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$$\ln(y_{i,t}) = b_0 + b_1 y_{i,t-1} + b_2 h_{i,t-1} + b_3 sv_{i,t-1} + b_4 pv_{i,t-1} + b_5 rf_{i,t-1} + \\ + b_6 inv_{i,t-1} + b_7 inn_{i,t-1} + b_8 \ln(oil_t) + \mu_i + {}_{i,t}, \qquad (1)$$

$y_{i,t}$ –   (   )
                                              i t; $\ln(y_{i,t})$ –
                                                                        i t -
            t–1; $h_{i,t}$ – i
    t; $sv_{i,t}$ –   -
  ; $pv_{i,t}$ –   -
  ; $rf_{i,t}$ –
10   .   ; $inv_{i,t}$ –
  ; $inn_{i,t}$ –   ,
          ; $\ln(oil_t)$ –
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                        $\ln(oil_t)$ -
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      3. $inv_{i,t-1}$.   -
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$y_{i,t-1}$	−5,169*** (0,206)	−5,167*** (0,206)
$h_{i,t-1}$	0,391 (0,430)	3,903* (2,057)
$h_{i,t-1}^2$		−0,062* (0,035)
$sv_{i,t-1}$	−0,552 (0,551)	−0,605 (0,550)
$pv_{i,t-1}$	0,517 (0,437)	0,501 (0,437)
$rf_{i,t-1}$	−0,028 (0,036)	−0,030 (0,036)
$inv_{i,t-1}$	0,164 (0,159)	0,158 (0,158)
$inn_{i,t-1}$	−0,053 (0,123)	−0,072 (0,123)
$\ln(oil_t)$	0,195*** (0,029)	0,181*** (0,029)
	−2,496 (25,779)	−48,530 (36,84)
R^2	0,638	0,641

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$y_{i,t-1}$	−49,996*** (9,738)	−43,543*** (8,608)	−5,372*** (0,480)
$h_{i,t-1}$	3,434*** (0,849)	1,168*** (0,252)	0,683 (3,302)
$h_{i,t-1}^2$	−0,058*** (0,014)		
$sv_{i,t-1}$	0,076 (0,202)	0,435 (0,336)	−3,200 (3,183)
$pv_{i,t-1}$	−0,069 (0,200)	0,405* (0,209)	4,197 (2,903)
$rf_{i,t-1}$	−0,079 (0,031)	−0,017 (0,013)	−0,102 (0,217)
$inv_{i,t-1}$	−0,093 (0,069)	−0,311*** (0,101)	0,777 (0,611)
$inn_{i,t-1}$	0,027 (0,045)	−0,002 (0,063)	−0,798 (1,237)
$\ln(oil_t)$	0,143*** (0,012)	0,178*** (0,016)	0,170 (0,195)
	−23,793 (14,246)	−13,041 (15,613)	−20,691 (192,215)
R^2	0,591	0,589	0,669
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$$LQ_{i,j} = \frac{E_{i,j} \, / \, E_i}{E_j \, / \, E} \, , \qquad (2)$$

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j $i;\ E_i$ – $i;\ E_j$ –
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$LQ_{i,1} > 1{,}5,$
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$y_{i,t-1}$	−38,800*** (11,262)	−5,250*** (0,416)	−58,109*** (10,767)	−37,719*** (9,513)
$h_{i,t-1}$	4,122*** (1,536)	−0,016 (1,791)	1,546*** (0,309)	−0,202 (0,299)
$h_{i,t-1}^2$	−0,064** (0,027)			
$sv_{i,t-1}$	−0,483* (0,279)	−2,251 (2,131)	1,243*** (0,373)	0,500 (0,421)
$pv_{i,t-1}$	0,087 (0,207)	0,595 (1,549)	0,766*** (0,257)	1,135*** (0,024)
$rf_{i,t-1}$	−0,033 (0,029)	−0,149 (0,270)	−0,016 (0,014)	−0,037 (0,106)
$inv_{i,t-1}$	−0,055 (0,110)	0,655 (0,504)	−0,299** (0,121)	−0,264** (0,112)
$inn_{i,t-1}$	0,089 (0,088)	−0,305 (0,659)	0,028 (0,047)	0,031 (0,112)
$\ln(oil_t)$	0,140*** (0,015)	0,235* (0,128)	0,163*** (0,017)	0,156*** (0,022)
	−31,647 (24,290)	45,710 (107,181)	−51,590*** (17,864)	8,264 (22,055)
R^2	0,567	0,655	0,641	0,590
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$y_{i,t-1}$	−16,822*** (4,102)	−5,192*** (0,271)	−50,810*** (12,242)
$h_{i,t-1}$	0,423* (0,248)	0,371 (0,818)	1,376** (0,539)
$sv_{i,t-1}$	−0,440 (0,308)	−0,693 (1,134)	0,143 (0,440)
$pv_{i,t-1}$	−0,137 (0,226)	1,191 (0,924)	1,081*** (0,355)
$rf_{i,t-1}$	−0,126* (0,070)	−0,051 (0,076)	−0,018 (0,015)
$inv_{i,t-1}$	−0,039 (0,101)	0,216 (0,297)	−0,235 (0,227)
$inn_{i,t-1}$	−0,017 (0,064)	−0,130 (0,235)	0,432** (0,204)
$\ln(oil_t)$	0,148*** (0,018)	0,183*** (0,051)	0,200*** (0,031)
	22,134 (12,865)	−12,055 (56,758)	−22,085 (28,589)
R^2	0,440	0,647	0,793
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$y_{i,t-1}$	−31,547*** (6,932)	−5,211*** (0,323)
$h_{i,t-1}$	0,387** (0,157)	0,442 (1,251)
$sv_{i,t-1}$	0,366* (0,209)	−1,414 (1,429)
$pv_{i,t-1}$	0,304** (0,161)	0,878 (1,150)
$rf_{i,t-1}$	−0,023 (0,012)	−0,069 (0,129)
$inv_{i,t-1}$	−0,259*** (0,080)	0,335 (0,306)
$inn_{i,t-1}$	0,040 (0,042)	−0,296 (0,399)
$\ln(oil_t)$	0,158*** (0,011)	0,194** (0,078)
	0,906 (9,265)	10,284 (70,950)
R^2	0,556	0,647
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R.M. Melnikov, V.A. Teslenko

EVALUATING THE IMPACT OF HUMAN CAPITAL ON ECONOMIC DYNAMICS IN RUSSIAN REGIONS

The authors evaluate the impact of human capital on economic dynamics in Russian regions against significant shifts in the educational structure of the employed population, characterized by a dominant share of people with higher education in most regions. The main hypothesis of the study states that only specific groups of regions could obtain real benefits from a significant increase in the share of employed with higher education. The results of estimation of panel regressions with fixed effects demonstrate that human capital accumulation somewhat increases the rates of economic growth in regions with industrial specialization, high scientific potential, and those located in the western part of Russia. The human capital has no significant effect on economic growth in regions with specialization in services and mining. An increase in the share of employed with higher education increases growth rates in under-developed and agricultural regions with decreasing return to scale. The low

share of the gainfully employed population with basic vocational education constrains growth in regions specializing in industrial production and services. At the same time, the human capital concentrated in the research and development sector has no significant effect on growth even in the regions with high scientific potential due to the «disconnected» character of regional innovation systems and the low level of demand for innovations from the majority of Russian industrial enterprises.

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