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## HOMO ECONOMICUS IN THE INTERNET AGE: RUSSIA AND US COMPARATIVE ANALYSIS

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**Abstract.** The article examines the dynamics of Internet search queries in the American and Russian segments of Google. The data are used to analyze common and different patterns of behavior of the population of the two countries. The role of globalization and unification of the system of economic institutions in the process of their convergence is shown. The author discusses the stability of the perception of certain economic concepts that accompany the search activity of the population on the Internet. The article notes the multiplicity of factors that at a particular point in time can determine the economic behavior of people. According to the author, all this diversity can be attempted to be reduced to three main groups of factors. First, behavior will largely depend on the meaning people put into their actions, how they evaluate and define them. Each deed or action is reflected in language, forming a unit of meaning that allows people to construct social communications, including resorting to Internet searches. Secondly, economic actions depend on the motivations underlying them, which, in turn, are the result of the correlation of goals and opportunities to do this or that. Third, economic behavior depends to a large extent on the development of the institutional system, which determines the different types and breadth of possible economic behavior of people. The author analyzes the dynamics of search requests according to these groups of factors. The author believes, the study of the economic behavior of the population of different countries, can serve as a starting point for assessing its adaptive capacity in the face of economic shocks.

**Keywords:** Russia, USA, economic behavior, internet, internet searches, big data, money, job, finance.

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## ЭКОНОМИЧЕСКИЙ ЧЕЛОВЕК В ЭПОХУ ИНТЕРНЕТА: СРАВНЕНИЕ РОССИИ И США

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**Аннотация.** Рассматривается динамика поисковых запросов в интернет в американском и российском сегменте Google. На основе полученных данных анализируются общие и различные модели поведения населения двух стран. Показана роль глобализации и унификации системы экономических институтов в процессе их сближения. Отмечена устойчивость восприятия отдельных экономических понятий, сопровождающих поисковую активность населения в интернете. Сделан вывод о том, что изучение экономического поведения населения различных стран может служить отправной точкой для оценки его адаптационных способностей в условиях нарастания экономических шоков.

**Ключевые слова:** Россия, США, экономическое поведение, интернет, поисковые запросы, “большие данные”, деньги, работа, финансы.

## INTRODUCTION

The impact of a number of factors on people's economic behaviour has been a focus of research for centuries. As noted by Fukuyama, the attempts to find an answer in dealing with this issue tend to two extreme poles: ethnographic and economic ones [1]. The economic approach, as a rule, ignores objective particularities and peculiarities of people's behaviour determined by national or cultural specifics; therefore, it is criticised for disassociation from reality. The ethnographic approach, on the contrary, delves deeply into such considerations, making extensive use of various gaming techniques, tasks, and questions aimed to assess respective situations. The researchers often succeed in identifying the distinctive features of perception by ethnic groups, at times quite narrow and small, of common human concepts such as fairness, sympathy, impartiality [2], and trust [3]. A number of linguistic studies have concluded that some ethnic groups, for instance, French and German speakers in Switzerland, have different attitudes towards money and financial operations [4]. However, these studies show a lack of generalising conclusions, which would explain the interrelation between the particular and the specific in people's economic behaviour in the long term.

The identification of long-term models (patterns) of people's economic behaviour requires in-depth knowledge of its similarities and differences depending on the prevailing conditions, social norms, historical and cultural traditions. Knowledge itself, according to French sociologist Tarde, makes it possible to see the future and is based primarily on numbers and measurements [5]. The problem of the measurability of social factors characterising economic behaviour has not found an adequate solution within more than 130 years since the time of his statement. This enables the representatives of the neoclassical school of rational choice to look down on any attempts to justify the specific economic behaviour of particular social groups by extra-economic factors. Fama, Nobel Prize winner, and the author of the hypothesis of efficient financial markets, is uncompromising: "Tastes and behaviour are important for economic science... But you have to translate it into something verifiable, so that we can take the data and test it, looking forward rather than looking back" [6].

Modern "big data" evaluation technologies provide due tools for translating people's tastes and behaviour into quantitative indicators. The subject of the present article is measuring differences and similarities in the economic behaviour of Russians

and Americans, those revealed through popularity statistics of Internet search queries in the USA and Russia within the period from January 2006 to September 2022, as provided by *Google Trends* service [source 1]. The period considered by the author is 200 months. This period covers one of the most devastating financial crises in world history in 2008–2009, the *COVID-19* pandemic that has had a significant impact on human behaviour worldwide and major geopolitical shifts in the established world order system. This is not the first time the author resorts to the analysis of economic and social processes on the basis of scrutiny of *Google* search queries. The present article continues this line of research and develops the results obtained earlier.

## NOT SO MUCH DIFFERENT FROM EACH OTHER?

*Google* users send more than 9 billion queries to the depths of the Internet within a single day [source 2]. This is a significant amount of continually updated information that can be used for broad research of people's behaviour, interests, motivations, and problems of their concern. Generally, one might observe researchers' consensus in that *Google Trends* data help in the ongoing evaluation of various social and economic processes. However, the use of *Google Trends* data requires special attention to the semantics of queries and accuracy of wording, search for proper words and phrases comparable in terms of popularity. In addition to the correct methodology of working with *Google Trends* data, it is also important to provide a clear problem definition and explicit formulation of the initial hypothesis of the research.

In order to carry out a comparative analysis of search requests in the Russian and American *Google* segments, the author selected 20 correlative queries. Most of them have the same meaning in both the Russian and English languages ("take out a loan" – "get a loan", "buy a car" – "buy a car", "look for a job" – "find a job", "transfer money" – "money transfer", "wages" – "wage", "salary" – "salary", "cash" – "cash", "buy shares" – "buy stocks", "deposit" – "bank deposit", "have a snack" – "where to eat", "bitcoin" – "bitcoin"). Some other queries can be considered as synonymous with regard to the country and language specifics ("buy an apartment" – "buy home", "rent an apartment" – "rent a home", "income" – "get paid", "repairs" – "home repair", "earn" – "make money", "by rail" – "train to", "by air" – "plane to", "job" – "get a job", "vacancies" – "jobs hiring").

The pairwise comparison of search queries in the American and Russian *Google* segments reveals a fairly high level of correlation (Table 1). The correlation of 14 out of 20 paired queries is above 0.5 despite the seemingly obvious difference between the two societies in social, behavioural, and economic aspects. How can this be explained?

There are a myriad of factors, which, at some point in time, can determine people's economic behaviour. Nevertheless, in the most general way, this diversity can be reduced, as one can suppose, to three main "centres of power".

Firstly, behaviour will largely depend on the meaning that people put into their actions and the way they evaluate and define them. Every act or action is reflected in the language, forming a semantic linguistic unit that allows people to construct social communications, including the use of Internet search: look for a job, buy a property, want to earn, invest savings. Although such expressions remain synonymous in different languages, synonyms still may have different connotations depending on the cultural and national context, since the shades of meaning tend to associate actions with broader concepts such as fairness, equality, weal, good or evil, honesty, or deceit. It appears that cultural, national, and historical features of the society form a value

framework that can and will influence, as much as possible, the semantic content of particular actions and the way they are perceived and evaluated by people.

Secondly, economic deeds depend on underlying motivation, which in turn is a result of matching the goals with opportunities in respect of a certain action. Motivation turns abstract meanings and value orientations into concrete actions and decisions. Modern behavioural economics, like the bulk of mainstream economics, assumes to a great extent that people in similar situations are driven by essentially the same motivations based on rational choice. Irrational behaviour is not a consequence of some cultural or national particularities, but a universal deviation from universal rationalism by virtue of universal cognitive fallacies [7, 8]. However, the complete exclusion of the cultural and national factor at the level of motivation would be a mistake. It is undoubtedly present but is noticeable to a much lesser extent than at the semantic level.

Thirdly, economic behaviour depends to a large extent on the development of the institutional environment, which determines different types and breadth of people's possible economic behaviour. With the general trend towards the unification of economic institutions, this behaviour is also becoming increasingly universal. If banks exist, people use their services; if there is a financial market, then people buy financial instruments traded on it; so far as insurance companies exist, they insure risks. Behaviour is determined by the extent of similarity between the global and national systems of economic institutions. It can be assumed that cultural differences at this level will be masked as much as possible by institutional universalism.

As one can assume, the synchronicity characterising the dynamics of search query popularity in the Russian and American *Google* segments is primarily a consequence of the institutional unification of the economic systems of the two countries as a result of globalisation. The high level of correlation of paired queries can indirectly indicate that during the period under consideration, both the USA and Russia were characterised by a prevailing trend of increased demand for values that make up material wealth, such as housing, cars, or financial assets. At the same time, the ongoing changes in the perception of comfort and convenience of everyday life were taking place, which stimulated demand for various services, including public catering, cultural events, and entertainment, new forms of recreation, etc. Globalisation,

**Table 1.** Correlation of paired queries in the USA and Russia in *Google*, 2006–2022

Queries in Russia	Correlation	Queries in the USA
Bitcoin	0.97	<i>Bitcoin</i>
Where to eat	0.87	<i>Where to eat</i>
Get a loan	0.86	<i>Get a loan</i>
Flights to	0.83	<i>Flights to</i>
Buy a car	0.82	<i>Buy car</i>
Find a job	0.79	<i>Find a job</i>
Train to	0.77	<i>Train to</i>
Buy home	0.68	<i>Buy home</i>
Rent home	0.67	<i>Rent home</i>
Money transfer	0.67	<i>Money transfer</i>
Jobs hiring	0.67	<i>Jobs hiring</i>
Wage	0.62	<i>Wage</i>
Cash	0.58	<i>Cash</i>
Buy stocks	0.57	<i>Buy stocks</i>
Salary	0.49	<i>Salary</i>
Bank deposit	0.41	<i>Bank deposit</i>
Get paid	0.22	<i>Get paid</i>
Home repair	0.00	<i>Home repair</i>
Make money	−0.22	<i>Make money</i>
Get job	−0.30	<i>Get job</i>

Source: [source 1].

underlying the exponential effect of economic and extra-economic shocks (crisis and pandemic), as well as the universalisation of instruments regulating economic processes (monetary anti-crisis policy) and unification of economic institutions, promoted the similarity of mass behavioural patterns in different countries.

### MONEY: TO EARN OR TO MAKE?

Money, despite its universal and widespread nature, becomes an economic object around which complex human relations are formed, considering that people are quite strongly influenced by cultural, linguistic, and national peculiarities. To make sure of this, let us look at a couple of very similar Internet queries by Russians and Americans: “earn” and “make money”. The actual wording of the queries reflects the national and country specifics of the economic language.

According to one of the characters in Rand’s book *Atlas Shrugged*, it was the Americans who presented the expression “make money” to the world [9]. Whether this is true or not, it is indeed a well-known Americanism. The popularity of this query in the American sector of *Google* within the 16-year interval of 2006–2022 was 64 points out of 100, being significantly ahead of the synonymous queries

“get money” (popularity 38 points), “get paid” (31). The query “earn” in the Russian segment of *Google* gets 53 points, while the queries “income” and “make money” score 20 and 3, respectively. The country specifics are even more pronounced when comparing the popularity of these queries with other Internet search requests (Table 2).

The first thing that strikes the eye is the negative correlation of the query “earn” with most of the correlative queries in the Russian segment of *Google* against the stable positive correlation of the query “make money” with the absolute majority of queries in the American segment of the search engine. In Russia, a significant positive correlation between “earn” and the paired queries “job” and “look for a job” is observed. The weak positive correlation with the query “repairs” probably underlines the Russian specifics expressed in the fact that repair is often a form of earning for quite a great number of Russian self-employed citizens.

Judging by the query popularity statistics, earnings for Russians are in no way associated with financial transactions with securities or cryptocurrency, deposits in banks, and even less so with the need to take out a loan. A rather strong negative correlation with the query “cash” is specific, which may suggest a hypothesis that the accent on earning cash is weakening with the development of non-cash mobile

**Table 2.** Correlation of paired queries: “earn” and “make money”, 2006–2022, popularity of queries in score (*max* =100)

“Earn”		“Make money”	
Correlation coefficient	Correlative queries	Correlation coefficient	Correlation coefficient
		<i>Get a loan</i>	0.94
Job	0.66	<i>Get paid</i>	0.94
Look for a job	0.64	<i>Get job</i>	0.92
Repairs	0.17	<i>Jobs hiring</i>	0.91
Salary	0.13	<i>Salary</i>	0.88
Vacancies	–0.12	<i>Where to eat</i>	0.86
By rail	–0.19	<i>Buy car</i>	0.86
Transfer money	–0.22	<i>Bank deposit</i>	0.86
Buy a car	–0.27	<i>Money transfer</i>	0.83
Income	–0.34	<i>Cash</i>	0.82
Take out a loan	–0.36	<i>Flights to</i>	0.78
Wages	–0.37	<i>Rent home</i>	0.74
Deposit	–0.39	<i>Wage</i>	0.71
Have a snack	–0.4	<i>Buy home</i>	0.68
Buy shares	–0.4	<i>Train to</i>	0.63
By air	–0.43	<i>Bitcoin</i>	0.54
Rent an apartment	–0.44	<i>Home repair</i>	0.52
Buy an apartment	–0.52	<i>Buy stocks</i>	0.48
Cash	–0.55	<i>Find a job</i>	–0.63
Bitcoin	–0.64		

Source: [source 1].



payments and transfer operations. At the same time, the query “earn” has a weak negative correlation with the query “transfer money”.

Equally significant is the different extent of correlation between the query “earn” and the queries “wages” and “salary”. In the first case, it is weakly negative, and in the second case, it is weakly positive. Moreover, given the correlation values, one can state that the query “earnings” is rather neutral relative to the query “salary”, but is rather opposite to the query “wages”.

Does this mean that finding a job for Russians is of primary importance, while wages or salary is secondary? Possibly, this situation can be explained by the fact that the user looking for a job on the Internet realises well the search sector specifics on the basis of his/her skills, education, experience, and qualification, which preconditions the wage level; the comparison thereof apparently starts after some options have already been found. One can also assume that the queries “wages” and “salary” come from those who have already found a job and seek to improve their financial situation, while the queries “earn” and especially “look for a job” and “job” come from those who are at the initial stage of searching for a source of income.

A striking feature of the interrelation of Americans’ paired Internet queries is the correlation of the query “*make money*” with the queries related to finding and getting a job. For instance, a strong positive correlation is revealed with the queries “*get job*” and “*jobs hiring*” (vacancies), and a pronounced negative correlation – with the query “*find a job*”. The latter contrasts particularly strongly with what is observed in the Russian segment of *Google*. Why is the query “*make money*” linked so differently to seemingly synonymous queries?

The answer is to be found in the cultural peculiarities and traditions of American speech and way of thinking, which are neutral in terms of economic theory. The hero of the mentioned Rand’s novel expresses the following thought in his monologue about money: “Money is not a beggar’s argument” [9]. The Russian-language query “look for a job”, like in the English-language “*find a job*” shows, to a greater or lesser extent, some undertones of dependence on circumstances, echoes of request, uncertainty, a clear hint that the one who formulates the query is jobless. One needs to find a job. The requests “*get job*” and “*jobs hiring*” are not so much about searching for a job, but about getting what is already available. These queries are active, assertive,

and even somewhat aggressive. They already contain a result in themselves. Job is there, one just has to get it. In these terms, they are in the spirit of the expression “*make money*”, which does not even contain a hint of asking questions “how”, “in what way”, and even less a shadow of a doubt that the result will be obviously positive.

Unlike Russians, Americans do not contrast the need and the desire to make money with other ways of increasing their wealth. The idiom “*make money*” in its meaning is much broader than search for money. It represents a request for a certain new way of life, style of behaviour, and new life skills, although implying concrete sources of income. As evidenced by *Google* statistics, requests for monetisation of active participation in social media are similar (“*make money on youtube*”, “*make money blogging*”, “*make money on instagram*”), as well as the use of various online multilevel marketing applications (“*apps to make money*”, “*swugbucks*”) and new digital assets (“*how to make money off nft*”).

In fact, all correlative queries are “friendly” to the “*make money*” query. This may be explained by the fact that buying real estate or a car, travelling, financial operations, and eating in restaurants or cafés represent in some way a visible result of being able to make money. Of particular interest is the fact that the highest correlation value is observed with the request for credit (“*get a loan*”). It seems that in the minds of Americans, wealth and living on credit are closely linked. This literally reflects the words of Rabelais’ famous hero that debt is the only pillar of the human race.

## WORK DRIVES EVERYTHING

Irrespective of how much one would like to learn to make money with minimal effort and quickly, it is the work that forms the immutable basis of all human economic activity and social progress. The more people are engaged in work, the more wealth, or aggregate real income, is created. Keynes, one of the icons of modern economic theory, explained the growth of aggregate income being correlated with increased aggregate consumption by social psychology [10]. Assuming the existence of a psychological propensity to consumption, saving, or investing, one should also assume that this psychology can be formed in many different ways depending on the cultural, historical, or national characteristics of a particular society. Are there any differences between Russians and Americans in terms of job search and attitude towards work?

The analysis of the queries “look for a job” in the Russian *Google* segment and “*find a job*” in the USA segment shows a predominance of their negative correlation with most of the other paired search queries. This could be an empirical confirmation of Keynes’ conclusions, assuming that people in different countries neglect material benefits until the main problem – employment – is resolved. That is, in order to secure demand, it is necessary to secure earnings, for instance, wages, and hence – employment.

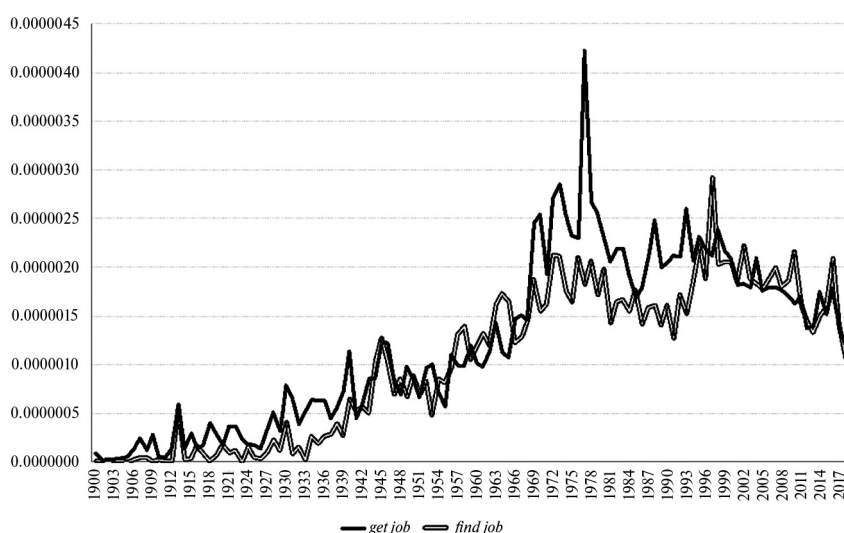
Another important caveat should be made: the semantic difference between “*find a job*”, “*get a job*”, and “*jobs hiring*” is typical for mass Internet queries, i.e. for a broad range of individual web users. The same cannot be stated about the dynamics of use of similar terms in literary sources. The correlation between the “*find a job*” and “*get job*” *Google* queries was negative (–0.48) within the period from 2006 to September 2022, while the correlation between the expressions “*find job*” (the article “a” is omitted for the purpose of demonstration of the visual comparability of results) and “*get job*” in the English-language literature in 1900–2019, according to *Google Ngram Viewer*, proved to be strongly positive (0.9) (Figure 1).

This shows that often, ordinary people’s usage of economic terms and concepts differs significantly from their strict scientific interpretation. Science may neglect distinctions when operating with synonymic concepts, while ordinary citizens interested in the solution of their domestic and material problems, even if not aware of scholarly differences, subtly feel

the slightest shades of meaning of each spoken word and action behind it. The latter is revealed in the analysis of dynamics of wage-related queries: “*wage*”, “*salary*” and respectively “*wages*”, “*remuneration*” (Table 3).

Queries about wages should, from the economic point of view, be based on job search queries, which condition their close correlation in theory. However, in both Russian and American *Google* segments, these queries have a strong negative correlation with the “look for a job” and “job” requests and, respectively, with the query “*find a job*”. However, the query “vacancies” correlates strongly with “wages” and “salary”; while the “*get job*” and “*jobs hiring*” requests correlate strongly with “*wage*” and “*salary*”. These differences are difficult to explain from a rational economic point of view. It is more likely that the meaning put by online users into search queries, along with the semantics of these queries, is decisive here.

An American, by formulating the queries “*get job*”, “*wage*” or “*salary*”, as well as a number of other consumption-related queries, psychologically shortens the semantic distance between the fact of getting a job and the reward for it. In the Russian segment of *Google*, queries about wages have quite a short semantic distance from consumer queries and are significantly distant in meaning from the queries “look for a job” and “job”. Apparently, indeed, wage requests in the presented wording are perceived in the minds of web users either as a result already achieved or as a request for an increase in material



**Figure 1.** Correlation of the mention of phrases “*find job*” and “*get job*” in the English-language literature, 1900–2019, %

Source: [source 3].

**Table 3.** Correlation of the paired queries: “wages”, “pay” and “wage”, “salary”, 2006–2022

Correlative queries	“Wages”	“Pay”	Correlative queries	“Wage”	“Salary”
Rent an apartment	0.86	0.48	<i>Job hiring</i>	0.75	0.88
Buy an apartment	0.84	0.48	<i>Where to eat</i>	0.75	0.94
Have a snack	0.78	0.47	<i>Flights to</i>	0.74	0.90
By air	0.73	0.43	<i>Get paid</i>	0.72	0.90
Buy a car	0.70	0.55	<i>Get a loan</i>	0.72	0.90
Vacancies	0.68	0.41	<i>Make money</i>	0.71	0.88
Bitcoin	0.67	0.35	<i>Money transfer</i>	0.71	0.85
Take out a loan	0.63	0.43	<i>Cash</i>	0.69	0.84
Buy shares	0.59	0.36	<i>Rent home</i>	0.67	0.76
Cash	0.56	0.33	<i>Get job</i>	0.65	0.81
By rail	0.54	0.39	<i>Buy car</i>	0.65	0.80
Transfer money	0.49	0.33	<i>Bank deposit</i>	0.64	0.81
Deposit	0.37	0.22	<i>Train to</i>	0.61	0.70
Income	0.2	0.16	<i>Home repair</i>	0.54	0.61
Repairs	−0.19	−0.28	<i>Bitcoin</i>	0.49	0.52
Earn	−0.37	0.13	<i>Buy home</i>	0.39	0.49
Job	−0.51	−0.10	<i>Buy stocks</i>	0.3	0.28
Look for a job	−0.64	−0.37	<i>Find a job</i>	−0.60	−0.71

Source: [source 1].

remuneration relative to the one a person already receives.

This fact underlines certain optimism on the part of the consumers. Their demand for tangible and intangible assets (values) is formed already on the basis of the expectation of obtaining necessary resources before they are acquired. That is, by sending a “salary” request, a person is already preparing subconsciously to use it towards increasing his/her level of well-being and begins to show interest in buying real estate, a car, in particular financial transactions. He/she is ready now to take on a loan: the correlation of the query pair “wages” – “take out a loan” is 0.63. In the American segment of *Google*, the correlation of the same pair “wages” – “get a loan” is 0.72, and the correlation of “salary” – “get a loan” reaches 0.90. At the same time, the correlation of queries “buy a car” – “take out a loan” is 0.84; “buy an apartment” – “take out a loan” – 0.78. In the American segment of *Google*, the correlation of the search queries “buy a car” – “get a loan” and “buy home” – “get a loan” is 0.90 and 0.71, respectively.

The advance demand arises not only in connection with anticipation of income but also due to planned activities. For instance, the semantics of the queries “by rail” and “by air” in the Russian segment of *Google* refer to possible travel and journeys. This quite naturally arouses interest in the available opportunity to have a snack on the trip or when arriving at a new place. This factor can explain the stable correlation

of queries “by rail” – “have a snack” (0.77) and “by air” – “have a snack” (0.85).

A similar situation is observed in the American segment of *Google* where the correlation between similar American queries is quite strong: “train to” – “where to eat” (0.78), “flights to” – “where to eat” (0.88). Moreover, with monthly measurements of the popularity of food queries in both Russia and the USA, they peak in July and August, the months of holidays and travel, and in the case of daily measurements, they fall on weekends. It is also noteworthy that the search for food outlets, cafés, or restaurants by both Russians and Americans is most strongly associated with requests for air flights. Possibly, this can be explained by the seasonality of holidays, the length of routes, and travel time, as well as greater propensity for mobility on the part of those who use air services. It means that eating out and flying by air seem to characterise a certain universal style of modern people’s behaviour. This just shows that the unification of lifestyles leads to the gradual unification of people’s behaviour. This is even more evident in the sphere of financial transactions.

#### UNIVERSALITY OF FINANCIAL CULTURE

Russia’s financial system has changed fundamentally over the past 30 years. A dynamic, albeit somewhat controversial, transition from the

centralised state system of financial institutions to the modern market system has been observed; this new system is practically in no way fundamentally different from those that evolved over centuries in the developed world. The most significant disadvantages of the new system comprised, on the one hand, the Russian issuers' persistent avoidance of the mass equity market as an investment attraction source (with the shift of interests predominantly to the debt securities segment) and, on the other hand, their extremely low interest in the financial market on the part of mass retail investors.

The reasons underlying the above shortcomings are rooted in the specific management models practised by Russian public companies, which discourage active corporate networking with potential retail investors; in a relatively low level of long-term savings and, most importantly, in macroeconomic instability. This was expressed, until recently, in the sustained depreciation of the national currency, which motivated the population to invest in foreign exchange assets. The low level of financial literacy and culture should also be mentioned, as well as the persisting extra-economic risks associated with

the infringement of investors' rights and legitimate interests in the financial market.

The Russian financial market, despite its well-developed infrastructure and the presence of all institutions necessary for sustainable operation, used to remain predominantly institutional, with evident dependence on foreign portfolio investors. At the same time, the development of the banking sector was accompanied by the active involvement of the population in financial transactions: opening accounts, use of non-cash settlements and money transfer, lending.

As a result, the influence of finance on the patterns of economic behaviour of the population increased significantly, which can be traced in the national payment system development statistics [source 4]. In this context, as of July 1, 2022, the banking system institutions registered on average seven accounts opened by a single Russian depositor, and in 2008 – only three.

The use of online services and mobile applications is expanding rapidly. Between 2008 and July 2022, the number of individuals' personal accounts accessed

**Table 4.** The strongest pairwise positive correlation of finance-related search queries, 2006–2022

Correlative queries	Financial queries (Russia)	Correlative queries	Financial queries (USA)
	Buy shares		Buy stocks
Buy an apartment*	0.72	Bank deposit	0.64
Rent an apartment	0.60	Buy home*	0.60
Wages	0.59	Money transfer	0.60
Bitcoin*	0.58	Bitcoin*	0.53
Buy a car	0.57	Get paid	0.53
	Take out a loan		Get a loan
Transfer money*	0.85	Get paid	0.97
Buy a car*	0.84	Jobs hiring	0.95
Rent an apartment	0.80	Money transfer*	0.91
Buy an apartment	0.78	Bank deposit	0.91
By air	0.75	Salary/Buy car*/Where to eat	0.90
	Transfer money		Money transfer
Take out a loan*	0.85	Bank deposit	0.93
Vacancies*	0.78	Get paid	0.92
Buy a car	0.76	Jobs hiring*	0.92
Rent an apartment	0.70	Cash	0.91
By rail/By air	0.69	Get loan*	0.91
	Deposit		Bank deposit
Cash*	0.45	Get paid*	0.93
Buy shares	0.44	Money transfer	0.93
Income*	0.39	Get loan	0.91
Buy an apartment	0.39	Jobs hiring	0.88
Wages	0.37	Make money/Cash*	0.86

Source: [source 1].



through the Internet grew from 2.8 million to over 280 million, and the number of accounts accessed through mobile applications (via phones and gadgets) grew from 1.3 million to 220 million.

Over the same period, the number of issued bank cards increased from 103,000 to 374,000; of them, the number of debit cards grew from 94,000 to over 330,000, and the number of credit cards – from, approximately 9,000 to nearly 43,000. The total volume of card transactions increased from 8.8 trillion to 35 trillion rubles. Whereas in 2008 over 92% of the card transactions were represented by cash withdrawals, and less than 8% – by payments for goods and services, the situation changed dramatically by July 1, 2022: 59% of the card transactions were purchasing operations and 41% were cash withdrawals. The actual number of cash withdrawal transactions decreased by almost 50% during that period, while the number of transactions involving payment for goods and services increased by more than 50 times [source 4].

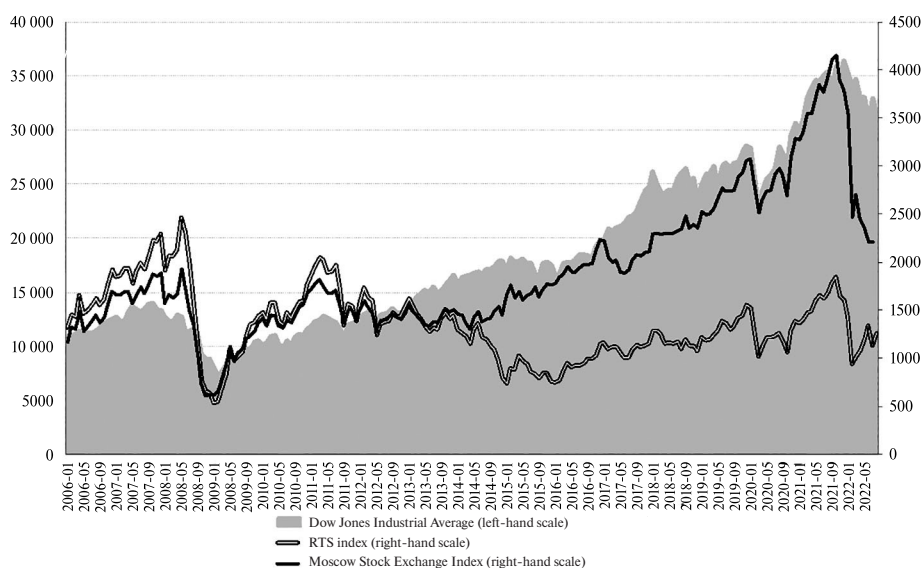
The dynamic transformation of Russians' financial behaviour is in line with the global trends towards digitalisation and democratisation of financial services. Moreover, in Russia, like in a number of developing countries (e.g. African) or newly developed ones (e.g. China, India, Brazil), these processes take place much more visibly and faster than in developed countries with long-established financial systems. This is undoubtedly

reflected in the economic language and stimulated through the relevant activity on the Internet.

Table 4 presents the highest correlation values for paired Internet queries in the USA and Russia on financial issues. As can be viewed, when considering finance-related queries, there are at least two queries among the selected five pairs with the highest correlation for each financial request, which are the same for both the Russian and American *Google* segments (marked with \* in the table). If one takes all correlative queries, such overlaps will be more numerous.

As far as transactions with securities are concerned, similar trends have been traced recently in this segment as well. Above all, the pandemic, which was accompanied by the massive injection of liquidity into the world's major economies, was a principal contributory factor. The quantitative easing policy, on the one hand, and the epidemiological restrictions imposed by the governments to combat the spread of *COVID-19*, on the other hand, resulted simultaneously in declined consumption, savings growth, and devaluation of traditional forms of conservative investments previously enjoyed by most of the population.

In 2020–2021, mass investors poured into the financial markets worldwide: owing to the prevailing circumstances, they turned to treating the attractiveness of income gained from investment in securities above the associated risks. This trend involved Russia as well, where the number of retail



**Figure 2.** Dow Jones Industrial Average, RTS index, and Moscow Stock Exchange Index dynamics, 2006–2022

Source: [sources 5, 6].

investors grew by more than 5 million, reaching, according to various estimates, 15–20 million. This behaviour change was also promoted by the stock market dynamics (Figure 2).

Taking the period under consideration, the correlation between Moscow Stock Exchange Index values calculated on the basis of rouble quotes and the Dow Jones Industrial Average was 0.9. However, the correlation of the latter with the RTS (Russian Trading System) Index calculated on the basis of USD quotes was slightly negative (–0.14). Apparently, the rouble exchange rate served as a kind of corrective coefficient balancing the dynamics of indices, which contributed to the transfer of ordinary people's demand from the foreign exchange segment of the market to the securities segment. As a result, the correlation between “buy shares” and “*buy stocks*” queries was 0.57 within the period under review.

It is important to note that the mass entry of retail investors into the securities market in the USA was accompanied by the significant expansion of the subcultural and gaming element, the creation of numerous online communities where retail investors shared their achievements and captured relevant information and signals for own decision-making (this can be seen through the example of a *wallstreetbets* community). In Russia, retail investors did not show such demonstrative activity; their behaviour was much more pragmatic. Although the experience of trader communities and some elements of trading subculture existed in Russia before, they were more prominent at the time of the rapid emergence of the derivatives market in 2007–2010.

## RESULTS AND CONCLUSIONS

The first half of 2022 was marked by powerful transformation processes in the global economy and politics. In the developed economies, it was marked by unprecedented inflation over the past 40 years, the energy crisis, and high demand for skilled labour against the anticipation of an imminent

recession. Russia, in turn, faced unprecedented external sanctions, the rupture of logistic chains, and disruption in the supply of a habitual range of goods – caused by the withdrawal of a number of brands from the domestic market. All of this could not but affect the behaviour of people in both Russia and the USA.

The period between January and September 2022 showed marked changes in consumer queries. In particular, the stable positive correlation observed within the previous 200 months gave way to a weakly positive one in such correlative queries as “buy an apartment” – “*buy home*” (0.48 instead of 0.68), “buy a car” – “*buy car*” (0.16 instead of 0.82). The strong positive correlation of paired queries “rent an apartment” – “*rent home*” (0.67) turned into a negative correlation (–0.37). The main reason for this divergence was the decline in popularity of such queries in the USA, especially in May–June against the dynamic growth of their popularity in the Russian segment of *Google*.

As one might think, this can be explained by the different adaptability of Russians and Americans to the challenging economic trends. Apparently, it is no coincidence that the most demonstrative variation in Internet queries concerned the search for rental housing. The search for an apartment or house to rent can be viewed as an indicator of the socio-economic mobility of the population (relocation from one place to another, including one due to a change in jobs, family extension, or income growth), which presumably demonstrates the extent of people's economic activity – more or less pronounced. This conclusion, naturally, requires further research and observation; the same concerns the overall problem of cultural and national peculiarities of people's economic behaviour. However, this very factor determines the vector of long-term interest in the subject under review: the differences in economic behaviour represent an important factor of adaptability to the changing external and internal conditions, as demonstrated by society. This is precisely this knowledge that helps to anticipate the future.

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