Research Statement

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1 Introduction

I am interested in research in macroeconomics, particularly empirical macroeconomics and macroeconomic history; economic history, with a focus on technological change and upper-tail human capital; and applied econometrics, specifically exploring technical topics such as the limitations of certain Stata packages and working to improve them. Currently, my work aims to advance an understanding of the causes underlying two research questions.

First, *what set of factors did cause the British Industrial Revolution*? In my work, I unfold market structure and business dynamism as possible explanations, building on advances in Schumpeterian growth models and distributional macroeconomics.[1] I firmly believe that the British Industrial Revolution debates will benefit from recent advances in macro literature, collecting individual-level data using the digitisation of hand-written and semi-structured documents, and, hence, a better understanding of a cascade of technological changes in recent centuries.

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1. Philippe Aghion, Ufuk Akcigit, and Peter Howitt, "The Schumpeterian Growth Paradigm," *Annual Review of Economics* 7, no. 1 (August 2015): 557–575, ISSN: 1941-1383, https://doi.org/10.1146/ANNUREV-ECONOMICS-080614-115412; Benjamin Moll, Lukasz Rachel, and Pascual Restrepo, "Uneven Growth: Automation's Impact on Income and Wealth Inequality," *Econometrica* 90, no. 6 (2022): 2645–2683.

Second, *what does drive cross-country differences in upper-tail human capital*? My research uncovers differences beyond education that contribute to innovation activity, economic performance, and knowledge formation. In particular, I am interested in comparing the Soviet experience in building upper-tail human capital through chess and math olympiads with their 20th-century counterparts. As it is widely accepted that capitalist economies better produce and allocate human capital, in my work I provide a more nuanced understanding by strengthening existing papers on knowledge formation..[2] In particular, I utilise a large body of textual data, such as protocols and newspapers from the Soviet era, as well as open-source data for the present day. This raises a broader research question on how these differences contribute to values, motivation for paid work, and other parts of market-based economic activity after the collapse of the Soviets.

In the following, I will briefly introduce these two topics and list some of my previous applied work and projects in Russian.

2 The British Industrial Revolution

2.1 Current Work

Drawing on a vast body of macroeconomic history of the British Industrial Revolution, in my paper I am exploring the distributional effects of this

2. George J. Borjas and Kirk B. Doran, "The Collapse of the Soviet Union and the Productivity of American Mathematicians," *The Quarterly Journal of Economics* 127, no. 3 (2012): 1143–1203, ISSN: 0033-5533.

technological change across industries, occupations, and local labour markets using micro-data.[3]

The central puzzle which interests me is the distribution of factor income shares from a long-run perspective, which is stable, in Caldor facts supported by some nuanced measures of labour share for Britain, or rising, if rely on usual macroeconomic calculations based on national accounting.[4] Ultimately, based on factor shares, the British Industrial Revolution caused a rise in labour share instead of expected capital income gains.

While these distribution effects were widely discussed in the literature before, most famously in Robert Allen's Engels Pause, previous investigations heavily relied on sparse historical wage data.[5] The limitations of the wage data and a questionable assumption that a rising labour income share translates into higher average wages overlook distributional effects. These gaps highlight the limitations of the macroeconomic literature on the British Industrial Revolution.

To overcome these limitations, my research leverages population census data from the I-CeM project alongside excellent work by CAMPOP on ex-

3. Kirill Kushnarev, "Labour Market Concentration Since the British Industrial Revolution" (Working Paper, 2025).

4. Nicholas Kaldor, "Capital Accumulation and Economic Growth," chap. 10 in *Capital Accumulation and Economic Growth*, ed. Friedrich Lutz and Douglas Hague (MacMillan / Co. Ltd., 1961), 177–222; Jane Humphries and Jacob Weisdorf, "Unreal Wages? Real Income and Economic Growth in England, 1260–1850," *The Economic Journal* 129, no. 623 (October 2019): 2867–2887.

5. Robert C. Allen, "Engels' Pause: Technical Change, Capital Accumulation, and Inequality in the British Industrial Revolution," *Explorations in Economic History* 46, no. 4 (2009): 418–435, https://doi.org/10.1016/j.eeh.2009.04.004.

tracting entrepreneurs from censuses between 1851 and 1911.[6]

My paper begins with *two questions*:

- Did market concentration increase between 1851 and 1911?
- If so, did the labour share decline?

These questions help highlight how economic growth was accumulated among entrepreneurs, suggesting that the benefits of the Industrial Revolution were not shared equally even among firms. Depending on the measurement approach, I've found a significant rise in market concentration across local labour markets and industries, coexisting with a stable or even increasing labour share.

2.2 Future Directions

These concentration-related stylised facts amplify *three research gaps* that I am currently addressing in my research and will develop into papers in the future:

- CAMPOP and I-CeM datasets, which digitised census micro-data, began in 1851. I am exploring extending this analysis by linking it with data from the 17th and 18th centuries.

6. Integrated Census Microdata (I-CeM), *I-CeM Data Archive*, Accessed: 2025-03-20, 2025; Robert Bennett et al., *British Business Census of Entrepreneurs, 1851-1911*, Accessed: 2025-03-20, 2019.

- Available micro-data focuses only on labour statistics, including occupation, tasks, and employment. To provide capital data, I am digitising and cleaning a separate dataset containing capital-related information on entrepreneurs. This will allow me to link it to labour data, analysing how the spread of innovations influenced capital replacement decisions and productivity at the individual-firm level.

- The integration of such data will allow me to re-evaluate overlooked theories in the context of the British Industrial Revolution, such as internal labour market theory and business dynamism, as these two could be seen as contested in explaining growth.

By addressing these gaps, my research contributes to the ongoing debates on why the Industrial Revolution happened in Britain, offering a broader view of a source of economic growth – whether it is internal or mainly shaped by market structure and business dynamism.

3 Upper-Tail Human Capital

3.1 Current Work

Branco Milanovich's *Capitalism Alone* claims that the glorious success of capitalism could be explained as the best system of reinforcing individuals' values.[7] To challenge this idea, particularly in the context of knowledge and

7. Branko Milanovic, *Capitalism, Alone: The Future of the System That Rules the World* (Cambridge, MA: Harvard University Press, 2019), ISBN: 9780674987593; George J. Borjas

human capital formation, I developed a framework for how the Soviet leisure time policies in the 20th century affected human capital formation. My focus is on the spillover effects of these policies on economic life.[8]

These policies, which I refer to as intellectual culture, summarise a passion for intellectual activities that existed independent of any economic participation or rewards under the Soviets. My research explores whether there was no premium for upper-tail human capital formation and how it affected the selection process, direction of innovations, and post-Soviet struggles to build effective markets for science.

As a first step, I analyse chess as a potential channel for forming upper-tail human capital.[9] To do this, I examine chess competition protocols published in local newspapers, as well as those collected by chess enthusiasts. I have collected and compiled 2,155 chess competition protocols from 1891 to 1991 into a single database. By measuring competition in chess, I found that local competition declined more than sixfold in the 1930s and, more significantly, in the 1970s and 1980s.

Based on these competition estimates, I theorise that selection was the primary driver of declining competition during these periods, along with structural changes in the organization of chess schools.

Furthermore, controlling for traditional education measures such as the

and Kirk B. Doran, *The Collapse of the Soviet Union and the Productivity of American Mathematicians*, Working Paper 17800 (National Bureau of Economic Research, 2012), https://doi.org/10.3386/w17800.

8. Kirill Kushnarev, "Spillover Effects from Chess, 1891–2021" (Working paper, 2025).

9. K. Kushnarev.

number of engineers per capita and educational attainment at different levels, I analyse whether chess selection influenced economic and political participation through the intellectual culture channel. No significant relationships have been identified yet, partly due to the sparsity of data on participation.

3.2 Future Directions

Beyond chess as a single channel, I am developing an approach to frame intellectual culture in terms of shaping intrinsic motivation and values toward work, as it could be a potential cornerstone for relating the direction of technological change to culture.

4 Applied Projects in Russian

I have extensively published on these topics: the art market, climate change, the political economy of economic fluctuations, and theory.

4.1 Art Market

I've been interested in analyzing how market prices for art are formed, particularly in the case of the first Western auction held in Moscow in 1988.[10]

10. K.A. Kushnarev and N.P. Ezdina, "Theoretical and Methodological Foundations for Constructing a Behavioral Pricing Model in the Art Market" [in Russian], 2019, Kirill A. Kushnarev, "Selection and Evaluation of Predictors in a Behavioral Pricing Model for the Art Market" [in Russian], *Plekhanov Barometer* 3 (2018): 65–68; A.I. Bolvachev and K.A. Kushnarev, "Mathematical-Statistical Pricing Model in the Art Market: Finance and Market Equilibrium" [in Russian], *Financial Management* 1 (2020): 51–63.

I've developed an approach based on Sherwin Rosen's Economics of Superstar with respect to art prices.[11] This approach has consequently been applied to the Soviet case, where a hedonic regression model—commonly used to estimate art prices in the literature—was not applicable due to the absence of a sales history.

Another aspect of my research relates to money laundering and regulation in the art market. I've been active in several areas related to the development of anti-money laundering legislation in the Russian art market, as well as researching practices of offshoring art.[12]

4.2 Climate Change

I have been interested in forecasting decarbonization in terms of social and economic costs. My research began with a paper on the transition from grey to green growth in Russian regions and its potential economic implications.[13] Considering the high social costs of such a transition in the Russian context, I

11. Sherwin Rosen, "The Economics of Superstars," *The American Economic Review* 71, no. 5 (December 1981): 845–858; Kushnarev and Ezdina, "Theoretical and Methodological Foundations for Constructing a Behavioral Pricing Model in the Art Market."

12. V. I. Glotov et al., "The Mechanism of Self-Regulation in the Art Market as a Factor in Countering the Legalization of Financial Flows" [in Russian], *Financial Research* 4, no. 69 (2020): 94–108; Aleksei Bolvachev and Kirill A. Kushnarev, "Money Laundering in the Art Market: Regulatory Mechanisms" [in Russian], in *The AML/CFT System in the Global World: Risks and Threats to the World Economy* (2020), 28–32; Kirill Kushnarev, "The Hypothesis of Homogeneity in Emerging Markets: The Case of the Diamond and Art Markets" [in Russian], in *National Session with International Participation of Student Scientific Communications* (2020), 54–56.

13. Kirill A. Kushnarev, "The Impact of the Industrial Growth Model on the Labor Market Under Russia's Decarbonization Commitments: A Methodological Framework" [in Russian], in *New Economy, Business, and Society* (2021), 61–69.

wrote my undergraduate thesis on the social costs of climate change transition at the local level. I estimated how much people are willing to pay, in terms of economic development, to transition from a grey to a green growth model. I was particularly interested in regions specialising in resource extraction.

I continued this work by examining the interaction between the economic and social costs of change. In particular, I have been the principal investigator on a grant studying costs of reallocating government spending from social and climate policies to military expenditures. I also actively participated in advising the climate change advisor to the President of Russia before 2022, particularly on the implementation of a carbon market pilot project.

4.3 Political Economy of Economic Fluctuations

Subsequently, as part of my research, I became interested in medium-range business cycles, particularly in the context of the Soviet transition. I have written two papers on the interaction between inequality and economic growth in the transitioning Russian economy, with a focus on the political economy of Simon Kuznets' ideas.[14]

One of them specifically has extended Acemoglu and Robinson's framework on the *Political Economy of the Kuznets Curve* to analyze the Soviet

14. A. I. Bolvachev and K. A. Kushnarev, "The Economic Views of S. Kuznets and the Reception of Medium-Term Cycle Theory in the Political Economy Narrative" [in Russian], Published in Russian, *University Bulletin*, no. 8 (2020); Kirill A. Kushnarev, "The Transformation of Kuznets Cycles in Post-Socialist Countries: The Relationship Between the Studied Cycles and Economic Growth" [in Russian], Published in Russian, *Scientific Works of the Free Economic Society of Russia* 224, no. 4 (2020): 541–553.

transition.[15] The second one has summarized and translated key methodologies on political business cycles.[16]

4.4 Theory and Other Works

I have engaged in theoretical research in several papers, particularly by extending the basic Solow growth model to account for human capital differences and, consequently, analyzing the convergence of this model for countries with different levels of human capital.[17]

In addition, I have been working on adapting methodologies to estimate public capital spillovers in the Russian context, building on the methodology of Ma, Racine, and Ullah.[18]

And lastly, my colleagues and I published an optical recognition and segmentation model based on the RetinaNet architecture for financial documents in Russian.[19]

15. Daron Acemoglu and James A. Robinson, "The Political Economy of the Kuznets Curve," *Review of Development Economics* 6, no. 2 (2002): 183–203.

16. A. I. Bolvachev and K. A. Kushnarev, "The Economic Views of S. Kuznets and the Reception of Medium-Term Cycle Theory in the Political Economy Narrative."

17. Kirill A. Kushnarev, "Application of an Extended R. Solow Model for Analyzing Economic Growth in the Context of the Convergence Problem" [in Russian] (2019), 116–117; Kirill A. Kushnarev, "Human Capital as a Predictor of b-Convergence of Economic Systems," in *Managing Geostrategic Issues: Proceedings of the Management International Conference 2019*, Published in English (2019), 85–85.

18. Shujie Ma, Jeffrey S. Racine, and Aman Ullah, "Nonparametric Estimation of Marginal Effects in Regression-Spline Random Effects Models," *Econometric Reviews* 39, no. 7 (2020): 792–825; Kirill A. Kushnarev, "The Role of Public Capital in the Development of Russia's Real Sector: Introduction and Review of Empirical Studies" [in Russian], Published in Russian, *Current Issues in Economics and Sociology*, 2019, 69–75.

19. Petr Sokerin, Alla Volkova, and Kirill Kushnarev, "Object Detection in Financial Reporting Documents for Subsequent Recognition," *International Journal of Advanced Smart Convergence* 10, no. 1 (2021): 1–11.