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CONTOURS OF A NEW WORLD ECONOMIC SYSTEM AND PROSPECTS FOR RUSSIA^{1 2}

Abstract: The world today is changing quite rapidly, reflecting the accumulation of contradictions between the leading countries of the world and their alliances, and for the purpose of its resolution they more and more often resort to strong-arm tactics (military conflicts, economic sanctions, etc.). On the one hand, they accelerate change, on the other hand, reduce the level of certainty of the future. Consequently, the need for development of new methods for scientifically based forecasting emerges. The author examines transformation trends of the current world economic system and Russia's place in it, and proposes new tools for forecasting its future development as well, taking into account its inherent turbulence.

Keywords: forecasting methods, economic mathematical modeling, international rating, Russian economy, economic growth, economic policy, sanctions, military conflict, world economy.

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新世界经济体系的概貌与俄罗斯的未来

摘要: 现代世界在快速变化, 这与世界主要国家以及国家联盟之间矛盾的积累有关, 为解决这些矛盾, 越来越多地使用强力手段 (军事冲突、经济制裁等)。一方面, 这使世界变化加速; 另一方面, 增加未来的不确定性。因此, 有必要研究新的科学预测方法。文章探讨了世界经济体系的变化趋势以及俄罗斯在其中的地位, 并在考虑发展波动性的基础上提出了预测未来发展的新工具。

关键词: 预测方法、经济数学模型、国际评级、俄罗斯经济、经济增长、经济政策、制裁、军事冲突、世界经济。

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² The article is based on the materials of the report presented at the 37th session of the International Theoretical Seminar of the S.Y. Witte Institute for New Industrial Development, titled Noonomy, Modernization, and Neoliberalism (2–3 August 2024, Athens, Greece).

Introduction

The current turbulence within the global geo-economic landscape is a direct consequence of the hybrid confrontation initiated by the United States against several nations, with Russia being a primary target. This confrontation employs a wide array of pressure tactics, ranging from the exacerbation of military conflicts to the implementation of trade restrictions and information warfare. In this context, an analysis of Russia's current and future positioning within the rapidly evolving international order is of particular significance.

Military conflicts and sanctions, their impact on economic development

The Centre for Economic Policy Research (CEPR) has published a study titled *The Price of War*, which analyzes interstate armed conflicts over the past 150 years (Figure 1). These conflicts are defined as combat engagements involving more than 10,000 participants and lasting over 2.5 years. A key quantitative finding indicates that a country experiencing conflict within its territory loses, on average, up to 5% of its GDP annually.

In contrast, neighboring countries within a 5,000-kilometer radius of the conflict participants experience an average GDP reduction of 0.4%. Meanwhile, countries located farther away (beyond 5,000 kilometers) often see an average GDP increase of 0.2%. In other words, distant conflict initiators frequently reap economic benefits from such engagements.

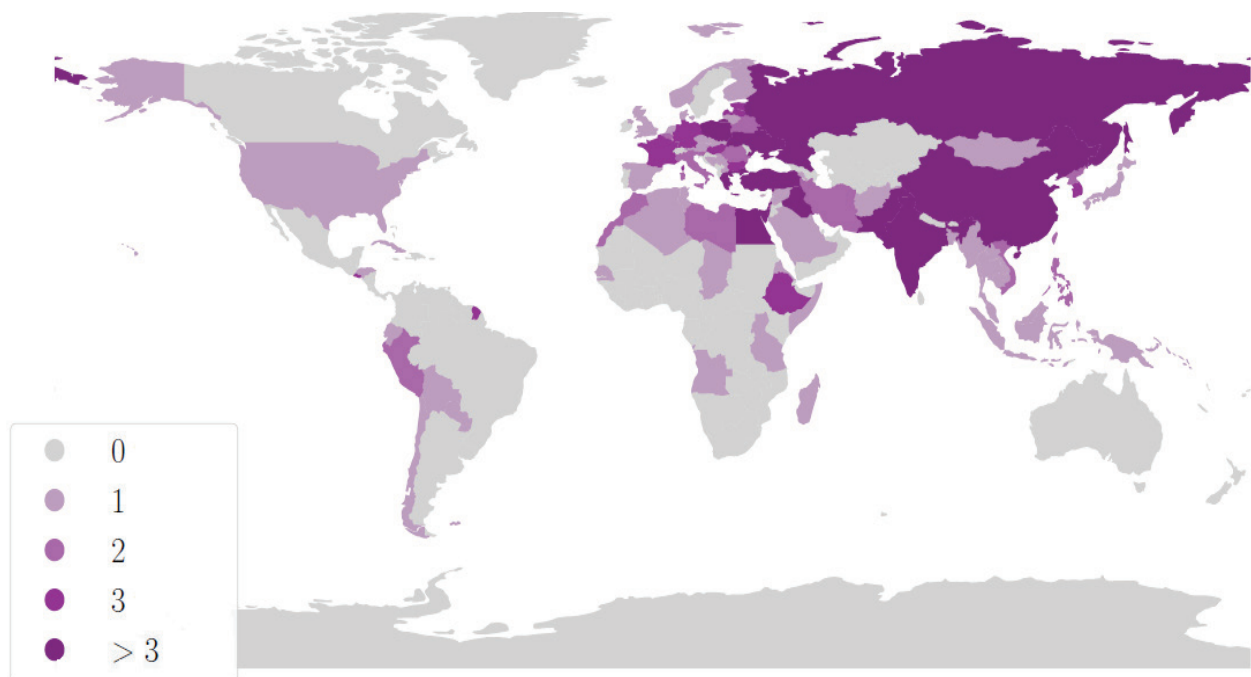


Figure 1. Frequency of military conflicts over the last 150 years

Over the past two years, major international organizations such as the IMF, WTO, and OECD have published numerous analytical reports outlining their perspectives on the emerging contours of the global macroeconomic system. A key theme across these reports is the ongoing fragmentation of the global economy and a projected decline in GDP across various nations, ranging from 0.2% to 12% compared to baseline scenarios that assume no additional trade restrictions.

In collaboration with colleagues from the National Supercomputer Center of China, we conducted a stress test to evaluate the resilience of global economies when subjected to a large-scale sanctions package comparable to the current sanctions imposed on Russia (Table 1). The most resilient economies proved to be those of the United States, China, and Russia. In contrast, more open economies demonstrated lower resilience. Notably, the German economy exhibited significant vulnerability, with trade restrictions resulting in a GDP decline of more than 8%.

One unexpected finding was the strong correlation between our results and the conclusions of the IMF’s report *The Leisure Gains from International Trade*. The IMF study demonstrated that a shift toward autarky in various countries leads to a decline in population welfare (Figure 2). Once again, the most resilient economies in this regard were those of the United States, China, and Russia, while European countries were identified as being less resilient according to IMF experts.

Methodological approaches to assessing the positioning of the world’s countries

GDP is a volatile, cyclical, and difficult-to-forecast indicator, prompting many analysts to search for viable alternatives. Additionally, it is more meaningful to assess the resilience of a country’s socio-economic system through a set of indicators rather than relying on one or two metrics. A composite group of indicators provides a more comprehensive assessment of a nation’s overall potential. For instance, U.S. News & World Report annually publishes a ranking of countries based on their national power, incorporating various dimensions such as economic strength, military capability, international influence, and the quality of infrastructure. This multidimensional approach allows for a more nuanced evaluation of a country’s standing and resilience in the global landscape.

*Table 1
GDP decline in key countries as a result of large-scale sanctions,
in percentage points from the inertia scenario*

USA	-2.25
China	-3.09
Russia	-3.54
Australia	-3.66
Indonesia	-3.66
Japan	-3.81
India	-3.98
Iran	-4.15
Brazil	-4.23
Pakistan	-4.66
Saudi Arabia	-5.18
Canada	-5.53
United Kingdom	-5.66
Italy	-6.01
Turkey	-6.58
France	-6.95
Mexico	-7.24
Republic of Korea	-7.92
Germany	-8.09

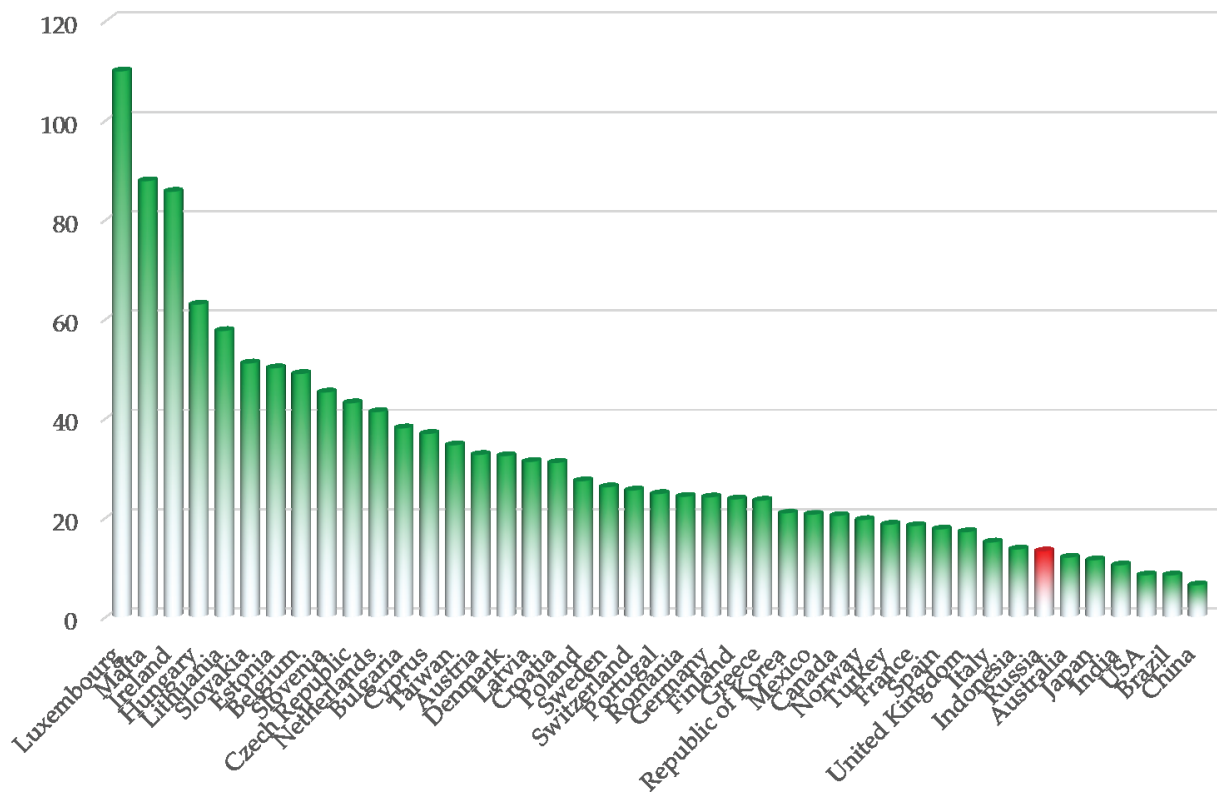


Figure 2. Welfare losses in a number of countries as a result of the transition to autarky, in percentages

There are also numerous alternative indices, such as the Global Power Index or the Asian National Power Index¹, among others. However, nearly all of these indices are politically biased, with a country's ranking largely influenced by its current relations with the state to which the publishing analytical center is affiliated. It is no coincidence that Russia is often unjustly placed in relatively low positions (for example, ranked 11th).

In response, the Central Economics and Mathematics Institute of the Russian Academy of Sciences (CEMI RAS), in collaboration with the D.I. Mendeleev Institute of Demographic Policy and the Federal State Statistics Service, has developed its own sovereign National Power Index. This index is updated annually and allows for a comprehensive comparison of countries based on their overall potential. According to this index, the leading nations are China, the United States, Russia, India, and Brazil – five countries that significantly shape the global geo-economic landscape (Table 2).

The aggregate potential of various international alliances is presented in Table 3. The results indicate that the dominance of the Western bloc over the rest of the world is not evident.

In the multidimensional space of variables that define this composite index, economic factors hold the greatest significance. It is important to note that the weighting of these factors was determined using multivariate statistical analysis methods, which helped eliminate the subjectivity inherent in expert-based weighting approaches. The resulting values (Figure 3) demonstrate that, in the context of hybrid confrontations between nations, economic systems are the primary targets of pressure designed to weaken a given country.

¹ <https://power.lowyinstitute.org>

Table 2
National Power Index of 10 World Leading Countries¹

1	China	13.05
2	USA	10.00
3	Russia	5.84
4	India	5.26
5	Brazil	3.03
6	Canada	2.36
7	Germany	2.04
8	Iran	1.92
9	Japan	1.88
10	Saudi Arabia	1.72
Total index value for 193 countries = 100		

Table 3
Integral indicators of national strength by blocs of countries (2024)²

US + EU	23.77
China + Russia	18.88
BRICS	27.64
BRICS+	33.12

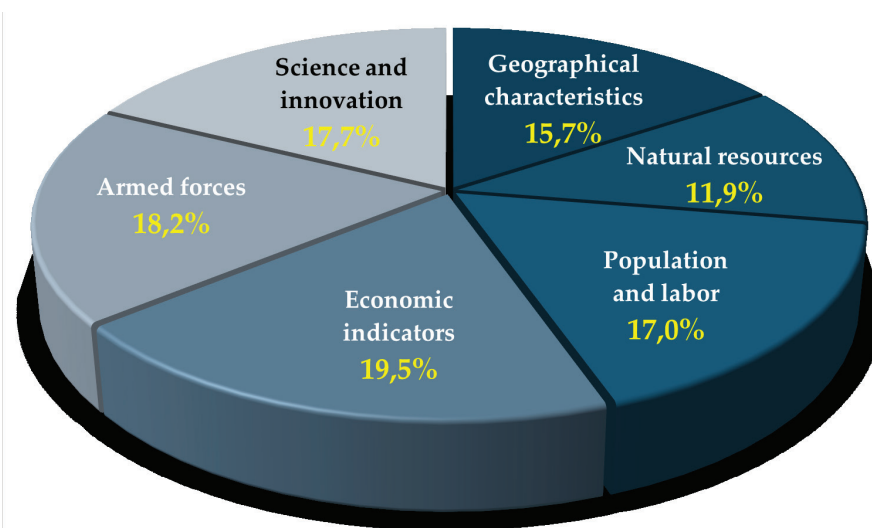


Figure 3. Calculated weights of factors used to calculate the integral index of national strength

¹ Calculations of the Mendeleev Institute for Demographic Policy. D.I. Mendeleev Institute of Demographic Policy, CEMI RAS and FSO of the Russian Federation.

² Calculations of the Mendeleev Institute for Demographic Policy. D.I. Mendeleev Institute of Demographic Policy, CEMI RAS and FSO of the Russian Federation.

Prospects for changes in the economic elements of the world order

In discussing the prioritization of economic systems as primary targets in hybrid conflicts, it is pertinent to reference the Federal Reserve Bank's study *Does Monetary Policy Have Long-Run Effects?*¹ This study, based on statistical analysis of long-term data series from multiple countries, concludes that poorly designed and imprecise monetary policies can have adverse effects lasting for several decades. The report particularly emphasizes that, when determining strategies for adjusting key interest rates, policymakers must approach the selection of new values with utmost caution.

In addition to monetary policy, sovereign payment systems play a crucial role. Currently, the dominant global payment system is SWIFT, established in 1973. However, alternative systems are emerging. For example, China launched its Cross-Border Interbank Payment System (CIPS) in 2015, which now serves 142 direct participants and nearly 1,400 indirect participants, processing approximately 40,000 transactions daily, valued at around \$120 billion². Although CIPS remains significantly smaller than the U.S.-based Clearing House Interbank Payments System (CHIPS), which processes 500,000 daily transactions worth approximately \$2 trillion, it is important to note that CHIPS was developed much earlier, in the 1970s. This provides a reasonable basis to suggest that over time, alternative systems such as CIPS may increasingly challenge SWIFT's dominance.

Let us now consider the issue of replacing the dominant global currency in light of the formation of new macroeconomic regions. Figure 4 illustrates that the share of the U.S. dollar in global reserves has declined from 71.1% at the beginning of the 21st century to 58.4%. According to a Bloomberg study, this process has recently accelerated³. According to estimates published in *The Sunday Guardian*, the share of the U.S. dollar as a reserve currency is expected to decline to 40–45% over the next 2–3 years^{4 5}.

There are clear prerequisites for this process. Notably, the study *Growth and Inflation Tradeoffs of Dollarization: Meta-Analysis Evidence*⁶ examines the relationship between GDP growth and the degree of dollarization in various economies. This study aggregates findings from several dozen academic articles that assess the corresponding effect. The overarching conclusion is that the more dollarized an economy becomes, the more its GDP growth is hindered.

Concluding the discussion on the restructuring of the global economic system, it is important to highlight the results of research conducted by the Central Economics and Mathematics Institute of the Russian Academy of Sciences (CEMI RAS). This research focused on calculating feedback indices for 65 industries across 70 key countries (Table 4). These indices identify sectors with the highest multiplicative effect on the overall economic system. However, these same sectors are also highly vulnerable, as targeted disruptions (such as restrictions on the supply of intermediate goods) could cause significant declines in economic growth rates.

For Russia, data is provided for five industries, with particular emphasis on sectors related to automotive and mechanical engineering. These sectors were subjected to a massive offensive by geopolitical opponents when the sanctions war was declared.

¹ <https://www.frbsf.org/economic-research/publications/economic-letter/2023/september/does-monetary-policy-have-long-run-effects/>

² <https://www.cips.com.cn/en/index/index.html>

³ <https://www.bnnbloomberg.ca/de-dollarization-is-happening-at-a-stunning-pace-jen-says-1.1909109>

⁴ <https://sundayguardianlive.com/news/de-dollarization-world-faces-threat-of-economic-catastrophe>

⁵ Data from the Bank for International Settlements portal <https://www.bis.org>

⁶ <https://www.sciencedirect.com/science/article/abs/pii/S026156062300116X>

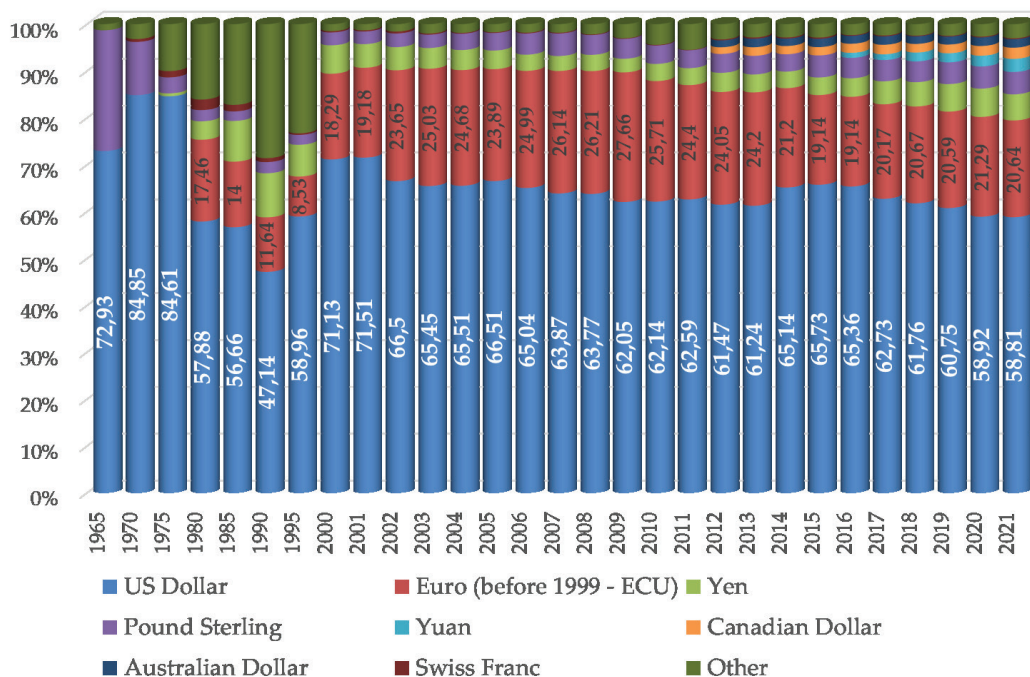


Figure 4. Share of individual currencies in world foreign exchange reserves¹

Table 4
Industries (among 65 industries) – multipliers with maximum backward linkage index by key countries of the world

USA	Manufacture of motor vehicles, trailers and semi-trailers
China	Manufacture of textiles, leather and footwear
France	Manufacture of vehicles and equipment
Germany	Metallurgical production
India	Repair and installation of machinery and equipment
Canada	Manufacture of motor vehicles, trailers and semi-trailers
Italy	Metallurgical production
Japan	Water transportation activities
Republic of Korea	Manufacture of motor vehicles, trailers and semi-trailers
Switzerland	Manufacture of electrical equipment
United Kingdom	Supply of electricity, gas and steam; air-conditioning
Brazil	Manufacture of chemicals and chemical products
Indonesia	Manufacture of rubber and plastic products
Russia (manufacturing, construction)	Manufacture of motor vehicles, trailers and semi-trailers
	Manufacture of electrical equipment
	Manufacture of rubber and plastic products
	Manufacture of machinery and equipment
	Manufacture of finished metal products
Saudi Arabia	Professional, scientific and technical activities

¹ Data from the Bank of International Settlements. URL: <https://www.bis.org/>

Tools for forecasting changes in the economic world order

In several recent IMF publications, there are concerns that their primary tools—equilibrium models and vector autoregression models—are gradually losing their ability to adequately reflect global economic processes due to increasing turbulence. Consequently, there is a growing demand for new assessment tools capable of accounting for hidden and non-obvious factors that cannot be detected by traditional methods.^{1 2}

If we examine the magnitude of forecast deviations from various organizations (including the IMF, OECD, and others), the average deviations during the relatively stable period from 2000 to 2017 amounted to 2–3 percentage points, which is quite significant (Figure 5).

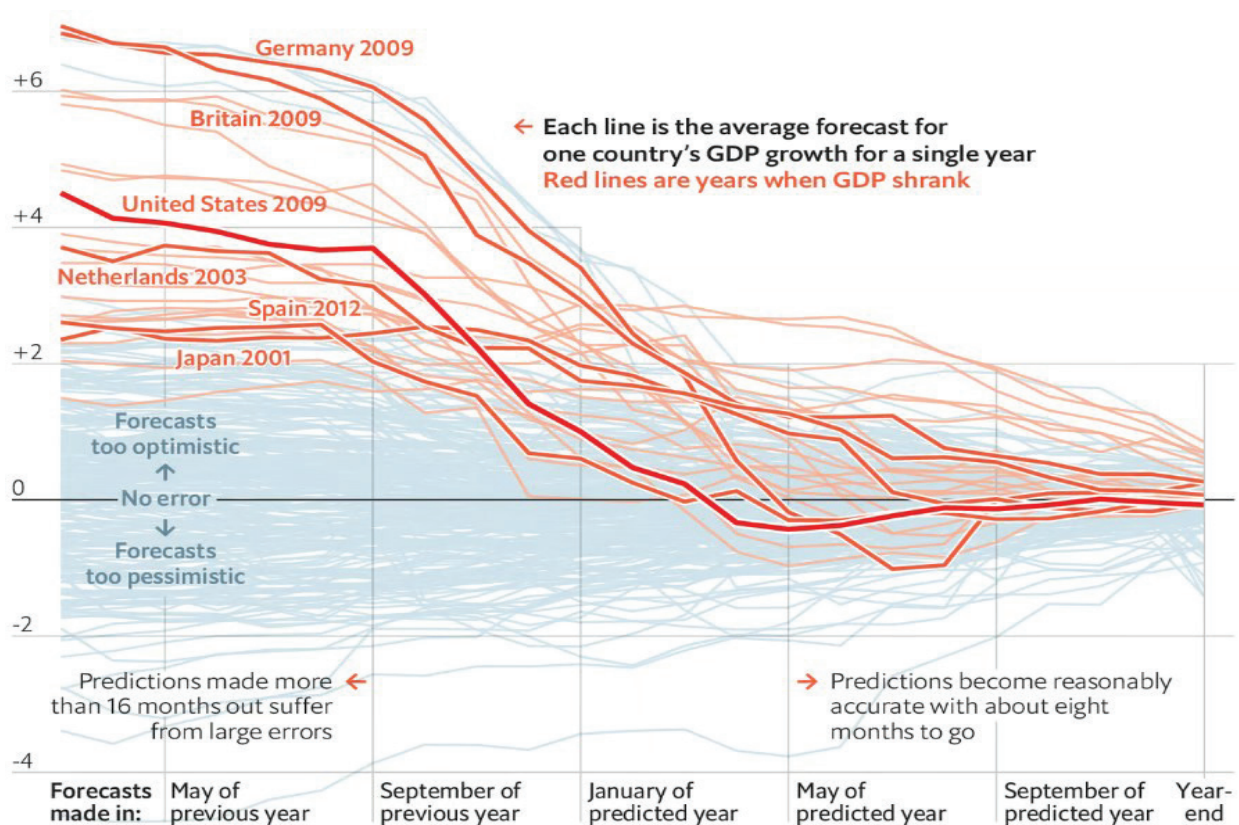


Figure 5. Average deviations of GDP forecasts from different analytical organizations for key economies of the world, compiled by The Economist for the period from 2000 to 2017.³

The same applies to forecasting even more inertial processes, such as demographic trends. For example, consider the United Nations Department of Economic and Social Affairs' global population projections. When forecasting the total fertility rate, a random walk model is used, with the following average margins of error: 6% over 10 years, 11% over 20 years, and 15% over 30 years⁴. There are numerous reasons for such discrepancies, including unevenly

¹ <https://www.imf.org/en/Publications/WP/Issues/2024/03/09/Predicting-IMF-Supported-Programs-A-Machine-Learning-Approach-545753>

² <https://www.atlanticcouncil.org/blogs/futuresource/imf-and-world-bank-in-need-of-more-modern-forecasting-methods>

³ <https://www.economist.com/graphic-detail/2018/12/15/gdp-predictions-are-reliable-only-in-the-short-term>

⁴ National Academies of Sciences, Engineering, and Medicine. 2000. Beyond Six Billion: Forecasting the World's Population. Washington, DC: The National Academies Press. <https://doi.org/10.17226/9828>.

increasing levels of urbanization, unpredictable migration flows, and other factors [Keilman, 2019].

It is also important to mention the new tools being applied to forecast socio-economic indicators. Notably, large language models (LLMs), primarily used for generating text, images, video clips, and similar content, are now being explored for their practical applications in economic forecasting. One example is the use of an LLM by the Federal Reserve Bank of St. Louis to predict the consumer price index (CPI). The results are remarkable—the root mean square error of the generative transformer was lower than that of standard forecasting methods [Faria e Castro M., Leibovici F., 2023].

Another example is the use of the GPT-4 model to forecast U.S. GDP. The input data for the transformer consisted of Federal Reserve meeting minutes, which provide detailed information on the current state of the economic system. As a result, the correlation between the actual and forecasted GDP values generated by the large language model was nearly identical to the consensus forecasts of experts surveyed by Bloomberg¹.

Language models have also been employed to forecast various events related to the economic sphere². Here are examples of questions answered by 12 transformers, with their responses compared to those of 925 highly reputable forecasters from the U.S. online forecasting platform Metaculus (correct answers indicated in parentheses):

- Will the U.S. federal funds rate be increased by December 14, 2023? (NO)
- Will Bitcoin reach \$40,000 by January 1, 2024? (YES)

Here are examples of politically related questions:

- Will Hamas lose control of the Gaza Strip before 2024? (NO)
- Will Volodymyr Zelensky visit Israel before 2024? (NO)
- Will Donald Trump spend at least one hour in a jail cell before January 1, 2024? (NO)

The results revealed that the ensemble of 12 language models outperformed human forecasters with high reputations in terms of the percentage of correct answers. In several cases, generative transformers exceeded financial analysts in forecasting changes in earnings. The implementation of chain-of-thought (CoT) reasoning, which effectively “trains” the model to mimic a financial analyst, enables it to follow a set of instructions – such as calculating financial indicators, identifying trends, and more [Kim, Muhn, Nikolaev, 2024].

The full potential of large language models has yet to be realized, and whether they can replace traditional methods of modeling and forecasting socio-economic systems remains to be seen.

Conclusion

Thus, based on the conducted research, it can be concluded that the current global economic and political landscape is undergoing a significant reconfiguration of the positions held by various countries, including Russia. This reconfiguration is largely driven by processes of inter-state confrontation, which can manifest in the form of military conflict or economic sanctions. In such circumstances, it is crucial to have forecasting tools capable of scientifically substantiating potential future transformations — not only to prepare for these changes but also, where possible, to shape and guide them in a controlled manner.

¹ <https://www.liontrust.co.uk/-/media/liontrust/files/insights/blogs/2023/12/2312-james-dowey-using-large-language-models-to-forecast-us-growth.pdf>

² <https://arxiv.org/pdf/2402.19379> (17 Jun 2024)

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