

## Feature Article

# IMPACT OF THE JOBS GROWTH INCENTIVE (JGI) SCHEME ON FIRM-LEVEL LOCAL LABOUR OUTCOMES

## OVERVIEW

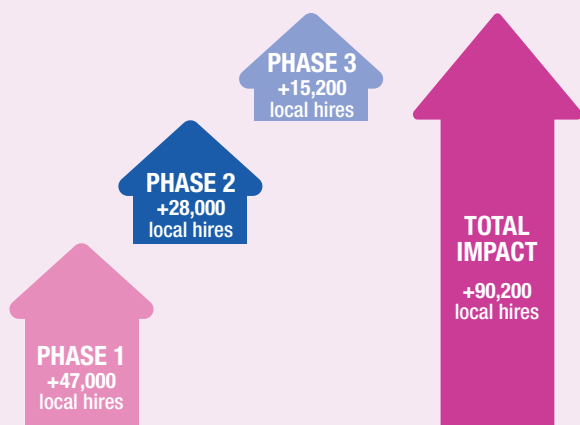
As the economy began to recover from the pandemic-induced recession, the JGI scheme was introduced to support job creation through the use of wage support to encourage firms to bring forward the hiring of local workers.



## FINDINGS

### Finding 1:

The JGI scheme was associated with an increase in local gross hires, although the impact waned over the three phases. Compared to their respective control groups, JGI-supported firms hired 47,000, 28,000 and 15,200 more local workers in Phases 1, 2 and 3 respectively. These estimates translate into a cumulative increase of about 90,200 local hires for the period of September 2020 to February 2022.



### Finding 2:

The JGI scheme was also associated with an increase in the average wages of local gross hires. Compared to the respective control groups, the average wages of local hires in JGI-supported firms were 12.1% to 13.6% higher during the first three phases of the JGI scheme.



## POLICY TAKEAWAY

Given that the JGI is an exceptional scheme designed to support labour market recovery during crisis, its positive effects on supporting local hires were the strongest as the economy was emerging from the recession and when labour market slack was the most severe. The JGI is assessed to have achieved its objectives with the labour market having largely recovered to pre-pandemic levels.



## EXECUTIVE SUMMARY

- ▶ In 2020, the onset of the COVID-19 pandemic caused the Singapore economy to plunge into its worst recession since independence. To cushion firms and workers from the impact of the recession, the Government provided broad-based cost relief to firms. However, as the economy began to recover from the recession, government support measures started to tilt from providing cost relief to supporting the labour market recovery. Against this backdrop, the Jobs Growth Incentive (JGI) scheme was introduced to support job creation through the use of wage support to encourage firms to bring forward the hiring of local workers. This study evaluates the effectiveness of JGI Phases 1 to 3 in supporting local employment outcomes.
- ▶ Our findings suggest that JGI Phases 1 to 3 were successful in encouraging firms to expand their local workforce, which in turn supported the labour market recovery. Between September 2020 and February 2022, the JGI scheme was associated with an increase of about 90,200 local hires cumulatively. At the same time, local hires also benefitted from wages that were 12.1 per cent to 13.6 per cent higher on average. Furthermore, there was evidence that in Phase 1, the scheme supported a modest increase in the hiring of mature workers.
- ▶ Given that the JGI is an exceptional scheme designed to support labour market recovery during a crisis, its positive effects on supporting local hires were the strongest as the economy was emerging from the pandemic-induced recession and when labour market slack was the most severe. As the economic recovery gained momentum and labour market slack dissipated, the positive effect on local gross hires expectedly waned. The JGI is assessed to have achieved its objectives with the labour market having largely recovered to pre-pandemic (2019) levels<sup>1</sup> by 4Q2022.

*The views expressed in this paper are solely those of the authors and do not necessarily reflect those of the Ministry of Manpower (MOM), Ministry of Finance (MOF), Ministry of Trade and Industry (MTI) or the Government of Singapore.<sup>2</sup>*

## INTRODUCTION

In 2020, the onset of the COVID-19 pandemic caused the Singapore economy to plunge into its worst recession since independence. To help firms and workers cope with the economic shock, the Government provided broad-based cost relief to firms. In particular, to safeguard the livelihoods of local workers, the Government implemented the Jobs Support Scheme (JSS) which provided wage subsidies to employers to help them retain their local employees. This helped to stabilise the labour market and mitigate the adverse impact on local employment and wages [Pang, Zhou & Lee, 2022]. Nevertheless, given the severity of the economic downturn, the labour market still experienced negative spillover effects as the resident unemployment rate rose above pre-pandemic levels and hiring sentiments weakened.

In the second half of 2020, as COVID-19 infections were brought under control following the Circuit Breaker, economic activities slowly resumed with a careful and calibrated easing of domestic and travel restrictions. In tandem with the recovery in economic activity, government support measures for firms began to pivot from providing cost relief to supporting a labour market recovery. Against this backdrop, as the JSS support was gradually tapered, a new hiring scheme – the Jobs Growth Incentive (JGI) – was introduced in September 2020 to encourage firms to bring forward their hiring plans and expand their local workforce. The first phase of the JGI scheme provided support to eligible firms who hired locals between September 2020 and February 2021. Since then, the scheme has been extended successively, with a total of five phases to-date (the latest Phase 5 is from October 2022 to March 2023). This study focuses on the impact of the first three phases of the JGI scheme based on data availability at the time of the analyses.

<sup>1</sup> As at December 2022, total employment surpassed pre-pandemic levels by 3 per cent whereas the resident unemployment rate, at 2.8 per cent, was below the pre-pandemic average resident unemployment rate of 3.0 per cent.

<sup>2</sup> We would like to thank Ms Yong Yik Wei, Mr Kenny Tan, Dr Yip Chun Seng, Mr Tan Kok Kong, Ms Jamie Poh, Mr Alphonsus Gomez and Mr Lee Zen Wea for their useful suggestions and comments. All errors belong to the authors.

In terms of scheme design, the JGI scheme provided wage support to firms for new local workers hired within a qualifying window. To qualify for the support, firms must have increased both their overall local workforce, and the number of local workers earning gross monthly wages of \$1,400 and above, relative to the size of their local workforce in the baseline months [Exhibit 1]. In this way, the JGI only supported firms that expanded their local workforce, which was a more targeted approach as compared to the JSS. In addition, the JGI provided a higher level of wage support for vulnerable workers, who were defined as mature workers (i.e., aged 40 years and above), persons with disabilities (PwDs) and ex-offenders.

**Exhibit 1: Scheme Details of JGI Phases 1 to 3**

	Phase 1	Phase 2	Phase 3
<b>Qualifying window</b>	New local hires in September 2020 – February 2021  Baseline month: August 2020	New local hires in March 2021 – September 2021  Baseline month: February 2021	New local hires in October 2021 – March 2022  Baseline month: September 2021
<b>Eligibility conditions</b>	1. Increase in overall local workforce relative to baseline month; and 2. Increase in local workforce earning gross monthly wages of \$1,400 and above relative to baseline month  Employer must be established on or before 16 August 2020	No change to conditions 1 and 2. Baseline month updated to February 2021  Employer must be established on or before 15 February 2021	No change to conditions 1 and 2. Baseline month updated to September 2021  Employer must be established on or before 23 September 2021
<b>Support for non-mature workers</b>	Up to 25% of first \$5,000 of wages for 12 months	Up to 25% of first \$5,000 of wages for 12 months	Up to 15% of first \$5,000 of wages for 6 months
<b>Support for mature workers (aged ≥40), PwDs, ex-offenders</b>	For wages paid in September 2020 – February 2021, up to 50% of first \$5,000 of wages; for wages paid from March 2021 onwards, up to 50% of first \$6,000 of wages. Support was provided for 18 months.	Up to 50% of first \$6,000 of wages for 18 months	Up to 50% of first \$6,000 for 12 months

As the resident unemployment rate began to fall in tandem with the economic recovery (i.e., from the pandemic peak of 4.7 per cent in September 2020 to 3.0 per cent in March 2022), the JGI support levels were reduced across the phases to scale down the support in general, even while continuing to maintain higher support levels for vulnerable workers.

This study empirically examines the causal impact of the first three phases of the JGI scheme on the following outcome variables: (a) the number of local gross hires<sup>3</sup>, which provides a measure of the effectiveness of the scheme in incentivising the hiring of local workers, (b) the average wages of local gross hires, which is a proxy for the quality of the jobs created for local workers, and (c) the share of local gross hires aged 40 and above, which examines whether the higher level of wage support provided for mature workers was effective in incentivising employers to hire them.<sup>4</sup>

<sup>3</sup> Local gross hires refer to the number of newly-employed locals who were not employed with the firm in the preceding month.

<sup>4</sup> The findings for JGI Phase 1 were first released in MOF's Paper on "Assessment of the Impact of Key COVID-19 Budget Measures" published in February 2022.

## LITERATURE REVIEW

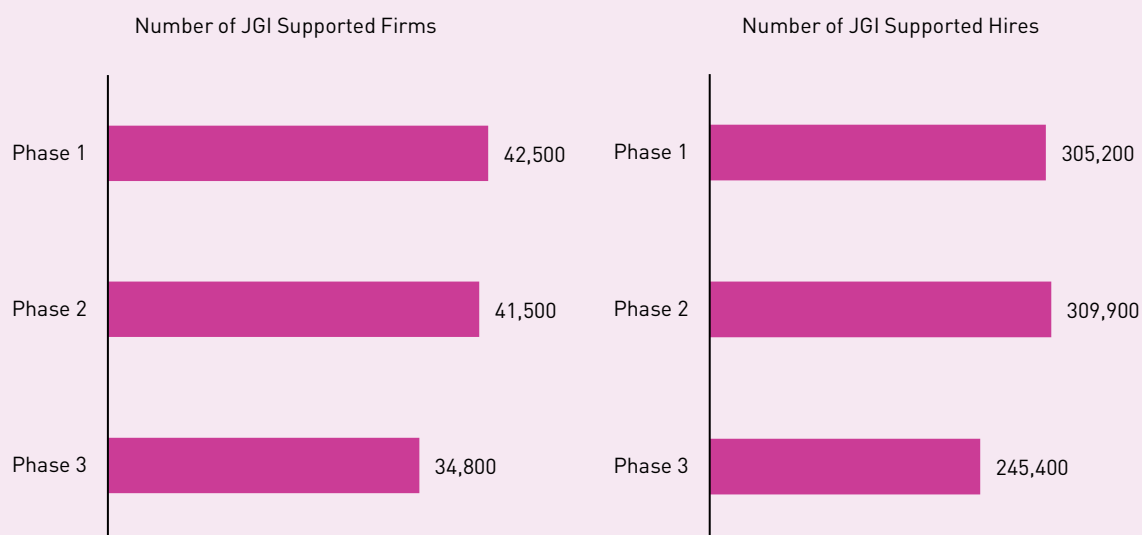
Hiring subsidies are commonly used to provide broad-based support for hiring during a recession as they lower the cost of workers. The literature generally finds that hiring subsidies can improve employment outcomes during economic downturns. For instance, evidence from France and the United States showed that hiring subsidies implemented during and shortly after the 2007-2008 Global Financial Crisis had a strong impact on employment rates [Cahuc et al., 2017; Farooq & Kugler, 2015]. Sjögren and Vikström (2015) also found that an increase in the wage subsidy rate in Sweden in 2009, following the Global Financial Crisis, had a substantial impact on job finding rates, although an increase in the subsidy duration had no effect.

Hiring subsidies are sometimes targeted at specific subgroups of workers, especially those who are more vulnerable, to improve their employment prospects. However, empirical findings on the effectiveness of such subsidies are mixed. Grijalva and Neumark (2013) found that state-level hiring subsidies targeted at unemployed jobseekers in the United States had a large impact on employment, while Desiere and Cockx (2022) concluded that a hiring subsidy targeted at mature workers in Belgium successfully increased the job-finding rates of these workers. On the other hand, Boockmann et al. (2012) found that overall, there was little evidence<sup>5</sup> that hiring subsidies targeted at mature workers in Germany incentivised firms to hire more mature workers.

## DATA AND SUMMARY STATISTICS

This study uses monthly administrative data on local employees and foreign work pass holders, as well as JGI payout data, which include data on the number of new local hires. The administrative datasets on local and foreign workers cover the period of June 2020 to February 2022, while the JGI payout data cover the period of September 2020 to February 2022.<sup>6</sup> Over the latter period, around 81,200 unique firms received JGI disbursements for making approximately 860,500 new local hires [Exhibit 2].

**Exhibit 2: Number of JGI-Supported Firms<sup>^</sup> and Hires, by JGI Phases\***



<sup>^</sup> These are not unique firm counts as the same firm can be supported in different JGI phases.

<sup>\*</sup> The statistics on JGI-supported firms and hires are for the full six months of Phase 1, the first six months of Phase 2 (out of seven months), and the first five months of Phase 3 (out of six months). These correspond to the time periods for the three phases analysed in this study, which were in turn based on data availability at the point when the analyses were carried out.

Source: MOM.

<sup>5</sup> The study found positive effects for only one sub-group of mature workers with no effect for the rest.

<sup>6</sup> JGI Phase 1 was implemented in September 2020, but data from June 2020 was used in identifying an appropriate control group for the analysis. While JGI Phase 3 provided support for new local hires made from October 2021 to March 2022, data for March 2022 was unavailable when the analysis was conducted.

The JGI scheme supported the recovery of sectors adversely affected by the pandemic, such as Food & Beverage Services and Retail Trade, as well as the expansion of growth sectors, such as Professional Services and Information & Communications. These were the sectors with the largest number of JGI-supported hires for Phases 1 to 3 [Exhibit 3].

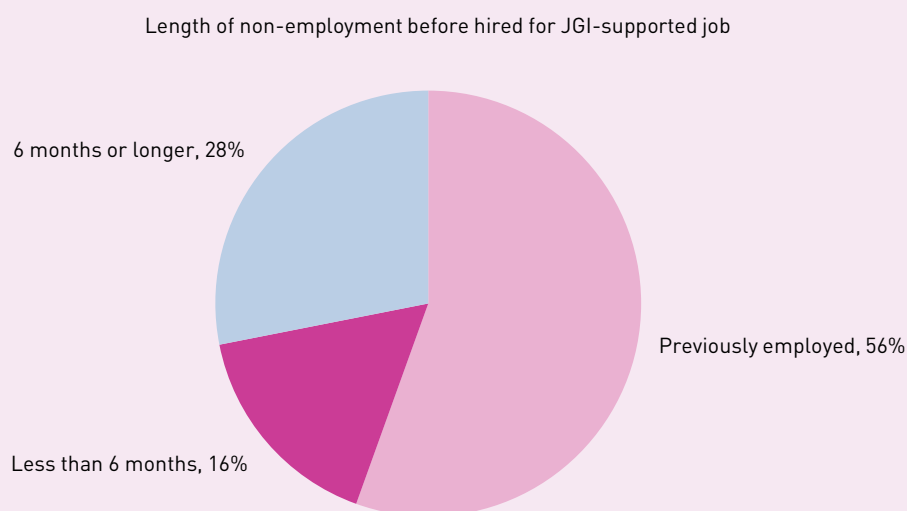
### Exhibit 3: Top 5 Sectors with the Most Number of JGI-Supported Hires for Phases 1 to 3



Source: MOM.

The JGI scheme also supported the hiring of vulnerable jobseekers. Among all JGI-supported hires across Phases 1 to 3, about 45 per cent were previously non-employed<sup>7</sup>, with close to 28 per cent having been non-employed for at least six months [Exhibit 4]. Close to half of all JGI-supported hires were mature workers.

### Exhibit 4: Distribution of Non-Employment Duration among JGI-Supported Hires for JGI Phases 1 to 3



## EMPIRICAL METHODOLOGY

To estimate the causal impact of the JGI scheme on key firm-level local worker outcomes, we compared the outcomes of two groups of firms: a first group that received the JGI subsidy in any given month of the qualifying window (i.e., the “treated” group); and a second group that did not receive the JGI subsidy during the qualifying window (i.e., the “control” group)<sup>8</sup>. The local worker outcomes in the control group would serve as a counterfactual for the treated group, thereby allowing us to estimate the causal impact of the scheme. The analysis was conducted separately for each JGI phase as the scheme parameters differed across the phases.<sup>9</sup>

<sup>7</sup> Individuals were defined as non-employed based on CPF administrative records, i.e., if they do not have any CPF contributions paid for him/her by an employer.

<sup>8</sup> For example, a firm that hired a local worker during the qualifying window but did not register an increase in its overall local workforce relative to the baseline month would not have received the JGI subsidy.

<sup>9</sup> For the analysis of JGI Phases 2 and 3, firms that had received support under the earlier JGI phases were excluded from both the treated and control groups as their employment outcomes could be confounded by continued impact from the earlier JGI phases.

However, across the three phases, the treated firms were observably different from firms in the control group in the three months prior to the qualifying window of the respective JGI phases [Exhibit 5]. A simple comparison of the outcomes of the two groups of firms could therefore be confounded by the underlying differences in these observable characteristics. To improve the comparability of the two groups, we (a) restricted the control group to firms that made at least one local gross hire during the qualifying window but did not meet the other JGI criteria, and (b) ran a matching algorithm known as Coarsened Exact Matching (CEM) based on firms' characteristics in the three months prior to the qualifying window of the respective JGI phases. This allowed us to construct control groups that were observably more similar to the treated firms in terms of their workforce profiles and sectors (henceforth "the matched treated and control groups") for the respective phases.

**Exhibit 5: Summary Statistics of Firm Characteristics Before and After Matching**

Firm statistics (Average)	Before Matching		After Matching	
	Treated	Control	Treated	Control
<b>Phase 1 (Using data from June 2020 to August 2020)</b>				
Number of local workers	27	9.4	13	14
Average wages of local workers	\$3,600	\$3,300	\$3,200	\$3,100
Share of local workers aged 40 and above	63%	70%	74%	72%
Number of local gross hires	1.3	0.35	0.35	0.34
<b>Phase 2 (Using data from December 2020 to February 2021)</b>				
Number of local workers	18	13	9.0	9.7
Average wages of local workers	\$4,500	\$3,800	\$3,600	\$3,500
Share of local workers aged 40 and above	67%	67%	76%	76%
Number of local gross hires	0.66	0.61	0.17	0.18
<b>Phase 3 (Using data from July 2021 to September 2021)</b>				
Number of local workers	11	14	6.8	7.2
Average wages of local workers	\$3,900	\$3,500	\$3,300	\$3,100
Share of local workers aged 40 and above	74%	67%	81%	80%
Number of local gross hires	0.58	0.64	0.17	0.18

Source: Authors' estimates.

Thereafter, we quantified the impact of the JGI scheme using a difference-in-differences regression model, which estimates the difference between the change in the trends of the matched treated and control groups. Specifically, the following equation was estimated:

$$Y_{it} = \beta_1 + \beta_2 T_i \times D_t + \delta_{st} + \alpha_i + \varepsilon_{it}$$

Where:

- $Y_{it}$  denotes the outcome of interest (i.e., number of local gross hires, log of average wages among local gross hires, share of local gross hires aged 40 and above) for each firm  $i$  in time  $t$
- $T_i$  is the treatment dummy (equals to 1 if the firm had received JGI for any given month during the respective qualifying period, 0 otherwise)
- $D_t$  is a monthly time dummy (excluding the baseline month: August 2020 for Phase 1, February 2021 for Phase 2, and September 2021 for Phase 3)
- $\delta_{st}$  refers to sector x time fixed effects to control for sector-specific time trends
- $\alpha_i$  refers to firm fixed effects
- $\varepsilon_{it}$  refers to the error term

The coefficient of interest is  $\beta_2$ , which measures the average impact of the JGI scheme on firm-level local worker outcomes.

The regression model controls for the influence of broader (non-JGI) macroeconomic and sector-specific trends that are common to both the treated and control groups (e.g., the uneven impact of the COVID-19 pandemic on different sectors). However, the identification strategy may still overestimate the impact of the JGI scheme on local hiring, as this outcome variable is positively correlated with assignment to the treated group. Specifically, as firms would need to register a net increase in their local workforce relative to the baseline month to qualify for JGI, the treated firms are by construct likely to have hired more local workers relative to the control group. Furthermore, as eligible firms are those that hired locals more extensively than firms in the control group, the two groups of firms are likely to be different in unobservable ways, which could bias the estimated impact. Nevertheless, our approach mitigates these biases by (a) examining the impact of JGI on local gross hires instead of local net hires, as the former is not perfectly correlated with the qualifying criteria, and (b) improving the comparability of the two groups by constructing a control group that comprises firms that are more similar to those in the treated group in the ways described earlier.

To ensure the robustness of our findings, we conducted additional checks. For example, we used a different matching method (propensity score matching) and lifted the restriction that control firms needed to have hired at least one local worker. The results from these robustness checks were similar to our main results.

## RESULTS

We find that the JGI scheme improved local employment outcomes modestly across all three phases [Exhibit 6].

**First**, we find that the JGI scheme was associated with an increase in local gross hires, although the impact waned over the three phases. Specifically, compared to their respective control groups, JGI-supported firms hired 0.30, 0.18 and 0.14 more locals per firm per month in Phases 1, 2 and 3 respectively. These estimates translate into a cumulative increase of 47,000 and 28,000 local hires across Phase 1 (six months) and the first six months of Phase 2 respectively, as well as a cumulative increase of 15,200 local hires over the first five months of Phase 3.

**Second**, we find that the scheme was associated with an increase in the average wages of local gross hires. Compared to the respective control groups, the average wages of local gross hires in JGI-supported firms were 13.3 per cent (which translates to approximately \$260), 13.6 per cent (or \$330) and 12.1 per cent (or \$300) higher in Phases 1, 2 and 3 respectively. The positive impact on average wages could be due in part to firms having to meet the JGI eligibility criterion of expanding their local workforce paid a monthly wage of at least \$1,400.

**Exhibit 6: Impact of the JGI on Firm-level Local Employment Outcomes, by JGI Phase**

Outcomes Examined	Estimated Average Impact for:		
	Phase 1 September 2020 – February 2021	Phase 2 March 2021 – August 2021 <sup>^</sup>	Phase 3 October 2021 – February 2022 <sup>^</sup>
<b>Change in number of local gross hires per firm per month</b>	0.3 count***	0.18 count***	0.14 count***
<b>Average wages of local gross hires at the firm level</b>	13.3%***	13.6%***	12.1%***
<b>Share of mature workers (aged 40 &amp; above) among local gross hires at the firm level</b>	1.9%-pt**	0.6%-pt	0.7%-pt

<sup>^</sup> The analysis for Phase 2 did not cover September 2021 while the analysis for Phase 3 did not cover March 2022 as the JGI payout data for these months were not available at the time when the respective analyses were conducted..

Source: Authors' estimates.

Third, we find a modest positive impact on the share of mature workers among local gross hires. In Phase 1, JGI-supported firms registered a 1.9 percentage-point increase in the share of mature workers hired compared to their control group. This increase was largely driven by strong hiring effects in the first month following the implementation of JGI Phase 1. The effects were positive but statistically insignificant in Phases 2 and 3.

## CONCLUSION

The findings of our study suggest that JGI Phases 1 to 3 were successful in encouraging firms to expand their local workforce, which in turn supported the recovery of the labour market from the effects of the pandemic. Between September 2020 and February 2022, the JGI scheme was associated with an increase of about 90,200 local hires cumulatively. At the same time, local hires also benefitted from wages that were 12.1 per cent to 13.6 per cent higher on average. Furthermore, there was evidence that the scheme supported a modest increase in the hiring of mature workers in Phase 1.

Given that the JGI is an exceptional scheme designed to support labour market recovery during a crisis, its positive effects on supporting local hires were the strongest as the economy was emerging from the pandemic-induced recession and when labour market slack was the most severe. As the economic recovery gained momentum and labour market slack dissipated, the positive effect on local gross hires expectedly waned. The JGI is assessed to have achieved its objectives with the labour market having largely recovered to pre-pandemic (2019) levels by 4Q2022.

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