Heterogeneous Impact of COVID-19 on Income: Evidence from Russia

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The effect of COVID-19 on income is linked to labour market, namely, to unemployment or reduction in working hours (e.g. the US: Albanesi and Kim, 2021; Sweden: Angelov and Waldenström, 2023; the EU: Dang and Nguyen, 2021; Russia: Kotyrlo, 2025; Russia: Kartseva and Kuznetsova, 2022) stressing that the lower-skilled and/or less educated workers were the most affected as their duties could not be teleworked. However, the transient policies efficiently targeted mostly exposed groups and prevented scaled income losses (e.g., Angelov and Waldenström, 2023). Studies from previous period also advocate higher wellbeing resilience of public workers to macroeconomic shocks (e.g. Gregory and Borland, 1999). Employment is strictly protected by formal contracts and laws there. Salary of public sector workers does not experience dramatic changes in response to business cycle due to a smaller proportion of performance pay in salary and the strict budget management system. Angelov and Waldenström (2023) state a greater decline in employment and earnings in private sector during the pandemic in Sweden.

Similar to other countries, job loss and working hours reduction were the main channels of the negative effect of COVID-19 on income in Russia (e.g., Kapeliushnikov, 2023). However, labour market adjustment to the pandemic was featured by the national institutional framework and, similar to crises of 2008–2009 and 2014–2015, was implemented via administrative leaves substantially reducing working hours and leaving the employment level fairly stable. To prevent income losses the Russian government enacted transient policies supporting employment in small and medium businesses and compensating income losses for unemployed people and families with children under 18 years old. The closest study made on Russian data is Kartseva and Kuznetsova (2022), where the effect of COVID-19 on earnings was investigated across socio-demographic groups. However, this study evaluated year-to-year changes in income, thus does not allow distinguishing the effect of the pandemic from time-varying confounders.

This study investigates the effect of COVID-19 on economic wellbeing. To address this issue, we compose the groups of private and public workers. Employment in the latter is assumed to be safe with guaranteed earnings and, thus, resistant to the shock caused by pandemic-related

restrictions. Thus, a comparison of the annual change in income between public and private workers would demonstrate the effects of these restrictions on economic wellbeing. One household member could adjusts his(her) labour supply (consequently income) according to not earned income coming from other sources (i.e. labour supply of another spouse). To avoid a spillover effect caused by the effect of non-earned income on labour supply, homogenous groups of households with all working members employed only in one of the sectors.

We employ data from the RLMS-HSE and four estimating procedures: 1) difference-in-differences (DID), 2) DD combined with the propensity score matching (PSM-DID); 3) quantile difference-in-differences (QDD) and QDD combined with PSM (PSM-QDD). Individual income and equivalised household income per capita in homogenous households by employment in a sector are the outcomes. In assumption of heterogeneity of the effect the model is estimated on subsamples across gender, age group, parenting status, health conditions, education, business size and city size. First, in contrast to (Kartseva and Kuznetsova, 2022) reports a 16% decline in wages in 2020, our results suggest that individuals and households mitigated the negative shock on income that dropped by no more than 7–9% for private workers compared to public workers. Second, the results for individual income support and clarify earlier findings (Kartseva and Kuznetsova, 2022) on negative effect for working-age population, male workers, workers with higher and secondary education and those, residing in towns less than 100,000 people. Third, to eliminate the effect of the transient policies supporting income in households with children and employment in small and medium businesses we construct subsamples of working-age not-parenting employees and estimate the models for workers in enterprises with less than 250 employees and more than 250 employees separately. This leads to negligible effect of the pandemic both for the potential recipients of the government subsidies and non-recipients. The negligible effect for the recipients can be explained by efficiency of the transient policies. Whereas insignificant effect for workers in enterprises larger than 250 employees can be explained by a higher resilience of large enterprises to macroeconomic shocks. Forth, we investigate a distributional effect of the pandemic on income. We find that the most affected were the low quartile of population and the 9th decile of population, whereas the effect for the median population was insignificant. This suggest that the bottom and the top quantiles were negatively affected by the pandemic-related shock on income, whereas the effect for the median population was negligible.

Table 1. Estimates of the ATT

No.	(1)	(2)	(3)	(4)
Dependent variable	ln_individual_income		ln_equivalised_hh_income	

Model	DID	PSM-DID	DID	PSM-DID
Entire sample	−0.032	−0.012	−0.079***	−0.030
	(0.044)	(0.045)	(0.030)	(0.031)
Male	−0.043	−0.001	−0.107**	−0.030
	(0.073)	(0.064)	(0.046)	(0.041)
Female	−0.016	−0.041	−0.048	−0.049
	(0.055)	(0.063)	(0.040)	(0.047)
city_size: < 100000	−0.037	−0.020	−0.072*	−0.038
	(0.059)	(0.063)	(0.042)	(0.045)
city_size: < 500000	−0.031	−0.009	−0.072	−0.074
	(0.120)	(0.114)	(0.068)	(0.083)
city_size: > 500000	−0.011	−0.052	−0.075	−0.036
	(0.080)	(0.073)	(0.052)	(0.046)
edu: Primary	0.239	0.298*	−0.021	0.170*
	(0.191)	(0.171)	(0.104)	(0.101)
edu: Secondary	−0.081	−0.000	−0.125***	−0.062
	(0.064)	(0.061)	(0.041)	(0.040)
edu: Higher	−0.020	−0.039	−0.014	0.007
	(0.060)	(0.065)	(0.047)	(0.051)
age_group: 15–24	0.437	0.238	0.021	−0.035
	(0.418)	(0.451)	(0.120)	(0.144)
age_group: 25–54	−0.091*	−0.025	−0.092**	−0.019
	(0.048)	(0.049)	(0.037)	(0.037)
age_group: ≥ 55	0.028	0.096	−0.076	−0.030
	(0.086)	(0.088)	(0.051)	(0.055)
single_parent	−0.197	−0.234	−0.210*	−0.060
	(0.165)	(0.171)	(0.122)	(0.107)
multichildren_parent	−0.166	−0.150	0.239	0.297
	(0.327)	(0.463)	(0.186)	(0.250)
chronic	−0.010	−0.004	−0.093**	−0.012
	(0.055)	(0.057)	(0.038)	(0.039)

Note. Standard errors in parentheses. *** — $p < 0.01$, ** — $p < 0.05$, * — $p < 0.1$.

Table 2. Estimates of QTT for the overall sample

Dependent variable	Model	QTT(0.10)	QTT(0.25)	QTT(0.50)	QTT(0.75)	QTT(0.90)
ln_individual_income	QDD	−0.105***	−0.005	−0.058***	−0.049	−0.091***
		(0.006)	(0.014)	(0.003)	(0.038)	(0.033)
ln_individual_income	PSM-QDD	−0.089***	−0.010***	0.000	−0.025	−0.112***
		(0.017)	(0.001)	(0.000)	(0.029)	(0.043)
ln_equivalised_hh_income	QDD	−0.067	−0.076**	−0.042	−0.073**	−0.089***
		(0.048)	(0.031)	(0.031)	(0.030)	(0.032)
ln_equivalised_hh_income	PSM-QDD	0.026	−0.053	0.011	−0.015	−0.040
		(0.054)	(0.035)	(0.039)	(0.031)	(0.042)

Note. Standard errors in parentheses. *** — $p < 0.01$, ** — $p < 0.05$, * — $p < 0.1$.