

Macroeconomic indicators of Russia's media communication industry in 2000-2020: Quantitative analysis

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Abstract

Technological and social processes of last years inspired by the information and communication technologies development, such as processes of digital transformation of society and the convergence of (mass) media, have led to the formation of a new macro-social entity – the media communication industry, integrated into the national and global economy and interacting in various ways with other sectors of the economy and the world media system. At the same time, instrumental methods of data analysis, widely used in economic studies, are still not very common for media communication industry studies. To bridge this gap and answer the question of how the macroeconomic situation affects the media industry and vice versa, the authors conducted a statistical analysis of the joint dynamics of macroeconomic indicators and those of the Russian media communication industry over the past 20 years.

Keywords

Media communication industry, macroeconomics, statistical analysis.

Introduction

As a result of the rapid change in the place and role of information and communication technologies in socio-political processes, computerization, and the penetration of the Internet into politics, business and the everyday lives of people, media communications by the end of the first quarter of the XXI century

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reached a new level, expressed in the formation of a new socio-economic entity – media communication industry (MCI). It is an integral poly-subject socio-economic system that combines technical means of representing, transmitting, storing and processing digital information in all existing types and formats, producing subjects and consuming subjects of information interacting through technical means within the framework of socio-economic relations that satisfy socially necessary information and communication needs (Vartanov, 2023). At the same time, it can also be perceived as a stage in the development of its subjects, their interaction, interpenetration, and unification on a common technical and technological basis. The main structural units of the media communication industry, which in their inextricable connection form its appearance, are previously unrelated sectors of the economy – telecommunications and media communication industries, film, television and video production, sound recording, advertising, public relations, which were not initially considered as components part of the media economy, but closely associated with it already in the early stages of media formation.

The functioning of the media communication industry in modern conditions is determined by such media characteristics as:

- level of development and current state of the national telecommunications infrastructure (Gladkova et al., 2019; Vartanova et al., 2021; Vartanova, & Gladkova, 2020);
- the level of development of the consumer economy, which determines the volume of the advertising market, audience spending on media and investment in the media business (Vartanov, 2015; van der Wurff et al., 2008; Vartanova, 2015);
- the level of interest of the population in media, expressed, among other things, by its proportion of an active audience of various types of media (television, radio, online and social media) (Nazarov, 2023; Vyugina, 2018; Kampes, & Brenthel, 2020);
- the level of competence of the population in matters of media consumption, defined in modern literature on media theory as the level of digital media literacy (Kazakov, 2017; Frolova, & Obratsova, 2017);
- the presence of a national and regional legal framework regulating the activities of various types of media at the national, regional and local levels (Pankeev, 2019, Sharkov et al, 2023; Bates, & Chambers, 1999);
- the ability and capability of the media system to create a favorable environment for the emergence and implementation of innovations (Gorokhov, & Shilina, 2020; Bakhshi, & McVittie, 2009);

- the ability of the media to meet the information and communication needs of society as a whole and its individual citizens (Vartanova, & Gladkova, 2022; Kampes, & Brenthel, 2020).

Particular attention should be paid to the growing integration of the media and telecommunications industries, which began in the last decades of the XX century and led to the formation of the media communication industry. Throughout the XX century, the links between telecommunications and the information technology industry and the mass media were strengthened and expanded, and new production capabilities turned into an infrastructure (for production and distribution) and an environment for the existence of media content of all possible types (de Prato, & Ganz, 2004). In Russian realities, this integration was confirmed by the creation in 2014 of the Media-Communication Union. The Media Communication Union (MCU) is an organization that envisages equal partnership between leading media and telecommunications companies and represents their common interests, including in government authorities, with which two-way communication between the industry and the state is organized. According to the Union's statutory documents, the need for its creation is linked to the development of digital technologies in telecommunications and media.

Since the media communication industry is not only transmission technologies, channels, platforms, and content distribution system, but also a social space, social institutions and structures, social processes in individual, national and global space, a significant number of indicators are required to quantitatively describe its state. To characterize the level of development of the national media system, it is necessary to consider, on the one hand, heterogeneous but interrelated federal-level indicators describing the development of media, telecommunications, and culture, and, on the other hand, their regional counterparts. The latter are necessary not only to assess the (un)uniformness of the development of the national media system and the severity and depth of the digital divide, but also to study the spatial effects and interrelationships between the indicators of different regions.

Statistical analysis of the Russian media communication industry and its interrelationships with other spheres and sectors of the economy has not yet gained popularity in Russia. Instrumental methods of data analysis are still not as widely used in its research as in the study of other sectors of the economy. Nevertheless, due to the high degree of MCI integration into the national economy and its significant contribution to GDP it is difficult to underestimate its strategic importance. This paper is one of the steps to fill the gap in the

statistical analysis of the relationship between MCI in Russia and other spheres of the economy.

Methods

Theoretical framework for quantitative research on MCI

The theoretical direction of quantitative research of the media communication industry research focuses on the development of models and theories that explain the main aspects of the functioning and interaction of media firms, as well as the influence of other factors on their activities. This approach investigates universal models that can explain the media communication industry in different countries and contexts. One of the main goals of the theoretical direction is to offer recommendations and practical solutions for various participants in the media communication industry – both media companies and government regulators. Researchers seek to identify effective strategies that allow media firms to operate successfully in difficult economic conditions and consider the interests of society. In works in this direction, the authors seek to develop theoretical models that explain the main features and structure of the media communication industry. They consider factors such as competition, scale of production, product differentiation, economies of scale, subsidies, taxes, and other regulatory measures.

Based on the understanding of the media communication environment as a multi-subjective one (Vartanov, 2023) and characterized by a highly active audience that performs different functions in this environment, we should recall the special role of the latter in the economic behavior of subjects of traditional media. According to Picard's approach, the dual market of goods and services assumes that the media not only produce content for the audience, but also, because of this production, organize advertisers' access to the audience (Picard, 1989). This basic position of the media economy captures a key feature that characterizes not only producers, but also consumers, which has given rise to some researchers to add among the main resources of the media business such as money, time and – subsequently – the attention of the audience. Audience monetization, which underlies the most influential business model of the traditional media industry, is the result of a process of commodification of the audience, acquiring the properties of a commodity (Mosco, 2009; Doyle, 2013). In a multi-subjective digital environment this turns the audience into a key actor, both a consuming and a producing and distributing subject (Vartanova, 2022; Makeenko, & Vyrkovsky, 2021).

One of the key models presented in the works of Hendricks (1995) and Ramstad (1997) is the segmented market model, where firms compete for market

share and strive to maximize profits. This allows researchers to assess the impact of various factors on industry structure, such as market concentration, number of participants, level of integration, and others. In addition, many authors pay attention to the impact of government policies on the media communication industry. Policy research typically attempts to analyze the impact of specific regulatory measures on existing markets and industries. In the context of this direction, the economic consequences of radio deregulation and the impact of political regulatory decisions regarding US cable television and French cable operators were studied (Bates, & Chambers, 1999). Several studies have also addressed employment and labor market trends (Albarran, 2008). They also analyzed issues such as taxation, subsidies, restrictions and regulation of content, intellectual property rights and other aspects that affect the behavior of individual subjects and the development of the whole industry (Collins, & Litman, 1984; Fan, 2005).

In recent years, researchers have been increasingly paying attention to the short-term relationship between economic crises and the media industry (Van der Wurff et. al, 2008; Picard, 2001). Studying such connections can help to understand how the media industry interacts with the economy during periods of crisis and how these interactions can affect the overall economic situation. Some of these studies focus on the impact of advertising spending on GDP during economic downturns. They indicate that during periods of crisis, companies often reduce their advertising budgets, which can lead to a decrease in advertising activity in the media industry. This in turn may affect consumer activity and the overall economic condition. Some studies also suggest that changes in advertising activity during periods of crisis can be more dramatic than changes in GDP (Picard, 2001). Other works examine the influence of the media industry on economic growth and development. They show that media industry growth can drive economic development and innovation. The media industry can create new jobs, stimulate competition, and improve the quality of products and services (Albarran, 2008; Gustafsson, 1988).

Picard's seminal 2001 work examines the impact of economic indicators such as GDP and total advertising expenditure on the media communication industry in developed countries. The author uses statistics on the GDP of some European countries and their advertising budgets in the late 1980s and early 1990s. The main issue of the work is to determine the effect of recession and economic growth on media in developed countries. The author concludes that a decrease in GDP by one percent leads to a drop in total advertising costs by an average of 5%. However, the relationship between GDP and advertising

costs is different in each country. This is explained by various factors, such as the structure of the economy, the level of economic freedoms, the impact of the recession on different sectors of the economy and the economic policy of the state. The study also shows that print media were the most vulnerable to negative changes in the economy. The impact of the economic downturn on them was almost four times bigger than in the case of television. This may be explained by changes in advertising budgets and audience preferences during the economic downturn. Picard's work is of interest to researchers in the media communication industry and macroeconomics, as it explores the relationship between these two areas and shows how economic factors can influence the media.

According to more recent macroeconomic model (Van der Wurff et al., 2008), based on regression analysis of macroeconomic indicators of many national economies, the indicator of total GDP (in real terms) can predict with a high degree of accuracy the volume of the advertising market, in particular for the traditional printed press. The higher the overall share of the advertising market in the structure of GDP, the higher the level of accuracy of such a prediction. At the same time, the influence of "internal" competition between different media as advertising carriers on the advertising market turns out to be less significant than the influence of "external" (macroeconomic) factors. Thus, the need to use advanced mathematical and statistical tools for macroeconomic forecasting to analyze empirical data in the study of the media communication industry is substantiated.

Instrumental methods for analyzing statistical data in MCI research

Statistical analysis of the joint dynamics of the main indicators of the media communication industry and the economy allows us to analyze the relationship between them and identify possible interdependencies. Various methods such as correlation analysis, regression analysis, time series and factor analysis can be used in such analyses. In correlation analysis, the degree of relationship between different variables can be investigated, for example, between the revenues of media companies and a country's main macroeconomic indicators such as GDP, investment, and unemployment rate. A positive correlation may indicate that economic growth favors the growth of the media industry, while a negative correlation may indicate the impact of economic difficulties on media companies.

Regression analysis allows for a more detailed examination of the impact of one or more independent variables on the dependent variable. For example, a

regression analysis can be conducted to determine how changes in investment and advertising expenditures affect the profits of media companies.

Time series analysis allows to examine changes over time and identify seasonality or trends in the dynamics of the media industry and the economy. This can help in predicting future trends and the state of the media industry based on previous data.

Factor analysis is used to identify the most significant factors affecting the variables under study. In the context of the media industry and the economy, factor analysis can help to identify the main economic factors affecting the state and development of the media industry.

The use of instrumental data analysis methods in media industry research allows for a more accurate and objective assessment of its state and the impact of factors related to the country's economy. This can be useful for making strategic decisions and designing measures to improve the state and development of the media industry.

Conducting such a study may require access to reliable and extensive statistical information. Therefore, qualitative analysis will require collecting and analyzing data from various sources, such as official statistical reports, studies, and publications by media industry operators. To achieve this goal, the *Mediamonitor* project of Lomonosov Moscow State University has been monitoring the state of the Russian media communication industry since 2019. The *Mediamonitor* project is a Russian implementation of media monitoring as a process of monitoring the state of the industry. It consists of collecting retrospective and current data, monitoring the current state of the media communication industry, assessing its current state, building its model, and then analyzing and forecasting its development dynamics under the influence of various factors of economic, technological, social, and cultural nature.

The *Mediamonitor* project database contains several thousand variables for a time horizon of up to 20 years, collected from a variety of sources, both open (Federal State Statistics Service) and proprietary (*Mediascope*). Of these, about 100 variables correspond to indicators characterising the media communication industry in four aspects: online media, printed press and books, television, and radio. For each indicator the dynamics of its change over the last ten years is considered (i.e. we are talking about a time series), besides, for these indicators for all years there are values for all federal subjects of the Russian Federation. In total, this gives about $100 \cdot 10 \cdot 85 = 85,000$ data elements. The total database of the *Mediamonitor* project contains 97 indicators in the "Technology" group, 122 indicators in the "Economy" group, 84 indicators in the "Demography"

group, 137 indicators in the “Culture and Institutions” group, 42 indicators in the “Human Capital” group and 87 indicators in the “Media” group.

The data sources were both open and proprietary databases. In particular, the database for the sets of variables describing the groups “Technology”, “Economy”, “Demographics” and “Culture and Institutions” is based on indicators collected by Rosstat. More data sources describing the media communication industry were used. Among the sources from which primary data were collected are not only the databases of the Federal State Statistics Service, but also other open and proprietary databases created and maintained by organizations such as:

- Book Chamber of the Russian Federation;
- Association of Communication Agencies of Russia;
- Federal Service for Supervision of Communications, Information Technologies and Mass Media (Roskomnadzor);
- Mediascope JSC (proprietary databases *TV Index* and *Radio Index*);
- Medialogiya LLC (open data on Russian media ratings).

A comprehensive qualitative and statistical analysis of the system of observed indicators is intended to form the basis of a “digital twin” of the domestic media communication industry and a model of its interrelations with other spheres and sectors of the national economy, ideologically and methodologically going back to the macroeconomic works mentioned in the previous section. On the “macroeconomic” side, GDP plays a key role in such analyses as the main macroeconomic indicator of the national level. When it comes to analyzing media consumption and telecommunications infrastructure, average annual income is also an important macroeconomic indicator.

Results

Dynamics of macro-indicators of the national economy and MCI of Russia in 2000-2020: Results and interpretation

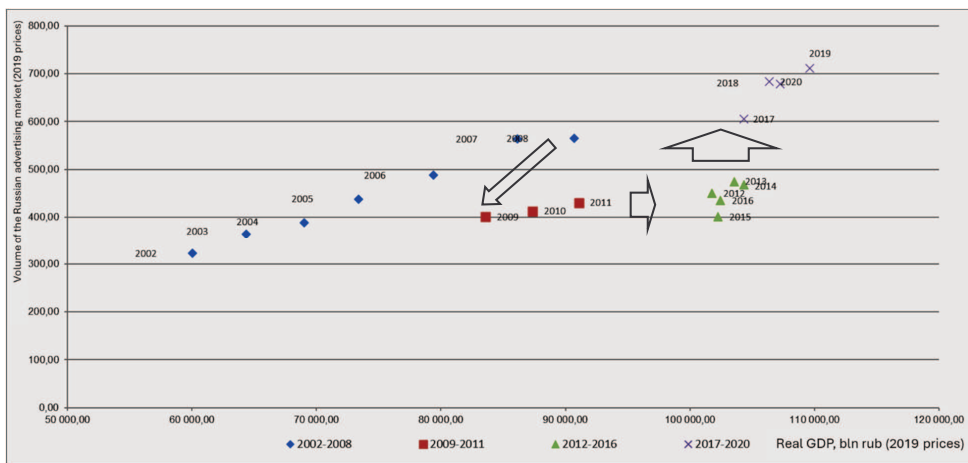
According to several studies, the Russian economy in the years corresponding to the period under study experienced at least two shocks – in 2008-2009 and 2014-2015, which led to a situation of a change in the mode of functioning of its system and qualitative changes in the dynamics of its development (Vartanov, 2015). Both shocks were exogenous, external to the Russian economy: the first of them was provoked by the international financial crisis of 2008, the second – by the global geopolitical situation (the key role in it was played by anti-Russian sanctions and countersanctions of the Russian Federation). We should probably expect a similar picture in 2020-2022 due to a qualitative change in the conditions

of economic functioning due to the coronavirus pandemic, a new round of sanctions pressure and geopolitical instability, but at the time of creation of this article complete and reliable data for these years were not yet available.

Economists divide the period under study (2000-2020) into three periods (separated by crises and shocks), during which the dynamics of the Russian economy was unchanged from a qualitative point of view: the first one lasted just until 2008; the next stationary period – from early 2009 to mid-2014. Finally, the third period, which began in 2014, lasted until 2020. This period is characterized by the most difficult exogenous environment in which the Russian economy functioned, both from the economic (falling commodity prices, capital outflow from many emerging markets, lower growth rates of previously high-growth economies, for example China) and geopolitical (conflict in Ukraine, reunification with Crimea, war in Syria, anti-Russian economic sanctions, and retaliatory countersanctions) points of view (Balashova, 2019; Mau, 2016; Nureev, & Petrakov, 2016). The qualitative difference between these periods, and hence the importance of 2009 and 2014 as key regime switch points, is so significant that econometric trend models for the main macroeconomic indicators are built separately for them. Within the framework of this approach, it is possible to study the qualitative features of the dynamics of some key macroeconomic indicators of the Russian media communication industry in the context of the general economic situation in Russia.

Figure 1

Total advertising market volume and real GDP in 2019 prices



Source: compiled by the author according to Rosstat and AKAR

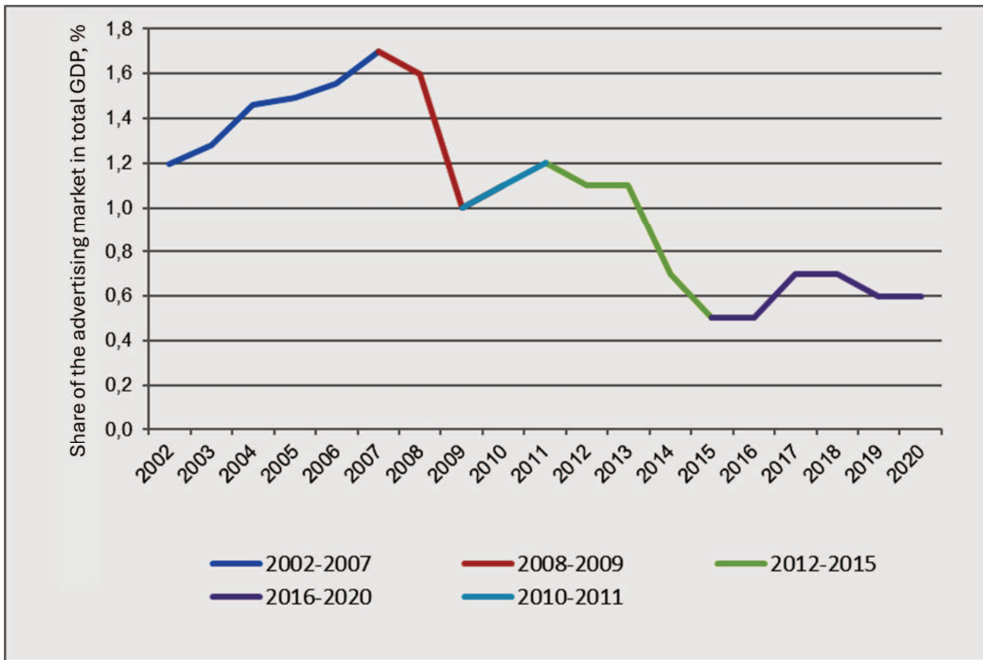
The first macro indicator analyzed in the media communication industry is the total volume of the advertising market. For many companies in the media communication industry, the sale of advertising inventory forms the basis of their business model, being a key revenue item (Vartanova (ed.), 2020). As it was shown earlier, the advertising industry is one of the most significant structural elements of the media communication industry as a sector of the economy. Vartanov (2020, 2021, 2022) also analyzed the close inter-sectoral ties that connect advertising with other sectors of the economy. These links become channels for the propagation of economic shocks from advertisers to participants in the media communication industry – from advertising intermediaries and media dealers to the media themselves (Vartanov, 2015). Moreover, since the advertising industry can be considered a fairly accurate representation of the entire media communication industry, as well as some of its elements and their connections, the state of the media communication industry can be assessed with sufficient accuracy by examining the state of the advertising market.

The scatter diagram for the variables representing the annual values of real GDP and advertising market volume (in 2019 prices) during 2002-2020 is shown in *Figure 1*. The set of points representing observations for these years visually breaks down into four clusters (groups of observations in consecutive years). The first cluster includes observations from 2002 to 2008, while the second cluster includes observations from 2009 to 2011. The third includes data from 2012 to 2016, and the fourth includes 2017 and later years. The selected system of clusters divided the entire period of observations into intervals during which the market dynamics had a relatively stable character. During this period (from 2002 to 2008), the advertising market volume and GDP were almost linearly related. At the end of the first period, in 2008, the advertising market growth almost stopped – against the background of continuing growth of the gross domestic product. The shock caused by the global financial crisis affected the inter-sectoral relations of advertising only quantitatively: the dependence of the advertising market volume and GDP retained a linear form and almost the same slope coefficient, having shifted below by “parallel transfer”. It is possible to characterize this period (2009-2011) as connected with the search and formation of a new mode of functioning. “Linear” dynamics ended after 2012; until 2016 the market in the context of GDP functioned quite stably, not showing tangible dynamism. A sharp change in the mode of functioning occurred in 2016, and from 2017 it again entered the stationary trajectory. Most likely, the end of the previous period was associated with such significant

events in the history of the Russian advertising market as the formation of the National Advertising Alliance (NAA) on the basis of the former Vi Group (formerly Video International) with the participation of four of Russia's largest media holdings (Gazprom-Media, Channel One, National Media Group, and VGTRK), which became a near-monopoly seller of TV advertising. By 2020, its share was estimated at approximately 95% of the total TV advertising market (see Boletskaya, 2019).

Figure 2

Percentage contribution of the advertising market to the Russian economy from 2000 to 2020



Source: compiled by the author according to Rosstat and AKAR.

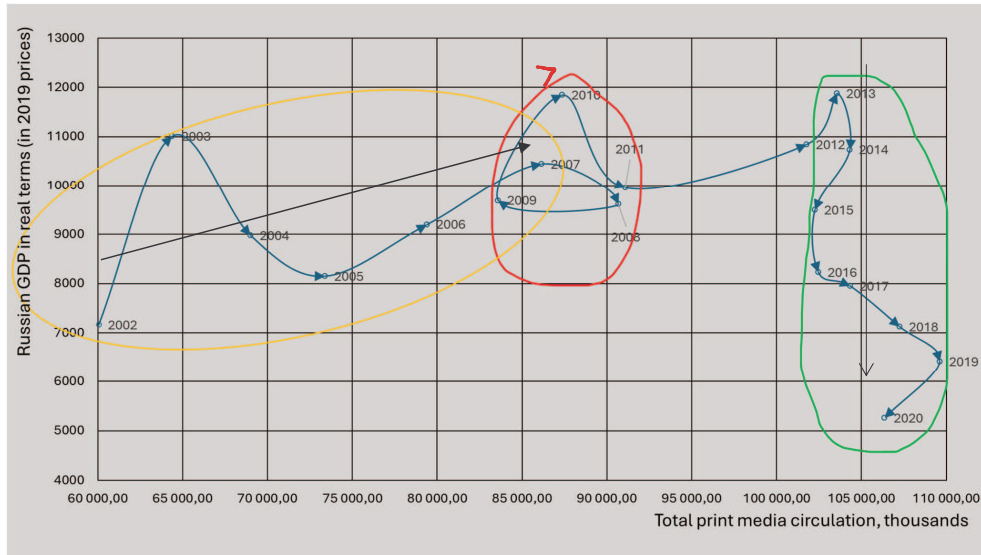
Figure 2 illustrates the dynamics of the advertising sector's contribution to the total GDP. The time intervals identified earlier for other elements of the media communication industry with the same character of market dynamics are also found here. Indeed, in the first eight years (from 2000 to 2007 inclusive) the advertising industry was steadily increasing its contribution to the gross domestic product. The financial crisis of 2008, due to the increased

vulnerability of the advertising industry to external economic shocks, provoked a sharp drop in its share in the Russian GDP. However, this drop was followed by a correction and four relatively “calm” years (advertising’s contribution to the Russian economy did not experience sharp fluctuations and amounted to 1-1.2%). In 2014-2016, the share of the advertising market in total GDP fell significantly again, with the general contraction of the domestic economy serving as a backdrop. In many respects, this confirmed Picard’s hypothesis, formulated by him in 2001 for Western economies and mentioned in Section 2.1: during recessions, advertising expenditure declines much more strongly than the economy (Picard, 2001). After 2016, the advertising industry stabilized and reached a roughly stationary level of 0.6-0.7 % of annual GDP.

The state of traditional media is described by other indicators, such as annual print media circulation. When assessing these, a significant methodological problem is the absence of a continuously operating unified circulation audit service in Russia. Circulation data are provided by several state institutions and authorities: the Book Chamber of the Russian Federation, Rosstat, Roskomnadzor, and from 2004 to 2020 the Federal Agency for Press and Mass Communications (abolished in 2020) conducted the relevant monitoring. On the other hand, even the data collected from all available sources are either incomplete or in some cases contradict each other due to different methodologies of their collection. In addition, the circulation figures declared by publishers may be deliberately overestimated or underestimated by them. Nevertheless, there are no other data on print press and book publishing circulations, and the scale of potential distortions by individual industry players in relation to total print media circulations is insufficient to meaningfully distort long-term trends in the industry.

Figure 3

**Russian GDP in real terms (in 2019 prices)
and print media circulation in 2002-2020**

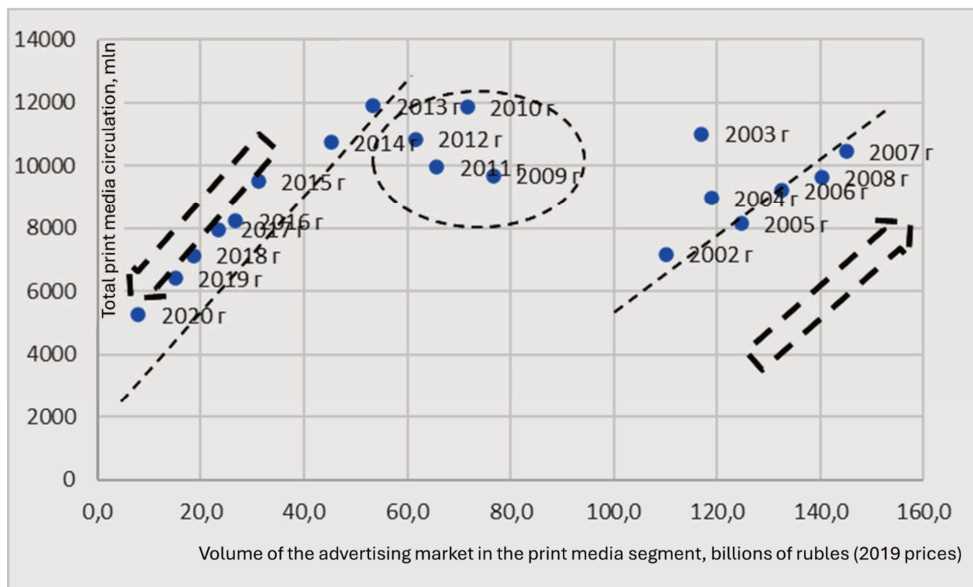


Source: compiled by the author according to the Russian Book Chamber, FAPMC RF and the Ministry of Digital Development, Communications and Mass Media, Roskomnadzor, Rosstat and AKAR.

The ratio of print media volume to real GDP during 2002-2020 is illustrated in Figure 3. From the point of view of print media, the entire period of observation falls into three stages with the expected periodization. The turning points that transformed the dynamics of print media development in Russia were 2008 and 2013. The first years of the noughties were characterized by simultaneous growth in both print media circulation and the economy, but already in 2003 fewer newspapers and magazines were printed than the year before. For three years in a row – from 2004 to 2006 – GDP showed stable growth, but the total volume of Russian print media became smaller (see Figure 3). In 2005, the dynamics changed to an “upward” trend: both the economy and print media circulation grew, forming an almost linear dependence, until the trend reversed in 2008. In that year there were 11% fewer newspapers and magazines than in the previous year. In 2009, the decline in GDP was 7.8 per cent, but in contrast, the volume of print media was virtually unchanged from 2008. By 2011, both indicators had returned to 2008 levels, and then a steady, economic-independent decline in circulation began, which continues to this day.

Figure 4

Print media advertising budgets and their total annual circulations



Source: compiled by the author according to the Russian Book Chamber, Federal Agency for Press and Mass Communications of the Russian Federation and the Ministry of Digital Development, Communications and Mass Media, Roskomnadzor, Rosstat and AKAR.

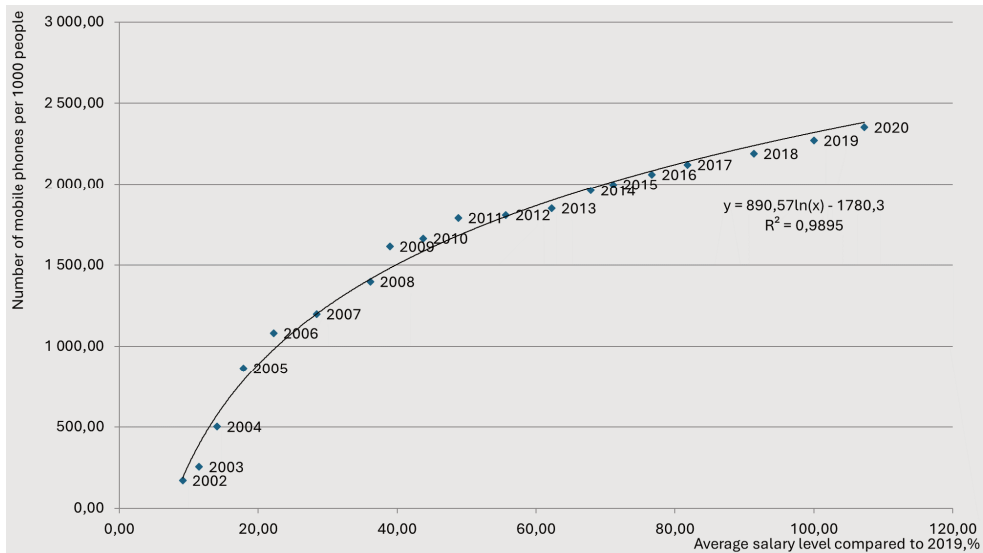
The analysis of the relationship between the aggregate advertising budgets of print media and their circulation reveals a similar picture (three characteristic periods: 2002-2008, 2009-2011 and 2013-2020). It is quite indicative that the interrelation of the studied indicators in the “extreme” periods – 2002-2008 and 2013-2020 – was close to linear with approximately the same absolute value of the coefficient. At the same time, in terms of dynamics they turned out to be “multidirectional” (see Figure 4). As in the previous case, the advertising industry’s increased sensitivity to endogenous crisis situations was also evident in the print media segment.

The status and development of the third component of the media communication industry – digital media – is characterized by such economic indicators as the total volume of the online advertising segment and its share in the total advertising market. Among the infrastructural characteristics of Russian digital media development, the level of mobile telephonization (per

thousand people), as well as quantitative indicators of Rунet are of interest, such as the total number of websites in national domain zones (RU, RF), etc.

Figure 5

Number of mobile phones per thousand people and average salary level (in % of the 2019 level)



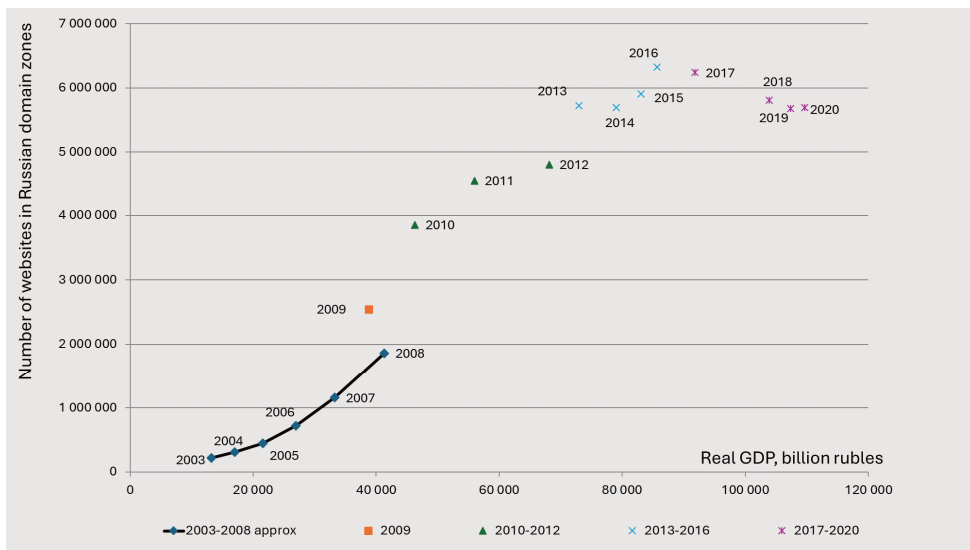
Source: compiled by the author according to Rosstat data

From 2002 to 2020, the level of mobile telephonization in Russia grew steadily (see Figure 5), despite external circumstances (more than a hundredfold increase from 22 to 2352 devices per thousand people). The nature of the observed correlation between mobile telephonization (or, more precisely, smartphoneization) of the population and average wages was unchanged and was not affected by any of the economic crisis shocks. The highest value of the indicator R^2 characterising the quality of approximation has a logarithmic trend line, and such a form is largely consistent with the qualitative features of the observed relationship. The logarithmic function is concave, i.e. it is characterised by growth deceleration. The same is true for the smartphone-related behaviour of Russian citizens: the higher the average salary level, the more its increase by the same constant value led to a smaller and smaller increase in the number of mobile phones. This can be explained by the gradual saturation of the market

with smartphones: people have practically satisfied their needs in them, and in the future there will be a renewal of the fleet of phones, while the process of its increase is likely to slow down.

Figure 6

Number of websites in Russian domain zones (.ru/.rf) and real GDP in 2019 prices



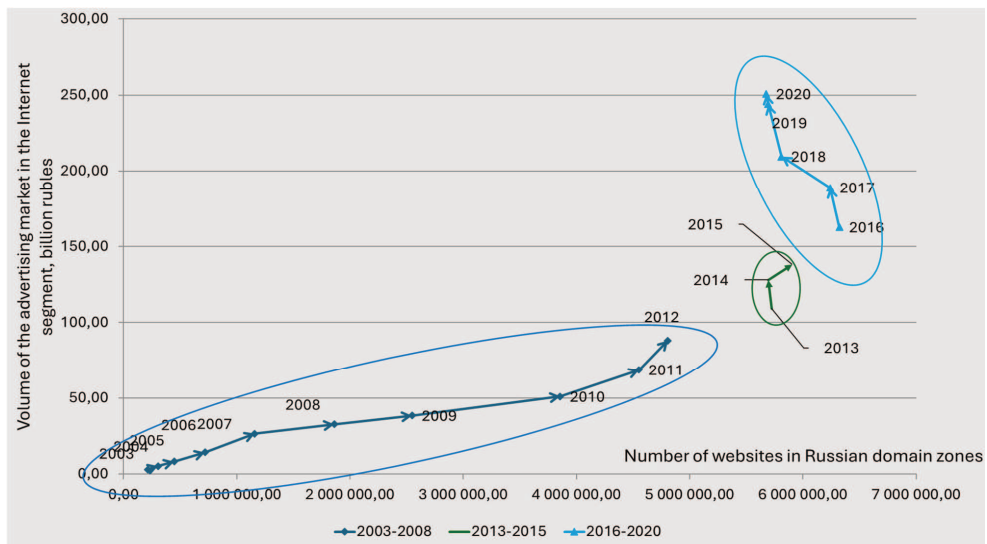
Source: compiled by the author according to the materials of Rosstat

The number of sites in Russian domain zones has been monitored since 2003, and until 2009 only the .RU domain zone was considered, but since 2010 the indicator began to consider the .RF domain zone as well. In the last 20 years the size of the Russian economy has related to the number of sites in a predominantly increasing dependence (see Figure 6). Based on the peculiarities of this dependence, the entire period under analysis can be divided into three shorter periods with relatively homogeneous dynamics. The first period lasted from 2003 to 2008, with the change of the relationship character in 2008, but it was provoked by general economic reasons rather than intra-industrial ones, because the number of sites did not stop growing during these years. The beginning of registration of sites in the .RF zone in 2010, in turn, contributed to a sharp and noticeable increase in the overall size of Runet. In 2009-2013, the growth rate of the number of sites in relation to GDP fell, nevertheless surpassing

the 2003-2008 trends extrapolated for these years (see *Figure 6*). A qualitative change in the relationship between the parameters in question occurred already in 2014-2016, growing for two consecutive years until 2016, after which it began to decline – with the economy growing unchanged. After that, starting from 2017, the dependence between the two indicators under consideration had an exceptionally monotonous character: the number of sites slowly decreased, while GDP increased. We can call this period a period of intensification: while the formal characteristics of the number of elements of the digital part of the media communication industry were decreasing, its role in the economy was becoming more and more significant, changing qualitatively. This is also evidenced by the joint scatter diagrams of the next two indicators under consideration – the volume of the advertising market in the online segment and the number of sites in the .RU and .RF zones (see *Figure 5*).

Figure 7

Number of websites in Russian domain zones (.ru/.rf) and online advertising market volume



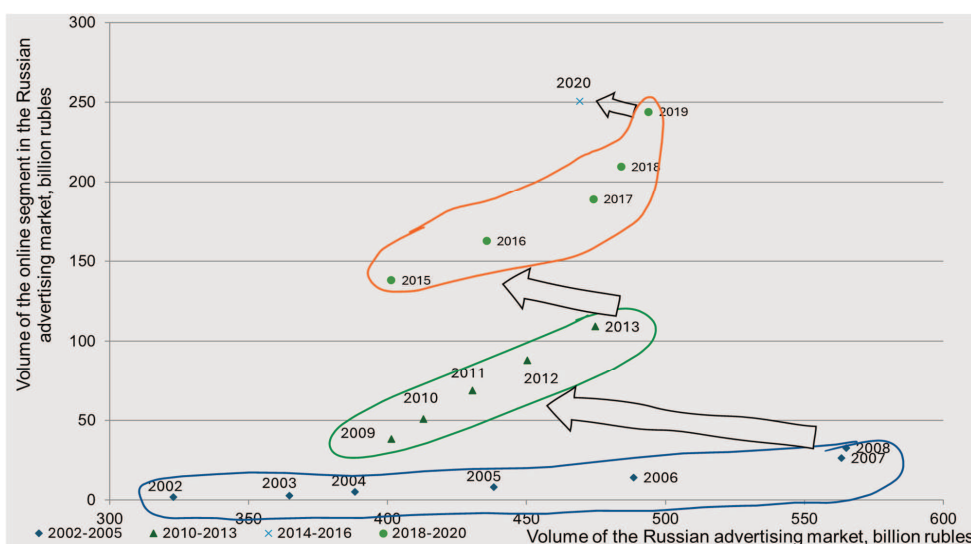
Source: compiled by the author according to Rosstat and AKAR

Similar in their periodization characteristic intervals of dynamics are highlighted in the analysis of the relationship between the volume of the online advertising market and the number of characteristics of Runet as a whole. For

the first time, the relationship between the online advertising market volume and the number of sites changed qualitatively in 2013-2015 (see *Figure 7*). Until 2013, the rule “More sites – more investment in online advertising” was true, and during this period the market dynamics was non-monotonic and quite volatile. At the same time, since 2017, the studied indicators have switched to multidirectional dynamics: the number of sites broke the continuous growth, which it was characterized by in previous years, but the total volume of the advertising market began to recover and grow. This once again confirmed the transition to intensification and increased efficiency of advertising investments in the already existing online infrastructure, instead of the extensive development that prevailed earlier.

Figure 8

Volume of the advertising market as a whole and its online segment



Source: compiled by the author according to Rosstat and AKAR

The dynamics of the online segment’s contribution to the overall indicators of the Russian advertising market is also divided into three periods, the boundaries of which are defined by the same years of “mode switching” as the boundaries of similar characteristic periods of dynamics of other indicators of the media communication industry development. Before the 2008 crisis, both the advertising market and the online segment’s contribution to it were growing.

The “crisis” year of 2008 was marked by a noticeable decline in the advertising market, but the share of online advertising continued to grow that year, and from 2009 to 2013 both indicators grew (see *Figure 8*). In 2014, the online segment's contribution to the total volume of the Russian advertising market still showed slight growth despite the market decline. This process continued in 2015, after which the market dynamics reversed, until in 2020, the pair “advertising market volume – online advertising volume” showed a jump similar in direction to the jump in 2014.

Thus, the online segment of the domestic media communication industry developed quite steadily during 2000-2020, unlike other segments of the media communication industry and the economy. Nevertheless, it was not able to “dodge” the catastrophic external shocks for the whole economy. On the one hand, the digital media infrastructure has been steadily improving over the years, as has the growth in the volume of content in the Russian-language segment of the Internet. However, the monetization of the associated new opportunities for the media communication industry still depended entirely on the general situation on the advertising market. The latter, in turn, has reacted very sensitively to exogenous macroeconomic shocks over the past 20 years, and this has had a negative impact on the online segment of the media industry quite quickly.

Summing up, we can conclude that the key years for the media communication industry were the years when the entire economy was experiencing large-scale shocks. Crises, shocks, and other negative events external to the national media communication industry, which transformed the functioning of the financial and real sectors of the Russian economy during these years, had a significant impact on the media communication industry, and in some segments of the industry this impact was even greater than in the national economy. In addition, 2016 was equally significant for advertising, when the structure of the Russian advertising market changed dramatically due to the creation of the National Advertising Alliance, from an oligopolistic to a leader-competitor structure close to an absolute monopoly.

The discovered pairwise interrelationships between macroeconomic indicators of the national and industrial levels can form the basis for the methodology of forecasting the development of the media communication industry. Nevertheless, since the period of 2020-2022 has once again become a turning point not only for the media communication industry, but also for Russian society and the economy, it is premature to make such forecasts, since there is still a lack of statistical data to determine the nature of the new mode

of functioning of the media and communications industry in the context of new socio-economic conditions. Nevertheless, as the analysis in the paragraph has shown, the dynamics and even the qualitative nature of the relationship between certain characteristics of the industry and certain macroeconomic indicators are far from homogeneous. The dynamic features of the relationship between the parameters describing different segments and aspects of the media and communications industry are often not only discordant with each other, but sometimes even contradict each other. The construction of mathematical and statistical models of their mutual influence using both simple regression and more complex econometric methods (time series analysis, factor analysis, etc.) and their application for forecasting the development of the industry is one of the main tasks solved by instrumental methods of data analysis in media research.

Conclusion

The number and heterogeneity of the constituent entities of the domestic media and telecommunications industry determine the need to collect a large amount of heterogeneous data required for a qualitative and quantitative macroeconomic study of the industry's place in the national economy. In addition to standard macroeconomic variables, it is necessary to collect and analyze indicators characterizing the level of media and telecommunications development in the country, the number of which is very large for the reasons mentioned above. These include data on media and telecommunications infrastructure, as well as media economic indicators, such as revenues from advertising, broadcasting and cable television, publishing, film and entertainment markets (and the total media revenues they generate), and indicators of media consumption activity by audiences of all existing types of media and telecommunications products.

In accordance with the authors' media monitoring methodology, the media and communications industry of the Russian Federation was selected, collected, and aggregated in a single database characterizing its indicators for the period from 2000 to 2021. Their qualitative macroeconomic analysis revealed the non-linear nature of the relationship between industries and segments of the media and communications industry and the national economy in the context of the ongoing processes of digitalization of the economy and comprehensive mediatization of public life, as well as external shocks caused by global economic shocks. Despite the different types, nature, and mechanisms of realization of such dependencies, it

was proved that the media and communications industry is closely connected with the national economy of Russia, as well as the long-term stability of its significant contribution to economic growth during 20 years of observation.

Due to the multisubject nature of the media and communications industry and the long period of observation of its dynamics, the volume and heterogeneity of the indicators describing it make it extremely computationally difficult to analyze the processes and relationships affecting it using raw data.

On the other hand, the results emphasize the importance of economic conditions for the media industry and show that it is a sensitive sector of the economy. Crisis periods such as 2009 and 2014 had a serious impact on the industry and led to changes in its dynamics and structure. Another important result is the statistical relationship between the main macroeconomic indicators and the performance of the media industry. This confirms that changes in Russia's economic sphere affect the media communication industry and can serve as an indicator of its state. The study also found that the nature of the relationship between macroeconomic indicators and MCI indicators changed over time. This indicates not only that the industry is adapting to changing economic conditions and can respond to them, but also that there are changes in the role and place of MCI in the structure of the national economy induced by macroeconomic and technological reasons.

Overall, the results of the study point to the importance of taking Russia's economic situation into account when analyzing and forecasting the development of the media industry. This has practical implications for strategic decision-making in the industry and can help predict the impact of economic changes on the media industry. However, while the media industry is affected by economic factors, it can also have an impact on the economy. For example, the media industry may not only promote tourism and attract foreign investment but affects positively the innovative dynamics of society (Vartanov, 2024). Thus, it can be an important tool for shaping public opinion and influencing political and social processes. Since the relationship between the media industry and macroeconomic indicators can be two-way, to better analyze the impact of macroeconomic situation on the industry, further research could include more sophisticated models and statistical methods. It may also be useful to compare data on the media industry in Russia with data from other countries to identify common patterns and peculiarities. This will help to better understand the factors influencing the development of the media communication industry and to take measures for its sustainable development in the future.

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