (2020). The Impact of the COVID-19 Pandemic on Firm Performance. DOI: 10.1080/1540496X.2020.1785863, 56(10), 2213–2230.

UNICEF, UNDP, Prospera, & SMERU (2022) The social and economic impact of COVID-19 on households in Indonesia | UNICEF Indonesia <https://www.unicef.org/indonesia/reports/social-and-economic-impact-covid-19-households-indonesia> [16 August 2023].

Walfajri, M. (2023) 'KUR di Bawah Rp 100 Juta Tak Pakai Agunan Tambahan, BRI Sebut Tidak Berdampak ke NPL' <https://keuangan.kontan.co.id/news/kur-di-bawah-rp-100-juta-tak-pakai-agunan-tambahan-bri-sebut-tidak-berdampak-ke-npl> [4 March 2025].

Appendices

Appendix 1
List of Respondents and Informants of In-Depth Interview

	Date	Respondent/Informant	Gender
1.	16 June 2023	Small-scale food and beverage firm	Female
2.	19 June 2023	Small-scale garment firm	Male
3.	19 June 2023	Medium-scale garment firm	Female
4.	21 June 2023	Medium-scale food and beverage firm	Male
5.	28 June 2023	Micro-scale cosmetic firm	Female
6.	30 June 2023	Medium-scale traditional and herbal medicine firm	Male
7.	30 June 2023	Large-scale traditional and herbal medicine firm	Female
8.	1 July 2023	Micro-scale garment firm	Male
9.	2 July 2023	Micro-scale food and beverage firm	Male
10.	24 July 2023	Representative of a steel manufacturing firm from an industrial town	Male
11.	26 June 2023	Representative of line ministry	Male
12.	27 June 2023	Representatives of line ministry	Male and female
13.	12 July 2023	Representatives of line ministry	Female
14.	4 July 2023	Representative of the Indonesian Chamber of Commerce and Industry (KADIN)	Male
15.	5 July 2023	Representative of the Indonesian Employers' Association (Apindo)	Male

Appendix 2
Participant List of FGD with Business Associations (13 July 2023)

No.	Representatives of	Gender
1.	APPI (Association of Indonesian Producers of Electricity Equipment)	Male
2.	APRISINDO (Indonesian Footwear Association)	Male
3.	GAPMMI (Indonesian Food and Beverages Association)	Female
4.	GAPMMI (Indonesian Food and Beverages Association)	Male
5.	ASMINDO (Indonesia Furniture Industry and Handicraft Association)	Male
6.	IWAPI (Indonesia Businesswomen Association – Special Region of Yogyakarta)	Female
7.	IWAPI (Indonesia Businesswomen Association – Kabupaten Bantul)	Female

Appendix 3
Participant List of FGD with Provincial and Local Governments (14 July 2023)

No.	Representatives of	Gender
1.	Planning and Development Agency, East Java Province	Male
2.	Planning and Development Agency, East Java Province	Male
3.	Planning and Development Agency, East Java Province	Male
4.	Planning and Development Agency, Central Java Province	Male
5.	Industry and Trade Agency, Central Java Province	Male
6.	Planning and Development Agency, Special Region of Yogyakarta	Male
7.	Industry and Trade Agency, East Java Province	Male
8.	Industry and Trade Agency, West Java Province	Female
9.	Industry and Trade Agency, West Java Province	Male
10.	Planning and Development Agency, Kota Yogyakarta	Male
11.	Industry and Trade Agency, Kota Yogyakarta	Male
12.	Industry and Trade Agency, Kota Yogyakarta	Female
13.	Industry and Trade Agency, Kota Yogyakarta	Male
14.	Development Planning and Research Agency, Kota Bandung	Male
15.	Development Planning and Research Agency, Kota Bandung	Female
16.	Development Planning and Research Agency, Kota Bandung	Female
17.	Development Planning and Research Agency, Kota Bandung	Male
18.	Development Planning and Research Agency, Kota Bandung	Female
19.	Development Planning and Research Agency, Kota Bandung	Female
20.	Planning and Development Agency, Kabupaten Karawang	Male

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