Understanding How Job Retention Schemes Reshape the Within-Occupation Skill Profile of Employees within Firms

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Motivation

- JRS were widely used during COVID-19 pandemic:
- Nevertheless, there are some arguments which question the positive employment effects of JRS:
  - The scheme might have been used to retain jobs that were not viable in the medium-term
  - It could have been used to save jobs that firms were to keep in any case
- Moreover, JRS might have had some side effects:
  - slower resource reallocation between industries and firms
  - unfavourable effects on the composition of labour within firms
- We investigate (a) whether the likelihood of JRS participation varied across employees with different within-occupation skill levels; (b) whether the impact of JRS participation on employment varied across different within-occupation skill groups.
- The analysis specifically focuses on the role of the maximum allowance in determining the probability of program participation and its effect on firm-level employment.

Related Literature: Job reallocation during the Covid-19 pandemic

- Several papers argued that Covid-19 was a persistent reallocation shock
  - In the US, low-skilled employees changed their positions to jobs requiring higher skills/offering WFH/unemployment/inactivity (Forsythe et al. 2022, Pizzinelli and Shibata 2023, Barrero et al. 2021)
  - In the UK, large heterogeneity in employment change across occupations. Employees switched to expanding industries and occupations (requiring higher skills, offering higher wages and WFH), while those at the margins of the labour market continued to target declining industries (Carrillo-Tudela et al. 2023)
- Some papers disagreed and claimed that the reallocation shock was transitory
  - After the initial spike in April 2020, cumulative reallocation in the US generally fell through December 2020 (David et al. 2021)
  - A considerable amount of reallocation during the Covid-19 recession may be taking place across firms within a sector (David et al. 2021, Barrero et al. 2020)
- The former strand of literature implies that JRS may be costly by deterring a speedy job reallocation to their most efficient uses and thus slowing down economic recovery in the wake of the crisis.

JRS in Latvia

- Introduced in Mar'2020 as a part of government's response to COVID-19 pandemic
- Two types of JRS were provided:
  - Idle-time allowance: Mar'2020-Jun'2020, Nov'2020-Jun'2021
  - Wage subsidy: Nov'2020-Jun'2021, Oct'2021-Nov'2021
- Idle-time allowance equal to 75% of the average monthly remuneration, but not exceeding 700 EUR (in the second wave 70%, but not lees than 500 EUR and more than 1000 EUR). Employees receiving allowance were not permitted to work and couldn't be fired within a month after the application
- Eligibility criteria of the idle-time allowance (at the firm level):
  - Reduction in turnover (caused by the pandemic) by at least 30% (or 20% if certain other criteria have been fulfilled)
  - Not in an open insolvency procedure, no tax debts exceeding 1000 EUR etc.
- The application for the idle-time allowance was made by the firm, and the firm was free to choose which employees the application would cover.

We focus our analysis on the effect of idle-time allowance during the first wave

We limit our analysis to the first wave: Mar'2020-Sep'2020

- The first wave of pandemic was an unexpected shock, while consequent waves (and support) were expected by the economic agents
- The idle-time allowance was the only support program during the first wave, no need to separate from the effect of other support programs
  - Wage subsidies were introduced in Nov'2020
  - Non-JRS support instruments (grants) were also introduced during the second wave: the support was large and many firms participated both in JRS and non-JRS programs
- The effect of the first wave is difficult to detect after Oct'2020 due to later waves of restrictions and overlapping support
  - We restrict our analysis to the short run effect of the JRS

Employer-employee level dataset linked to other sources

We use the following data to study the effect of JRS on skill/quality composition of labour at the firm level:

- Main dataset: SRS employer-employee monthly dataset, 2019-2020:
  - Provides information on gross wage and hours worked (monthly)
  - Contains information on gender, age, employment status, taxpayer status
  - Information on occupation (4-digit ISCO-08) imputed from the dataset that contains information on changes in employees' status
- Linked with: SRS monthly data of JRS benefit recipients at the employer-employee level:
  - Idle-time allowance amounts and duration
- CSB administrative firm-level annual data, 2019-2020:
  - We only use information on sector (4-digit NACE) and size (number of employees)

Employees included in the analysis

- We analyse only workers that were employed in firms that participated in the idle-time allowance programme in Mar'2020–Jun'2020.
- All the employees within such firms were eligible, but not all received the support.
- We proxy skills by the gross FTE wage conditional on occupation
  - More than half of the employees eligible for the idle-time allowance were excluded from the analysis, since we were not able to impute their occupation in Feb'2020
  - Some minor loss of observations due to missing data on age, gender, NACE industry, size of the firm etc.
- The proportion of firms covered by the JRS was 3-4% of all firms, the proportion of employees - 3-7% of all private sector employees every month in March–June 2020

Who got the idle-time allowance? Linear Probability Model

Linear Probability Model (LPM) for the probability of an employee to get JRS support in Mar'2020–Jun'2020:

$$JRS_{i,j,k} = \beta X_{i,j,k} + \mu_j + \lambda_k + \epsilon_{i,j,k}$$

where $JRS_{i,j,k}$ is a binary variable $=1$ if an employee i from firm j of occupation k participated in an idle-time program during Mar'2020–Jun'2020

- $X_{i,j,k}$ is a vector of employees characteristics
  - The potential value of the JRS support for the employee i
  - Variables determining the potential value of support, e.g. gross FTE wage, FTE in 2019H2
  - Demographic variables (age, gender), employee's status, salary tax booklet
  - Gross FTE wage can be interpreted as skills, since we control for occupation, experience, age, any firm-level characteristics etc.
- μ_j is a firm fixed effect: we control for absolutely any firm characteristic
- λ_k is an occupation fixed effect: thus we also control for differences between occupations
  - In other words, we compare (at least) two employees of the same occupation working in the same firm, one JRS participant, another – non-participant
  - This excludes most observations from the small firms...

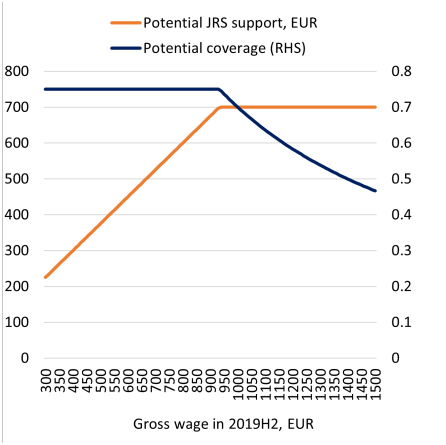
Linear Probability Model estimates

Table: Probability to participate in JRS at the employee level

Determinants	(1)
Log of potential JRS value	0.0278***
Female (dummy)	0.0486***
Age	-0.00429**
Age^2	0.00005**
Log of experience in job position in Feb'2020	-0.00797*
Ordinary employee's status in 2019H2 (dummy)	0.0921***
Salary tax booklet in 2019H2 (dummy)	0.0286***
Firm fixed effect	Yes
Occupation fixed effect (4-digit ISCO-08)	Yes
Number of observations	24'586
R^2	0.446

Decomposing potential value of JRS support

- JRS support equals 75% of gross wage in 2019H2, but cannot exceed 700 EUR
- Potential value of JRS support can be decomposed into:
  - Gross wage in 2019H, which can be further decomposed into
    - Gross FTE wage in 2019H, our proxy for skills (after controlling for occupation)
    - Average FTE in 2019
  - Coverage: ratio of potential JRS value to gross wage
- We use non-linear relationship between the coverage and the gross wage to include all these factors into the LPM regression (and avoid perfect multicollinearity)
  - Note that approximately half of employees have gross wage exceeding 933.33 EUR, so we can exploit the non-linearity



Linear Probability Model estimates: more insights about the effect of coverage

Table: Probability to participate in JRS at the employee level

Determinants	(1)	(2)	(3)
Log of potential JRS value	0.0278***	-	-
Log of FTE wage in 2019H2 (aka skills)	-	-0.0575***	0.0341*
Log of average FTE in 2019H2	-	0.00865	0.0400***
Log of potential JRS value to wage in 2019H2	-	-	0.170***
Female (dummy)	0.0486***	0.0411***	0.0379***
Age	-0.00429**	-0.00259	-0.00250
Age^2	0.00005**	0.00003	0.00003
Log of experience in job position in Feb'2020	-0.00797**	-0.00306	-0.00441
Ordinary employee's status in 2019H2 (dummy)	0.0921***	0.0990***	0.0870***
Salary tax booklet in 2019H2 (dummy)	0.0286***	0.0319***	0.0287***
Firm fixed effect	Yes	Yes	Yes
Occupation fixed effect (4-digit ISCO-08)	Yes	Yes	Yes
Number of observations	24'586	24'586	24'586
R^2	0.446	0.446	0.448

Local projection difference-in-difference (LP-DiD) regressions

We use LP-DiD estimation technique with control variables to uncover the effect of JRS program on the probability of a worker to stay employed in the same firm:

$$E_{i,j,t+h} = \delta_{0,h} + \delta_{1,h} JRS_{i,j,t} + \delta_{2,h} JRS_{i,j,t} X_{i,j,t-1} + \beta_{1,h} X_{i,j,t-1} + \beta_{2,h} X_{i,t-1} + \beta_{3,h} X_{j,t-1} + \epsilon_{i,j,t}. \quad (1)$$

- t is the period March 2020–June 2020, h runs from August 2020 to October 2020
- $E_{i,j,t+h}$ is a binary variable $=1$ if an employee i works in the firm j during the period (month) $t+h$.
- $JRS_{i,j,t}$ denotes binary variable that is 1 for employees from firm j that received the idle-time allowance in period t.
- $X_{i,j,t-1}$ includes various employee-employer pair characteristics and the set of four-digit occupation fixed effects, $X_{i,t-1}$ denotes employee-specific variables, $X_{j,t-1}$ denotes firm-specific variables
- We estimated LP-DiD using the sample of matched firms. We employ the propensity score matching technique (using the kernel method with a calliper of 0.0075).

LP-DiD results using the matched sample

Table: Probability to stay employed in the same firm, matched sample

	Aug'2020	Sep'2020	Oct'2020
JRS participation (dummy)	0.318**	0.238*	0.258*
... x Log of FTE wage in 2019H	-0.019	-0.017	-0.021
... x Log of FTE in 2019H2	-0.138***	-0.073*	-0.073*
Log of FTE wage in 2019H	0.028	0.024	0.031
Log of FTE in 2019H2	0.133***	0.106***	0.120***
Log of potential JRS value to wage in 2019H2	-0.011	-0.020	-0.013
Female (dummy)	0.028	0.035*	0.037*
Age	-0.001*	-0.000	-0.000
Log of experience in job position in Feb'2020	0.019***	0.014***	0.013**
Ordinary status in 2019H2 (dummy)	0.006	0.011	-0.024
Salary tax booklet in 2019H2 (dummy)	-0.017	-0.007	0.002
Occupation fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Firms size fixed effects	Yes	Yes	Yes
R^2	0.143	0.115	0.122
Number of employees	10'294	10'194	10'294

Robustness checks

- Alternative matching technique (NN with a caliper= 0.005)
- Incorporate firm fixed effects in the LP–DiD regressions
- As a skills proxy use an employee fixed effect of the wage equation (Abowd et al. 1999, henceforth AKM skills proxy)

Conclusions

- Participation in the JRS has positive effect on the employee's probability to stay employed in the same firm (at least in the short run horizon)
- There is only weak relationship of this effect with skills
  - JRS support per se has little to do with the quality/skill composition of labour for participating firms
  - at least for larger firms and widespread occupations
- Legal ceiling of 700 EUR per month for the value of JRS support:
  - stimulates providing support for low-skilled labour
  - create a negative effect on the quality of labour (and productivity) for participating firms
- Overall, positive evidence of JRS on employment confirmed at the employee level. However, is there a case to raise the ceiling for JRS?
  - The ceiling can be important from other perspective: e.g. distribution of income, or the sustainability of the budget

Limitations

- More than half of JRS recipients have no occupation information, therefore we cannot evaluate their skills
- Large share of JRS recipients was not matched, which may affect the results
- We assume that gross FTE wage is a good proxy for (unobservable) skills
- We restrict our analysis to the probability of staying employed in the same (JRS participating) firm
  - Despite the importance to understand behaviour of employees who left JRS participating firms, we left this question for another research due to large number of dimensions that should be understood:
    - What was the probability to find new job (in the short run)?
    - What was the productivity of the new firm relative to the productivity of the old firm?
    - Did the employee keep the same occupation as in the old firm?
    - What are the skills of the employee in case of changes in occupation?

References I

Abowd, J. M., F. Kramarz, and D. N. Margolis (1999). High Wage Workers and High Wage Firms. *Econometrica 67*(2), 251–334.

Barrero, J. M., N. Bloom, and S. J. Davis (2020). Covid-19 is also a reallocation shock. Technical report, National Bureau of Economic Research.

Barrero, J. M., N. Bloom, S. J. Davis, and B. H. Meyer (2021). Covid-19 is a persistent reallocation shock. In *AEA Papers and Proceedings*, Volume 111, pp. 287–291. American Economic Association 2014 Broadway, Suite 305, Nashville, TN 37203.

Carrillo-Tudela, C., A. Clymo, C. Comunello, A. Jäckle, L. Visschers, and D. Zentler-Munro (2023). Search and reallocation in the covid-19 pandemic: Evidence from the uk. *Labour Economics*, 102328.

David, J. M. et al. (2021). Has covid-19 been a reallocation recession? *Chicago Fed Letter 452*.

Forsythe, E., L. B. Kahn, F. Lange, and D. Wiczer (2022). Where have all the workers gone? recalls, retirements, and reallocation in the covid recovery. *Labour Economics 78*, 102251.

Pizzinelli, C. and I. Shibata (2023). Has covid-19 induced labor market mismatch? evidence from the us and the uk. *Labour Economics*, 102329.