

26th INFORUM World Conference
Łódź, Poland, 27 August – 31 August 2018

THE INFLUENCE OF A HUMAN CAPITAL
ON THE RUSSIAN ECONOMY
DEVELOPMENT

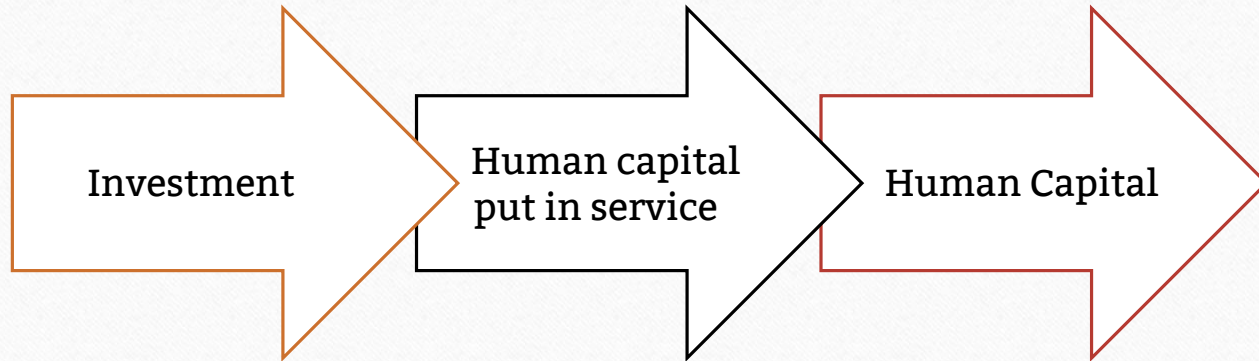


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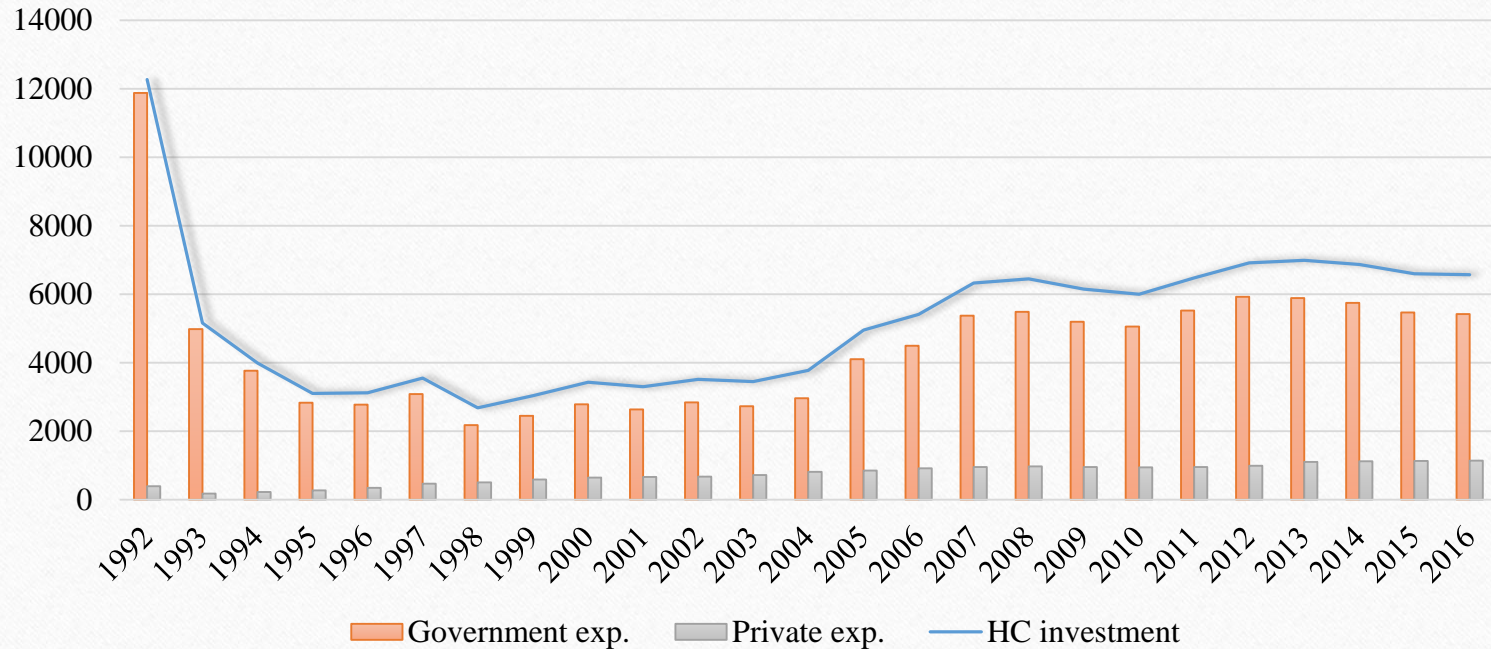
Institute of Economics and Industrial Engineering of SB RAS
Novosibirsk State University



Calculation of a Human Capital amount



Human capital investment (prices of 2015), bln rubles





9% of GDP

Average investment share from 1992 to 2016

17,5%

Average share of the Private expenses in the Human capital investment

27,4%

Maximum share of the Private expenses in the Human capital investment
(2004)



Human capital put in service

education

healthcare

culture

Human capital put in service: education



30% of graduates

(secondary vocational education – SVE)

continue their studies in universities

90% of schoolchildren

continue their studies

70% of university entrants

come after high school graduation



Human capital put in service: education

School:
$$BHsc(t) = 0,1 \cdot Nsc \cdot \sum_{s=0}^{10} IHsc(t-s)$$

SVE:
$$BHspr(t) = 0,7 \cdot Nspr \cdot \left[\sum_{s=0}^2 IHspr(t-s) + \sum_{s=3}^{12} IHsc(t-s) \right]$$

University:
$$BHtr(t) = Ntr \cdot \left[0,3 \cdot \left(\sum_{s=0}^4 IHtr(t-s) \right) + \sum_{s=5}^7 IHspr(t-s) + \sum_{s=8}^{17} IHsc(t-s) \right] + 0,7 \cdot \left(\sum_{s=0}^4 IHtr(t-s) \right) + \sum_{s=5}^{15} IHsc(t-s) \right]$$

BH – HC put in service, N – number of graduates,

IH – expenses per 1 student



Human capital put in service: education

$$\mathbf{BHe}(t) = \mathbf{BHsc}(t) + \mathbf{BHspr}(t) + \mathbf{BHtr}(t)$$

- University graduates (tr);
- Secondary vocational education graduates (spr);
- 10% of high school graduates (sc).



Human capital put in service: healthcare and culture

Healthcare:

- 1 year lag*

Culture:

- No lag

* For ex., Heijink R., Koolman X., and Westert G. Spending more money, saving more lives? The relationship between avoidable mortality and healthcare spending in 14 countries // The European Journal of Health Economics, No. 14, 2013. pp. 527-538.

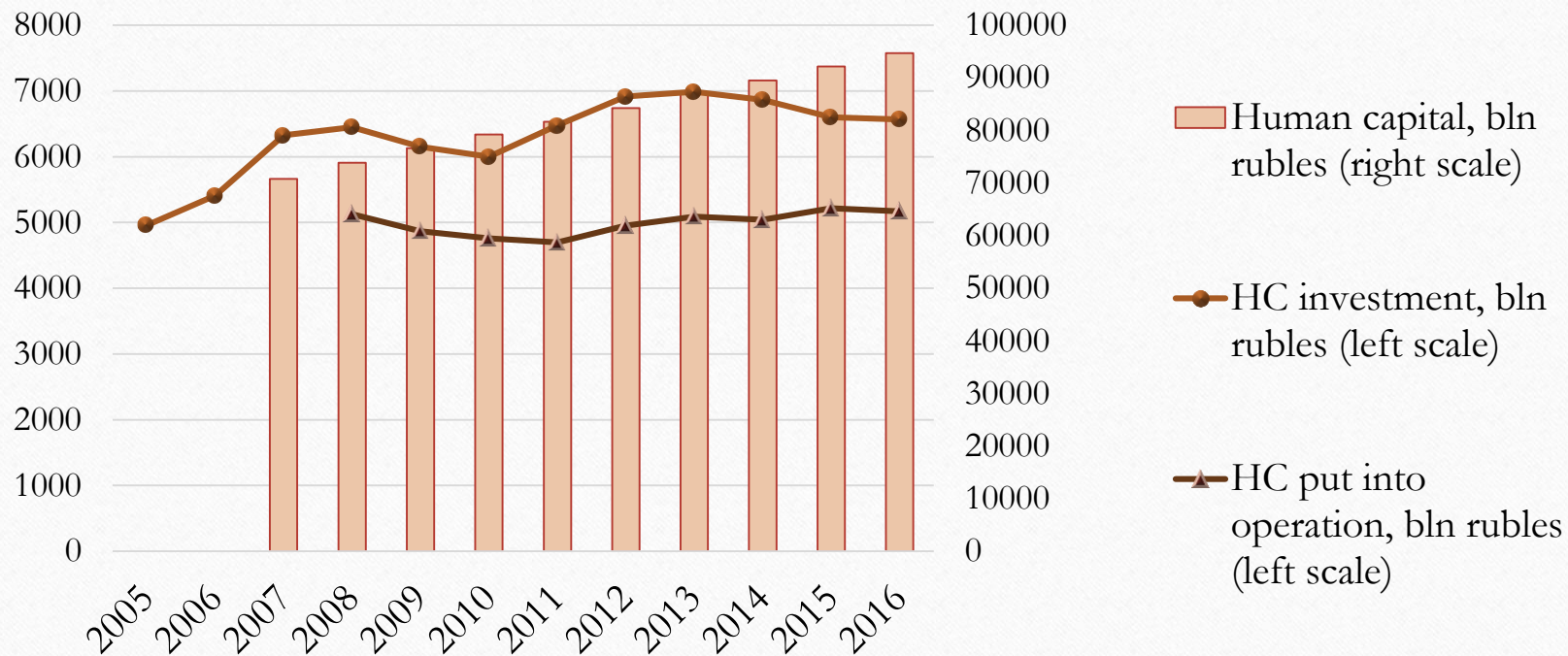


Human capital put in service (BH)

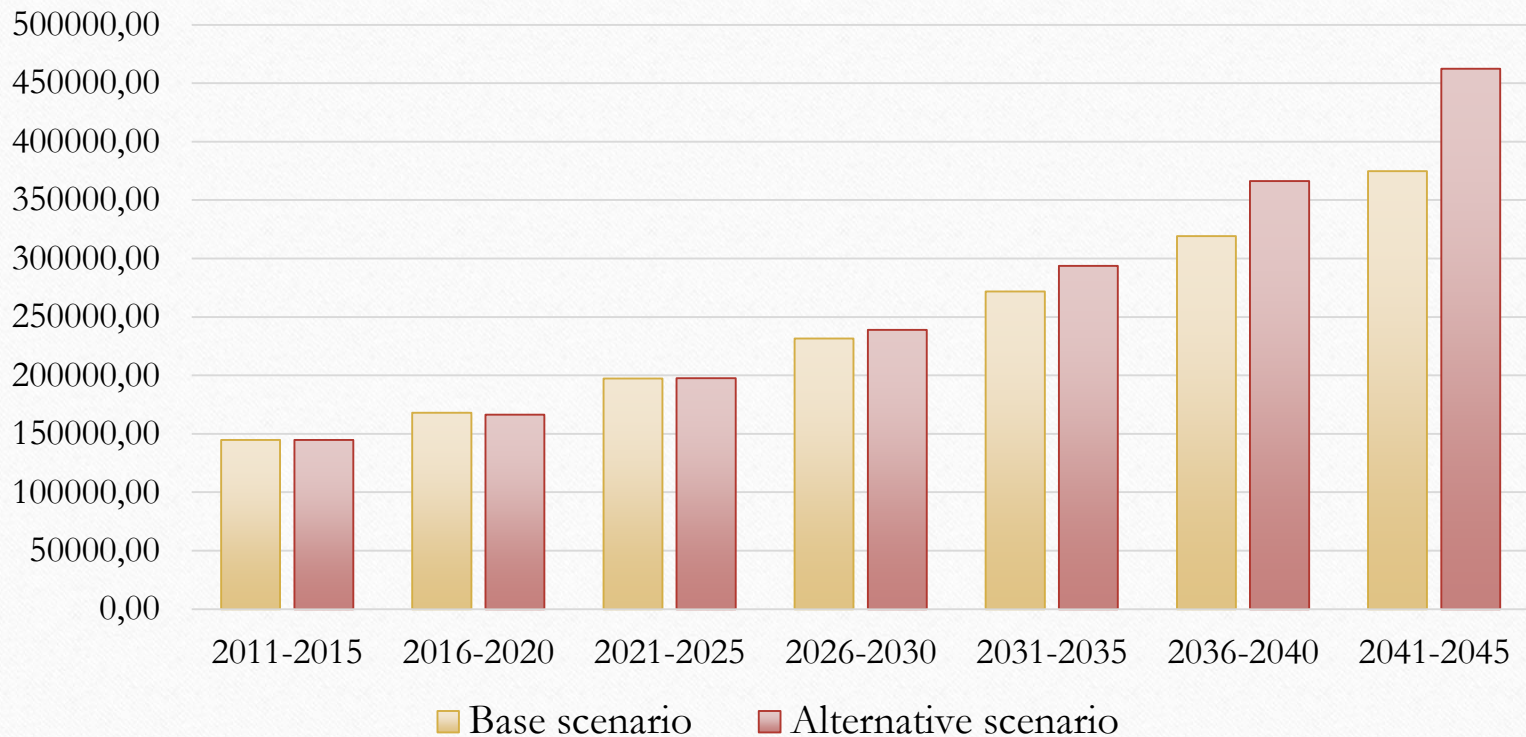
$$BH(t) = BHe(t) + IHh(t-1) + IHc(t)$$

- BHe – Human capital put in service: education
- IHh – healthcare expenditures
(– without expenses on unemployed retired people)
- IHc – culture expenditures

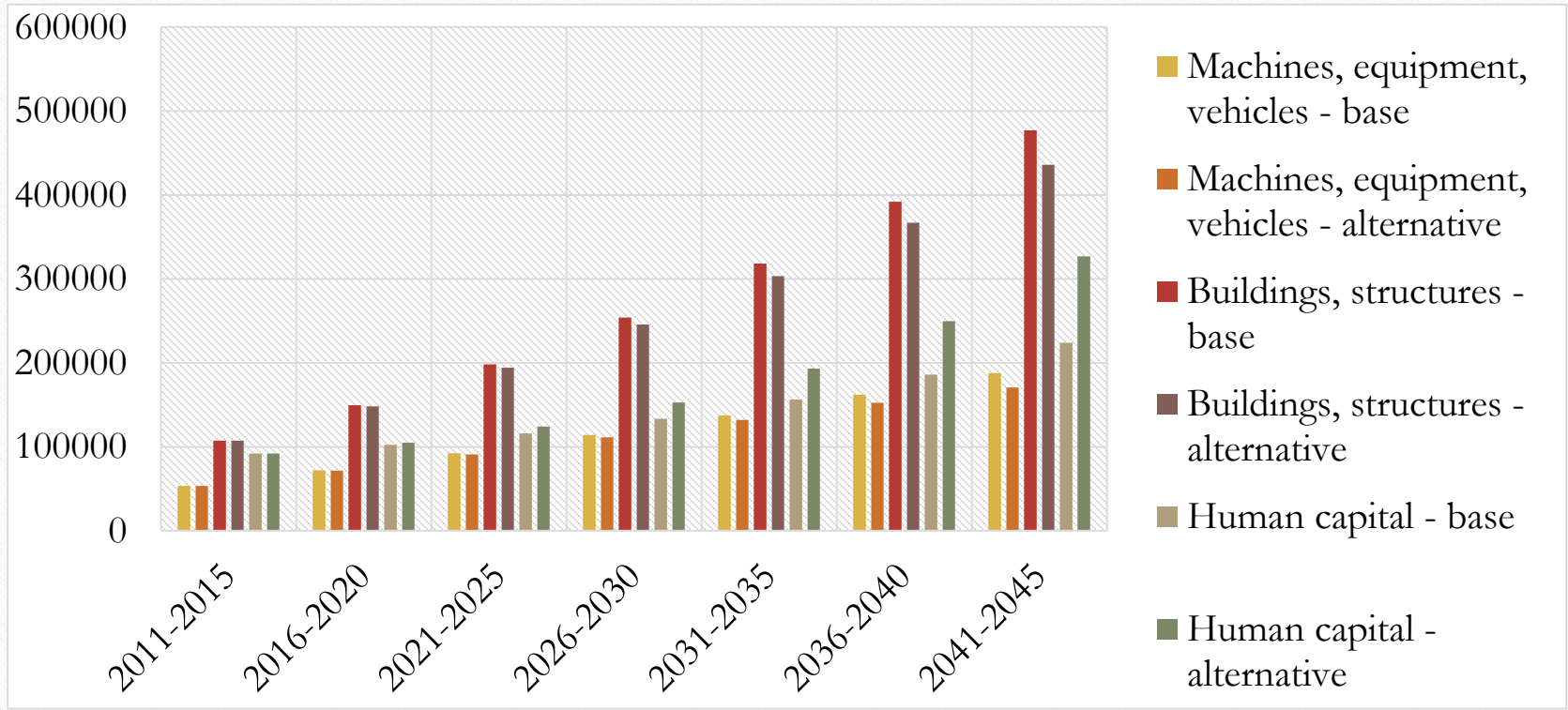
Human capital, HC put into operation, HC investment (prices of 2015), bln rubles



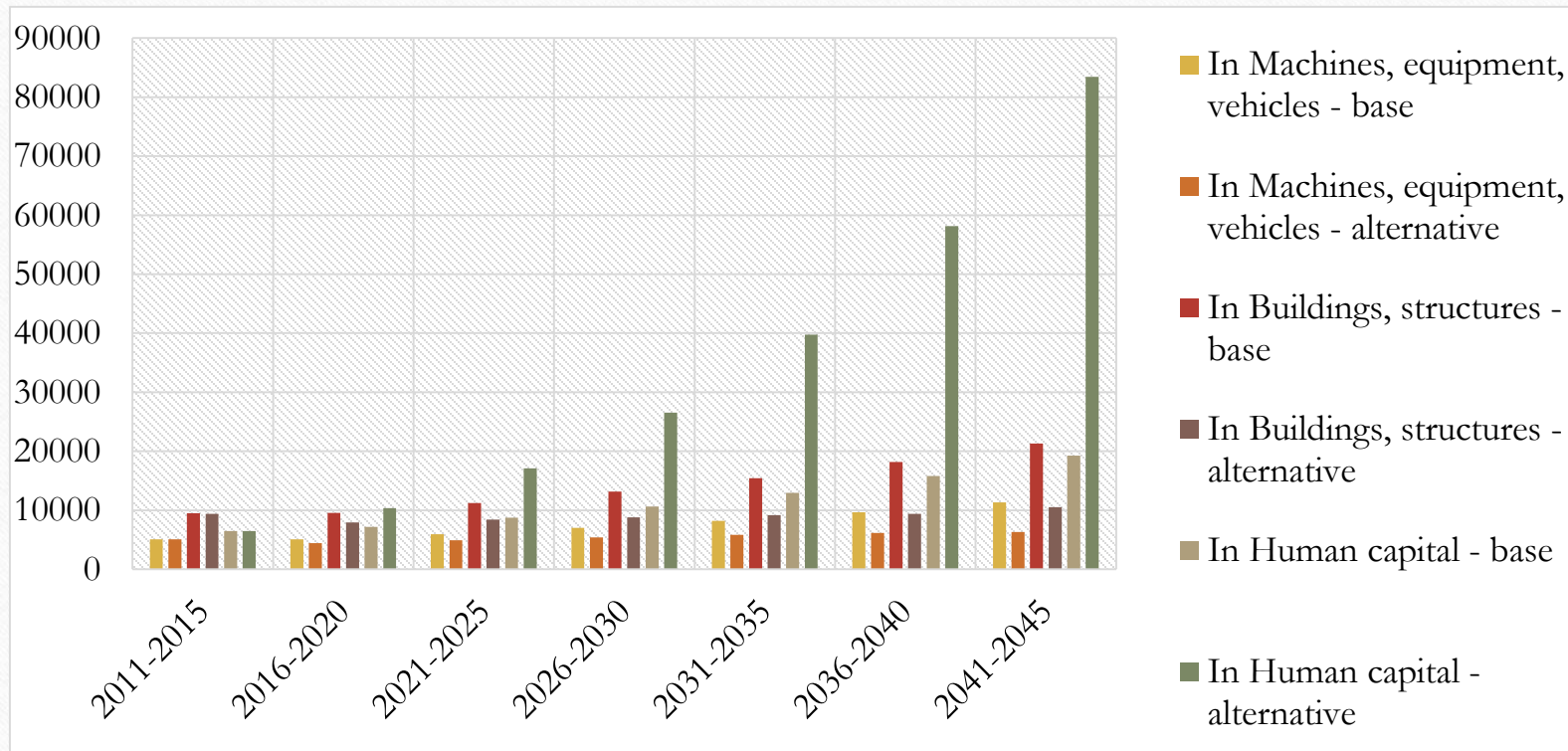
Forecast of the output (prices of 2015), bln rubles



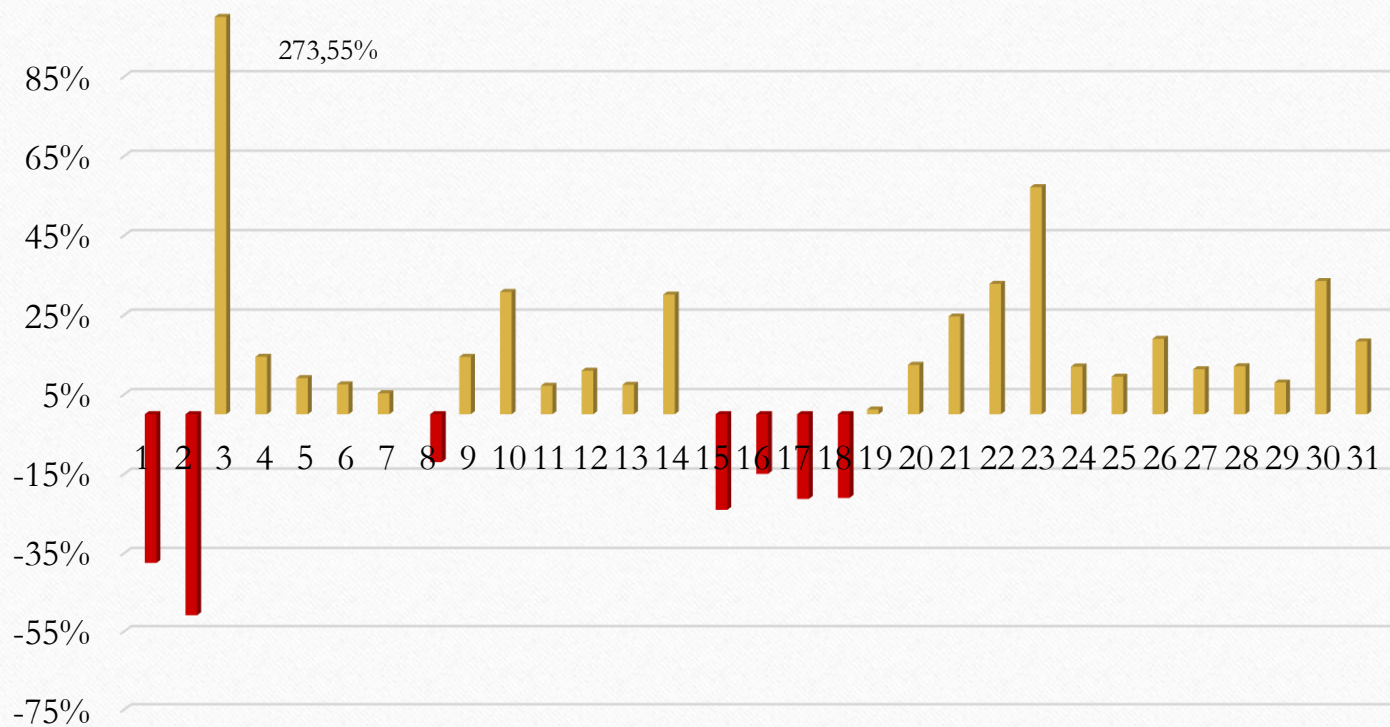
Forecast of a Fixed capital and a Human capital dynamics (prices of 2015), bln rubles



Forecast of investment dynamics (prices of 2015), bln rubles



The growth rate of the output, % to the base scenario output



The list of the brunches

1. Manufacture of machinery and equipment	9. Manufacture of food products and tobacco
2. Construction of buildings and structures	10. Textile and clothing manufacture. Manufacture of leather, leather goods and footwear
3. Branch of formation of the human capital	11. Wood processing and production of wood products. Pulp and paper industry, publishing and printing activities
4. Agriculture, hunting and forestry, fishing and fish farming	12. Manufacture of coke
5. Gas extraction	13. Production of petroleum products
6. Oil extraction	14. Chemical production. Manufacture of rubber and plastic products
7. Extraction of other fuel and energy minerals	15. Manufacture of other non-metallic mineral products (building materials)
8. Extraction of minerals, except for fuel and energy	16. Manufacture of ferrous metals

The list of the brunches

17. Manufacture of non-ferrous metals	24. Wholesale and retail trade, repair, hotels and restaurants
18. Manufacture of fabricated metal products	25. Transport
19. Mechanical engineering non-fund forming (production of spare parts, weapons, etc.)	26. Communication
20. Other production	27. Financial activities
21. Production and distribution of electricity, gas and water	28. Operations with real estate, renting and provision of services (with the exception of R & D)
22. Collection, purification and distribution of water	29. Public administration and military security. Social Security
23. Non-fund forming construction (production of current repair of buildings and structures)	30. Research and Development
	31. Provision of other communal, social and personal services

Conclusion remarks

Increase of the growth rate of a Human capital put into operation
– **6% per year** (basic variant 4% per year)

No change of the growth rate of a Fixed capital put into operation

Result:

the gross output in alternate scenario in 2041-2045 is **1.23** times greater than the basic one

Conclusion remarks

Consequences:

Decrease of the output at the asset-building sectors (machine building, construction) as well as at the metallurgy sector.

Serious structural shifts in the economy.

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