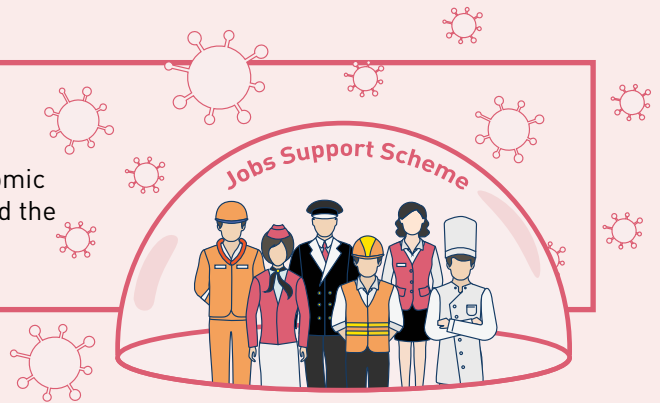


IMPACT OF THE JOBS SUPPORT SCHEME ON LABOUR MARKET OUTCOMES

INTRODUCTION

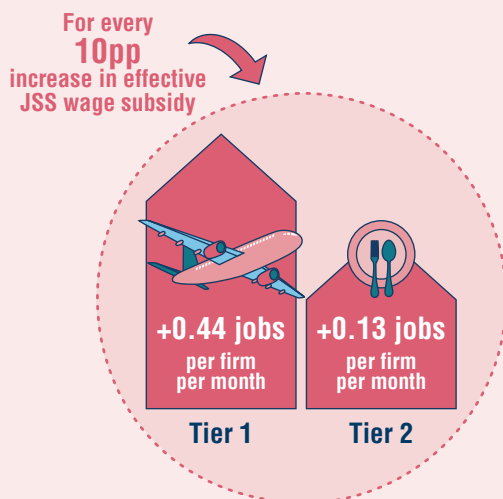
To safeguard the livelihoods of local workers amidst the economic disruptions caused by COVID-19, the Government implemented the Jobs Support Scheme (JSS) which provides wage subsidies to employers to support the retention of local employees.



FINDINGS

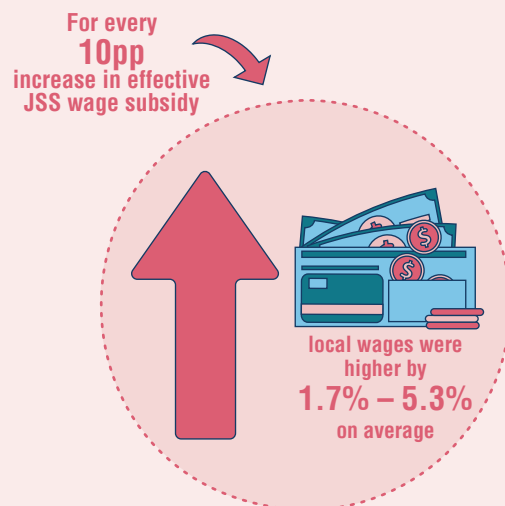
Finding 1:

JSS was effective in helping locals to retain their jobs in sectors that were more severely affected by the pandemic. For every 10 percentage-point (pp) increase in the effective JSS wage subsidy, there was a net increase of 0.44 and 0.13 local jobs saved per firm per month for firms in JSS Tiers 1 and 2 respectively. These estimates translate to a total of 165,000 local jobs preserved over the period of March to December 2020.



Finding 2:

JSS also helped to preserve local workers' wages. For every 10pp increase in the effective JSS wage subsidy, local wages were about 1.7 to 5.3 per cent higher on average, depending on the JSS tier. This translates to higher average monthly wages of about \$70 to \$150 for local workers.



Translates to a total of 165,000 local jobs saved over March – December 2020

POLICY TAKEAWAY

The findings of our study suggest that the adverse effect of COVID-19 on the livelihood of local workers would have been more severe without the JSS support, especially for workers in sectors that were more badly affected by the pandemic.



EXECUTIVE SUMMARY

- ▶ To safeguard the livelihoods of local workers amidst the economic disruptions caused by COVID-19, the Government implemented the Jobs Support Scheme (JSS). Under the scheme, wage subsidies were provided to employers to support the retention of local employees. This study evaluates the effectiveness of the JSS in preserving local jobs and wages in 2020.
- ▶ Our findings suggest that the JSS was effective in helping locals to retain their jobs in sectors that were more severely affected by the pandemic. Specifically, for firms in JSS Tiers 1 and 2, we estimate that for every 10 percentage-point (pp) increase in the effective JSS wage subsidy, there was a net increase of 0.44 and 0.13 local jobs saved per firm per month respectively. These estimates translate to a total of 165,000 local jobs preserved over the period of March to December 2020.
- ▶ In addition, we find that the JSS helped to preserve local workers' wages. For every 10pp increase in the effective JSS wage subsidy, local wages were about 1.7 to 5.3 per cent higher on average, depending on the JSS tier. This translates to higher average monthly wages of about \$70 to \$150 for local workers.

The views expressed in this paper are solely those of the authors and do not necessarily reflect those of the Ministry of Finance (MOF), Ministry of Manpower (MOM) or the Government of Singapore.¹

INTRODUCTION

In the initial stages of the COVID-19 pandemic, governments around the world imposed lockdowns and movement restrictions to contain the spread of the virus. Singapore likewise imposed stringent travel and domestic restrictions, including a "Circuit Breaker"² which lasted eight weeks. While these strong public health measures helped to reduce the transmission of the virus and saved lives, they also disrupted domestic economic activity. Coupled with weaker external demand due to the pandemic-induced slowdown in major economies, the Singapore economy saw its deepest downturn on record in 2020.

Amidst the economic downturn and uncertainty, 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 local employees. JSS support for the various sectors was tiered based on the severity of the impact of COVID-19 on these sectors. Tier 1 sectors, comprising the Aviation, Aerospace and Tourism sectors, were the most badly affected due to global travel restrictions, and hence received the highest JSS support levels (i.e., for the 2020 payout, this amounted to 75 per cent of the first \$4,600 of gross monthly wages³ paid to each local employee⁴). Tier 2 sectors, comprising the Food Services, Retail Trade, Arts & Entertainment, Land Transport, Marine & Offshore and Built Environment sectors, were adversely affected by safe management measures and weakened consumer sentiments; these sectors received the next highest level of support (i.e., 50 per cent). All other sectors were classified as Tier 3 and received 25 per cent of support.

The JSS scheme was announced in the Unity Budget in February 2020 and enhanced in subsequent rounds of supplementary Budgets to provide extended support to employers and workers due to the protracted nature of the pandemic. In 2020, there were four JSS payouts in total, with employers receiving the first payout in April, followed by payouts in May, July and October. The first JSS payout was based on wages paid to local employees in October to December 2019, prior to the onset of the pandemic and the announcement of the JSS. The subsequent payouts were based on more recent payroll data in 2020, to provide wage support for local employees who were retained.

¹ We would like to thank Ms Yong Yik Wei, Dr Yip Chun Seng, Mr Tan Kok Kong, Ms Jamie Poh and Mr Alphonsus Gomez for their useful suggestions and comments. All errors belong to the authors.

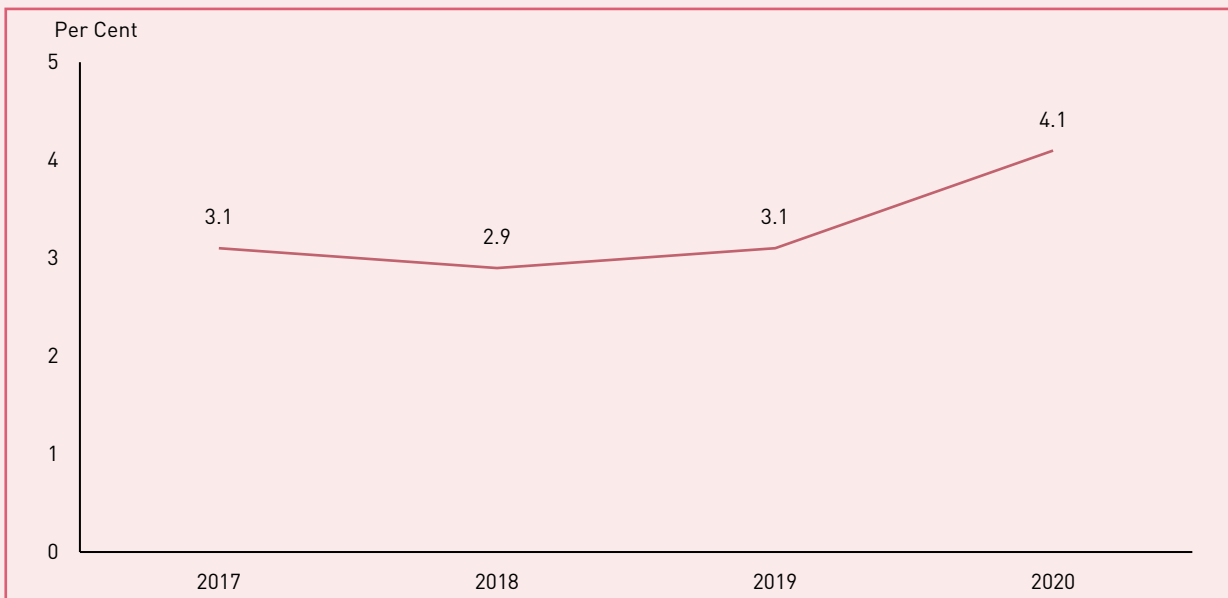
² The "Circuit Breaker" was from 7 April 2020 to 1 June 2020. Measures included physical closure of most workplace premises and full home-based learning for schools.

³ Gross monthly wages include employee's CPF contribution but exclude employer's CPF contribution.

⁴ Local employees refer to Singapore Citizens and Permanent Residents.

Notwithstanding the Government's efforts to help local employees retain their jobs, the annual average resident unemployment rate rose from 3.1 per cent in 2019 to 4.1 per cent in 2020 [Exhibit 1]. At the same time, the median gross monthly income from work (including employer's CPF contribution) for full-time employed locals fell by 0.6 per cent in 2020.⁵ Nevertheless, the negative impact of the pandemic on local employment and wages could have been even more severe in the absence of the JSS. This study empirically examines the effectiveness of the JSS in preserving the jobs and wages of local workers in 2020.

Exhibit 1: Annual Average Resident Unemployment Rate, %



Source: MOM.

LITERATURE REVIEW

In the initial months of the COVID-19 pandemic, many governments rolled out policies that were aimed at subsidising labour cost to mitigate the impact of the economic shock on employment. For example, the U.S. Congress enacted the Paycheck Protection Program (PPP)⁶ to help small businesses to maintain employment and wages during the crisis. The effect of the PPP was examined by Autor et al. (2022), who compared the employment outcomes of PPP-eligible firms with those of PPP-ineligible firms. The researchers found that the PPP preserved between 2 and 3 million job-years⁷ of employment over 14 months, at a cost of US\$170,000 to US\$257,000 per job-year retained.

At around the same time, the Australian Government implemented the JobKeeper Payment (JKP)⁸ scheme to support businesses and preserve jobs over a 6-month period. Bishop and Day (2020) estimated that the JKP saved at least 700,000 jobs in the first four months by comparing the employment outcomes of Australian residents who were eligible for JKP to those who were not. To approximate the cost per job saved, the authors assumed similar effects in the remaining two months of the scheme and estimated that it cost about A\$100,000 (around US\$69,000)⁹ to save each job over the period when the JKP was in place.

In summary, the experiences of the U.S. and Australia suggest that policies aimed at offsetting labour costs were effective in saving jobs during the COVID-19 pandemic.

⁵ Data from "Labour Force in Singapore 2020", MOM.

⁶ The PPP was structured as loans to small businesses which did not need to be repaid if the businesses were able to meet a specified set of criteria over 24 weeks from the receipt of the loan. This included maintaining their full-time equivalent employment at pre-crisis levels.

⁷ One job-year refers to one worker working for one year.

⁸ Under the JKP, eligible firms received A\$1,500 per fortnight for every employed Australian resident who had previously worked for at least 12 months. For a firm to qualify, it must have experienced a fall in revenue of at least 30 or 50 per cent, depending on its annual turnover size.

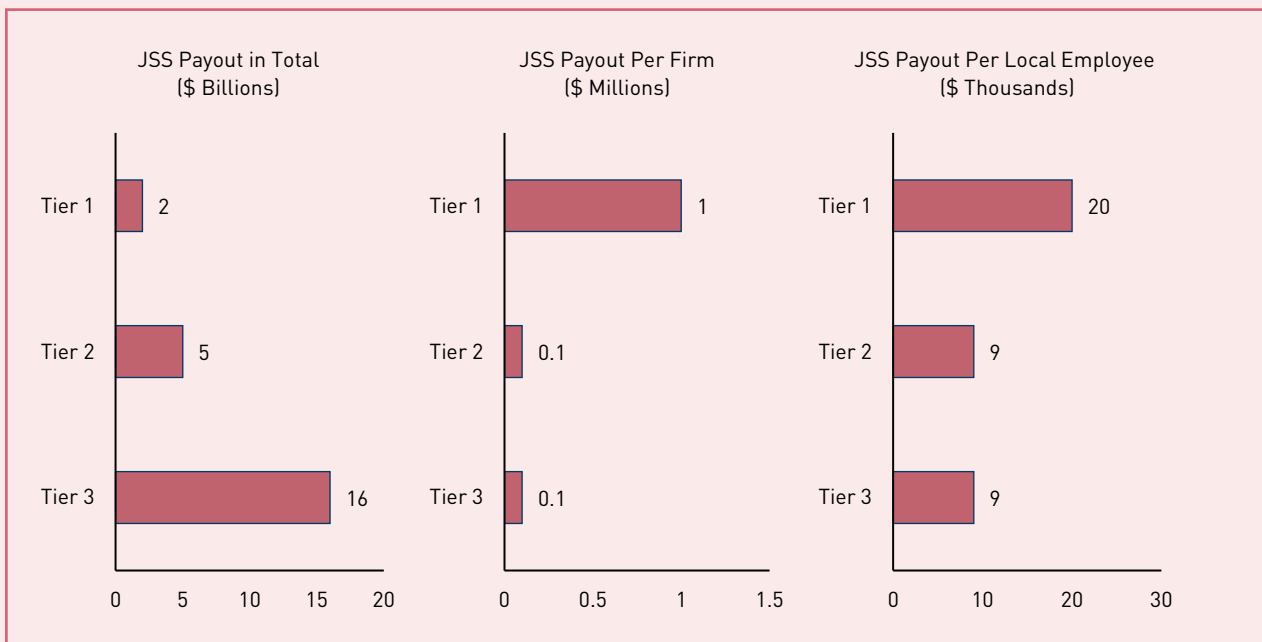
⁹ Based on the average market exchange rate in 2020.

DATA AND SUMMARY STATISTICS

This study utilises administrative data on local employees and foreign work pass holders from the Ministry of Manpower (MOM), as well as JSS payout data from the Inland Revenue Authority of Singapore (IRAS). The datasets cover the period of January 2018 to December 2020.

From April 2020 (first JSS payout) to December 2020, a total of \$22.6 billion of JSS payout was disbursed. In total, Tier 3 firms received the largest share of the JSS payout as they accounted for the largest share of the economy and local employment, compared to firms in the other two tiers.¹⁰ However, on a per firm basis and per local employee basis, Tier 1 firms received a higher JSS payout [Exhibit 2].

Exhibit 2: JSS Payout for April – December 2020, by Support Tiers



Source: MOF (2021).

Apart from being affected by the pandemic to varying degrees, the firms in the various JSS tiers also had different characteristics. On average, Tier 1 firms had the largest number of local employees, while Tier 3 firms had the highest share of local workers earning monthly wages of \$4,600 and above, which lowered the JSS payout received as a share of their total local wage bill. By contrast, on average, Tier 2 firms had the lowest share of local workers earning \$4,600 and above, which meant that the JSS payout received as a share of their total local wage bill was closest to the corresponding tier's cap (i.e., 50 per cent for Tier 2 firms) [Exhibit 3].

Exhibit 3: Firm Characteristics, October – December 2019

Firm Characteristics (JSS wage support for the first \$4,600 gross monthly wages of local workers)	Tier 1 (75%)	Tier 2 (50%)	Tier 3 (25%)
Average local employment count	62	20	14
Average share of local workers earning \$4,600 & above	18%	3%	24%
Average JSS receipt as a share of the total local wage bill	66%	49%	21%
Average monthly wage per local worker (\$)	3,100	1,600	3,800

Source: Authors' estimates based on administrative data.

¹⁰ Tier 3 firms accounted for more than 75 per cent of Singapore's real value-added and local employment.

EMPIRICAL METHODOLOGY

To estimate the causal impact of JSS on local employment and wages, we exploit the exogenous variation in the share and wages of local workers who earned above the subsidy cap of \$4,600 prior to the JSS announcement. Specifically, the treatment variable is the JSS wage subsidy received as a share of total local wages (hereby “effective JSS wage subsidy”). To avoid simultaneity bias, the effective JSS wage subsidy was computed using wages reported for the period of October to December 2019, as they would not be influenced by the announcement and implementation of the JSS in 2020.¹¹ The population of firms in our study are those that employed workers in the period used to construct the treatment variable, including those that subsequently exited.

$$\text{Effective JSS Wage Subsidy for a firm} = \frac{\text{Average monthly JSS receipt based on Oct-Dec 2019 local wages}}{\text{Average monthly total local wages in Oct-Dec 2019}}$$

The variation in the effective JSS wage subsidy across firms stems from differences in the distribution of wages of local workers earning above the \$4,600 salary cap within the firm between October and December 2019. Consider two hypothetical Tier 2 firms, Firm A and B, and assume that each local worker in Firm A earns \$10,000 per month, while that in Firm B earns \$5,000 per month. Given the Tier 2 subsidy rate of 50 per cent of the first \$4,600 in monthly salary for each local worker, Firm A will receive a maximum JSS payout of \$2,300 for each local worker and its effective JSS wage subsidy is 23 per cent (\$2,300/\$10,000). Firm B will also receive \$2,300 for each local worker, but its effective JSS wage subsidy is higher at 46 per cent (\$2,300/\$5,000). This exogenous variation in the treatment variable allows us to compare the impact of the JSS on firms that received a higher effective JSS wage subsidy, with firms that received a lower effective JSS wage subsidy.

Due to differences in firm characteristics and the heterogenous impact of COVID-19 on firms across the different support tiers, regressions are run separately for each JSS support tier. The following fixed effects regression is used:

$$Y_{ijt} = \beta_{0,j} + \beta_{1,j} \text{Effsub_JSS}_{ijt} \times \text{Trt_period}_t + \alpha X_{ijt} + \delta_{jt} + \gamma_i + \epsilon_{ijt}$$

Where:

- Y_{ijt} denotes the outcome of interest (i.e., change in local employment, log local wage) for each firm i in JSS support tier j at time t
- Effsub_JSS_{ijt} is the effective JSS wage subsidy for each firm, computed based on the firm’s CPF contributions in October – December 2019
- Trt_period_t is a dummy variable that takes on a value of 1 for the periods of March – December 2020 and 0 for other periods
- X_{ijt} refers to a vector of firm-level time-varying control variables, including industry-time effects and foreign worker levy waivers and rebates
- δ_{jt}, γ_i refer to time and firm-level fixed effects respectively
- ϵ_{ijt} refers to the error term

To isolate the impact of JSS, the regression model takes into account the influence of broader (non-JSS related) macroeconomic trends and other policies implemented over the same period as the JSS. For instance, we control for the effect of foreign worker levy rebates and waivers as these could potentially affect local employment outcomes.

The coefficient of interest is β_1 , which measures the average impact of an increase in the effective JSS wage subsidy on firm-level outcomes.

¹¹ Other treatment variables, including using the exact JSS disbursement amounts, were also considered. The “effective JSS wage subsidy” variable constructed was deemed to be the most appropriate treatment variable that would allow the causal impact of the JSS to be uncovered.

To ensure the robustness of our findings, we conducted further checks. For example, we checked that the regression results were not overly sensitive to the selection of baseline period in the regression by excluding the local wage data for the period of January 2018 to December 2018, and the period of January 2018 to September 2019. In addition, to ensure that our results were not mainly driven by firms that exited, we ran the above fixed effects regression using a sample which included exiting firms. The results from these robustness checks were similar to our main results.

RESULTS

We find that the JSS was effective in helping locals to retain their jobs in sectors that were more severely affected by the pandemic. Specifically, we estimate that over the period of March to December 2020, every 10 percentage-point (pp) increase in the effective JSS wage subsidy led to a 0.44 and 0.13 net increase in local jobs saved per firm per month for firms in JSS Tiers 1 and 2 respectively [Exhibit 4].

In comparison, the impact of JSS on the net change in local employment in Tier 3 firms was close to zero (and statistically insignificant). This could be because firms in Tier 3 were less adversely affected by COVID-19 and hence more likely to retain their local employees regardless of the quantum of effective JSS wage subsidy received.

The estimated monthly employment impact for firms in JSS Tiers 1 and 2 translates to a total of 165,000 local jobs that were preserved at the aggregate level between March and December 2020 [Exhibit 4]. Taking the total cost of the JSS divided by the total number of local jobs saved, we estimate that the cost per local job saved as a result of the JSS is around \$137,000 (US\$100,000)¹².

Exhibit 4: Impact of the JSS on net change in local employment, by JSS support tiers (March – December 2020)

JSS Support Tiers	Impact of every 10pp increase in effective JSS wage subsidy on net change in local employment per firm per month (count)	Aggregate impact on net change in local employment over March – December 2020 [^] (count)
Tier 1	0.44*	55,000
Tier 2	0.13*	110,000
Tier 3	0.02	-

* Indicates statistical significance at the 10% level.

[^] To estimate the aggregate impact on net change in local employment over the 10-month period from March to December 2020, for Tiers 1 and 2, we multiply the monthly impact estimated from the regression by the number of firms, average effective JSS wage subsidy and 10 months for each tier respectively.

Source: Authors' estimates based on administrative data.

In response to the economic slowdown, some firms may choose to cut cost by reducing wages rather than shedding workers. However, as the JSS quantum was proportional to the wages paid up to the salary cap, reducing the wages of local workers (those earning less than \$4,600) would also mean lower JSS receipts for the firms. As the amount of cost savings that accrue to the firms would then become correspondingly smaller, the JSS may lower the incentive for firms to reduce wages, thereby helping to preserve local workers' wages.

This is corroborated by our findings on the impact of the JSS on the average wages of locals that were still on the payroll in recipient firms. We estimate that for every 10pp increase in the effective JSS wage subsidy, average local wages were about 1.7 to 5.3 per cent higher, depending on the JSS tier. This translates to higher average monthly wages of about \$70 to \$150 for local workers [Exhibit 5]. The results are driven by larger declines in average local wages among firms that received a lower effective JSS wage subsidy, compared to smaller declines or slight increases in average local wages among firms that received a higher effective JSS wage subsidy.

¹² Based on the average market exchange rate in 2020.

Exhibit 5: Impact of the JSS on average gross monthly wages of locals, by JSS support tiers (March – December 2020)

JSS Support Tiers	Impact of every 10pp increase in effective JSS wage subsidy on average local wages (per cent)	Estimated change in average gross monthly wages of locals (\$)
Tier 1	4.7%***	\$150
Tier 2	5.3%***	\$80
Tier 3	1.7%***	\$70

*** Indicates statistical significance at the 1% level.
Source: Authors' estimates based on administrative data.

CONCLUSION

The findings of our study suggest that the JSS was successful in preserving the jobs and wages of local workers during the COVID-19 pandemic. For the period of March to December 2020, the JSS is estimated to have saved about 165,000 local jobs in total, translating to a cost of \$137,000 per job saved. This is broadly comparable to the cost of wage support schemes implemented in the U.S. and Australia during the COVID period.¹³ As for wages, we find that for every 10pp increase in the effective JSS wage subsidy, average local wages were about 1.7 to 5.3 per cent higher (which translates to an increase in average gross monthly wages of about \$70 to \$150).

Taken together, our results suggest that the adverse effect of COVID-19 on the livelihood of local workers would have been more severe without the JSS support, especially for workers in sectors that were more badly affected by the pandemic.

Contributed by:

Ms Jeanette Pang, Economist
Mr Eugene Zhou, Senior Economist
Manpower Planning and Policy Division (Economics Unit)
Ministry of Manpower

Mr Lee Tian Mun, Senior Economist
Economic & Fiscal Analysis Directorate
Ministry of Finance

¹³ Due to differences in the economic situation, magnitude of impact from the pandemic and scheme design, it is not straightforward to compare the cost-effectiveness of the different programmes implemented by the different countries.

REFERENCES

Autor, D., Cho, D., Crane, L. D., Goldar, M., Lutz, B., Montes, J., Peterman, W. B., Ratner, D., Villar, D., and Yildirmaz, A. 2020. "An Evaluation of the Paycheck Protection Program Using Administrative Payroll Microdata." Massachusetts Institute of Technology Department of Economics Preliminary Paper.

Autor, D., Cho, D., Crane, L. D., Goldar, M., Lutz, B., Montes, J., Peterman, W. B., Ratner, D., Villar, D., and Yildirmaz, A. 2022. "The \$800 Billion Paycheck Protection Program: Where did the money go and why did it go there?" NBER Working Paper 29669.

Bishop, D., and Day, I. 2020. "How Many Jobs Did JobKeeper Keep?" Reserve Bank of Australia Research Discussion Paper RDP 2020-07.

Bruhn, M. 2016. "Can Wage Subsidies Boost Employment in the Wake of an Economic Crisis? Evidence from Mexico." IZA Discussion Paper No. 9995.

Singapore Ministry of Finance. 2021. "An Interim Assessment of the Impact of Key COVID-19 Budget Matters."

OECD Employment Outlook. 2021. "Navigating the COVID-19 Crisis and Recovery."