An Assessment of the Debt Burden Effect on the Suicide Rate in Russian Regions

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Abstract—Population size is one of the most important parameters of national social and economic systems. It is controlled by multiple factors (components) that form ambiguous and complex feedback loops. The most important issue in this case is the study of the behavioral reactions of the population that form certain parameters of the population dynamics. In this article, the authors consider only one behavioral reaction that seems important to them—suicidal tendencies, which ultimately leads to the formation of suicide dynamics that entails serious socioeconomic and demographic losses. Emphasis is placed on assessing the impact of financial parameters, namely the size of the debt burden on households, on the suicide rate in general in the Russian regions. An econometric assessment of the impact of the volume of individual debt on the suicide rate among other socioeconomic factors (unemployment rate, logarithm of GRP per capita, divorce rate, number of persons with mental disorders, average actual duration of the work week, number of persons with alcoholism) was carried out for the regions as a whole, as well as among rural and urban populations. We used panel data for 80 federal subjects of Russia for 2005–2018. The system generalized method of moments was applied. The calculations were carried out using the Stata 14 stistical package. As a result of the study, a negative effect of the individual debt volume on the suicide rate in the regions of Russia was revealed, which contradicts the results of similar studies conducted for developed economies. At the same time, certain results obtained earlier in Russian and foreign studies were confirmed, including a U-shaped relationship between work hours and the suicide rate and a direct relationship between an increase in the suicide rate and an increase in divorce rates, the number of persons with mental disorders, as well as unemployment and consumption of alcohol products. The latter manifestation is characteristic, first of all, of the population of rural areas both in Russia and abroad.

Keywords: number of suicides, factors, debt burden on households, volume of individual debt, Russian regions

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INTRODUCTION

Population size is one of the most important parameters of national social and economic systems, characterizing the humanitarian, labor, technological, and mobilization potentials of countries. This parameter is controlled by multiple factors (components) that form ambiguous and complex feedback loops. The most important issue in this case is the study of the behavioral reactions of the population that form certain parameters of the population dynamics. In this article, the authors consider only one behavioral reaction that seems important to them—suicidal tendencies, which ultimately leads to the formation of suicide dynamics, which are one of the most common external causes of death in most countries, regardless of the level of economic development. The result is an increase in premature mortality, which entails serious socioeconomic and demographic losses.

Although Russia was in ninth place in terms of suicide rates according to WHO1 in 2019, little attention is paid to research on this problem in the scientific literature (Aminov, 2019). To some extent, this may be due to the fact that in quantitative terms, the severity of the problem of suicide as a factor in adjusting the population, according to official statistics, has been declining in the country in recent years, from 17.4 peo

1 World Health Statistics data visualizations dashboard, World Health Organization. https://apps.who.int/gho/data/node.sdg.3-4-data?lang=en. Accessed September 2021.
Mortality rate by main classes and individual causes of death per 100,000 population in 2015 to 11.3 people per 100,000 population in 2020. However, this statistical well-being is disputed by researchers of real suicide rates in the regions (Yumaguzin and Vinnik, 2019). In particular, the problem of distortion of data on the suicide rate in official statistics by classifying a large number of cases as death from “injuries with undetermined intentions” is actively discussed (Aminov, 2020; Medvedeva et al., 2020). In reality, Russia suffers significant social and economic losses (Kozlova and Zubarev, 2020), since the majority of suicides affect the economically active population. The situation is also aggravated by the COVID-19 pandemic, which is accompanied by an increase in the suicide rate. If in previous (canonical) crises the population faced mainly economic problems, the current pandemic crisis has extremely exacerbated social and humanitarian problems caused, first of all, by the restriction of the usual way of life, which significantly affected the emotional state of the population (Medvedeva et al., 2020).

The standard factors analyzed in the literature on the dynamics and causes of suicide are gender, age, and social characteristics (Summer et al., 2019), alcohol and psychotropic drug use (Pavarin et al., 2021), the standard of living and well-being of the population (Alothman and Fogarty, 2020), ethnicity (Semenova, 2018), being in a long-term stressful state (Kasyanov et al., 2019), and economic crises (Razvodovskii, 2017). It is also emphasized that suicidal ideation is largely associated with debt, everyday and psychological stress, and loneliness (Lu et al., 2020).

This article focuses on assessing the impact of financial parameters, namely the volume of the debt burden on households. At the same time, the econometric assessment was carried out on the basis of data on the Russian regions, which has not been done before. Thus, the main objective of the study was to assess the impact of the population debt burden (the volume of individual loan debts) on the suicide rate in the regions of Russia.

FACTORS OF SUICIDE IN SCIENTIFIC RESEARCH

Research on the relationship between the suicide rate and individual debt is relevant for scientists from different countries. For example, the relationship between suicidal tendencies and the presence of credit obligations is considered in (Melzer et al., 2011). In a 2007 study, 4.3% of the people in the sample had thought about suicide in the past 12 months. Those who were in debt were twice as likely to think about suicide after taking into account socio-demographic, economic, social, and lifestyle factors. Suicidal thoughts were closely linked to difficulty in paying installments, as well as paying off loans, in addition to rent and mortgage arrears. The volume of financial obligations, as well as their sources and causes, are key correlates of suicidal thoughts.

Some authors have assessed the impact of indebtedness using content analysis or a systematic review of thematic publications. Such studies found that debtors suffered more suicidal ideation and depression than those without debt (Amit et al., 2020; Turunen and Hiilamo, 2014).

The assessment of the impact of debt obligations is carried out on data by individuals, regions or even countries. For example, (Goulas and Zervoyianni, 2016) use the system generalized method of moments to examine the impact of IMF lending on suicide mortality using data from 30 developing and transition countries that received non-concessional IMF loans during 1991–2008. The authors’ results support the hypothesis of a positive causal relationship between suicide mortality and participation in IMF programs, but this effect was only short-term.

Papers on the impact of the crisis on the mortality rate due to suicide, in which it is proved that periods of economic recession are accompanied by an increase in the suicide rate of the population, are common. The economic downturn in 2008 was followed by an increase in suicide rates in many parts of the world (Chang et al., 2013). The author notes that 4884 additional suicides were recorded in 2009 compared to the number expected based on previous trends in 2000–2007. The increase in suicide rates occurred mainly among men in 27 European and 18 American countries; suicide rates were 4.2 and 6.4% higher, respectively, in 2009 than expected. For women, there was no change in European countries, and in the Americas, the growth was less than for men (2.3%). The increase among men in Europe was highest in the 15–24 age group (11.7%), while in the Americas, men aged 45–64 showed the largest increase (5.2%). The rise in the suicide rate among men was related to rising unemployment.

Similar results were obtained in (Coope et al., 2015); however, in the sample from England, the authors did not find a relationship between gender and the suicide rate. In this study, crisis, employment, and financial difficulties were largely responsible for 13% of suicides.

Many researchers have emphasized that gender is an important variable in the study of suicide (male mortality from suicide is higher than female). A study (Pavarin et al., 2021) was aimed at assessing the risk of death by suicide in patients applying to a public drug treatment center for alcohol and drug use disorders. The authors found that the overall death rate from suicide was higher among persons with alcohol dependence and among men aged 45–64 years. The main
attention of the authors was directed to the increase in mortality in 2009–2012 (which coincides with the economic recession) and for the year of the first visit to a drug dispensary. Multivariate analysis showed a higher risk for single or divorced patients.

In addition to the above factors, some authors note that religion also has a significant impact on the suicide rate. The paper (Alothman and Fogarty, 2020) was aimed at studying gender differences in the global suicide rate depending on geographic location, religion, and other social factors. Data on suicide rate by gender were collated for 182 countries in 2015. Both the continent and predominant religion were found to be strongly associated with male-to-female ratio of suicide rates. The highest value of male-to-female ratio of suicide rates was observed in the Americas, and the lowest gender differentiation in suicide rates was observed in Africa and Asia. Predominantly Christian countries had the highest value of male-to-female ratio of suicide rates, while Hindu-dominated countries had the lowest one. The authors also conclude that in developed countries the suicide rate is higher than in developing ones.

A number of studies have noted that the impact of specific economic problems on the likelihood of suicidal behavior is often mediated by other individual-level factors, mainly psychological and physical, whose negative effect is exacerbated by the reduction in the availability of medical and social assistance during the economic crisis. The paper (Merzagora et al., 2016) was aimed at testing the dependence of the likelihood of suicide during an economic crisis on the relationship between a person’s employment status and the presence of psychological or physical illness. Using a binary logistic regression model, the author demonstrates that people suffering from severe physical or psychological illness are three times more likely to commit suicide during a crisis. Employment status (unemployed or not) did not affect the difference between suicide rates before and during the economic crisis.

It is also important to take into account social factors that influence the decision to commit suicide. Summer et al. (2019) analyzed the socioeconomic determinants of suicidal risk among the population of Monroe County, Florida. Univariate analysis and logistic regression assessed associations between self-reported socioeconomic status (SES) of the population (education, employment, income, housing), access to healthcare, quality of life, substance use, mental illness, and suicide risk. The uniqueness of this paper lies in the fact that the authors used such an indicator as housing instability (defined as the payment of more than 50% of family income for housing). The results of the study showed that renting a house resulted in a more than 3-fold increase in the risk of suicide among the population. Those at risk of suicide in Monroe County were more likely to be renters rather than homeowners. Thus, as a measure of SES, housing status had a greater effect on suicidal risk than did income, employment, or education.

Working hours also have an impact on the suicide rate, which is confirmed by (Korotkov et al., 2020), which revealed a U-shaped relationship between work hours and the suicide rate according to panel data for 2000–2017 using the example of Russian regions. In a previous paper (Korotkov and Zagainova, 2017), this hypothesis was confirmed by the example of 22 European countries. With low work hours the suicide rate is high; as the average work time increases, the frequency of suicides reaches its minimum when a certain optimum work time is reached; with a further increase in the average length of work hours, the suicide rate tends to increase. In addition, the authors calculated the optimal value of the average actual duration of the work week for employees. For men, this figure was 40.55 h per week. For women it was 35.69 h. In general, without gender separation, this figure was 37.99 h per week.

Thus, a theoretical review showed that suicidal behavior is influenced by the unemployment rate, gender, age, physical and psychological state of a person, economic recession, housing costs (mostly rent), and the average length of the work week. But at the same time, debt obligations play an important role. The use of a clear definition and indicators of the multidimensional domain of debt can contribute to the accuracy of measuring the debt burden.

STATISTICS OF SUICIDE IN THE REGIONS OF RUSSIA

In Russia as a whole, the distribution of mortality due to suicide has a serious preponderance towards the rural population (Fig. 1). As of 2020, the mortality rate from suicides in Russia was 18.2 deaths per 100000 population among the rural population and 9 among the urban population. This situation is typical for a number of countries, such as China (Li and Katikireddi, 2019). This is partly due to the fact that
the problems of unemployment, poverty, and excessive alcohol consumption are most acute in rural areas (Bogdan, 2011).

The spatial distribution of the suicide rate by federal districts is far from normal (Fig. 2). The largest number of suicides is in the Siberian (18 people per 100000 population) and the Far Eastern (17.5 people per 100000 population) federal districts. The lowest values of the indicator are in the North Caucasian (3 people per 100000 population) and Southern (6.5 people per 100000 population) federal districts. However, in every federal district, more suicides occur among rural residents.

Even greater heterogeneity (which is natural) is characterized by the distribution by the federal subjects of Russia. The suicide rate per 100 000 population by region varies from 0.1 (Chechen Republic) to 43.1 (Altai Republic) according to 2020 data. In addition to the Altai Republic, the Republic of Buryatia (33.9), the Tyva Republic (32.5), Kurgan oblast (29.3), Amur oblast (29) and the Udmurt Republic (28.9) have high suicide rates. It should be noted that regions with a high suicide rate in terms of GRP per capita are located closer to the end of the rating (Republic of Buryatia, Kurgan oblast, Altai and Tyva republics); Amur oblast and the Udmurt Republic are ranked 37th and 43rd, respectively.

The distribution of the suicide rate by gender in Russia has a significant preponderance towards male mortality. At the end of 2019, the mortality rate from suicide per 100 000 of the working-age population for men was 24.9, while for women it was 3.6.4

Fig. 2. The suicide rate per 100 000 population in Russia by federal districts, 2020. Compiled by the authors based on Unified Interdepartmental Statistical Information System (https://fedstat.ru/indicator/31270. Accessed 2021).

MATERIALS AND METHODS

To assess the impact of the debt burden on the suicide rate in the regions of Russia, the following regression model was used:

\[ \text{Suicide}_{it} = \alpha + \beta_1 \text{Suicide}_{i,t-1} + \beta_2 \text{Debt}_{it} + \beta_3 X_{it} + \epsilon_{i,t}, \]

where \( \text{Suicide}_{it} \) is the number of suicides in the \( i \)-th region (in general, among the rural population and among the urban population) in the period \( t \); \( \text{Suicide}_{i,t-1} \) is the number of suicides in the region in the past period; \( \text{Debt}_{it} \) is the volume of individual loan debts; \( X_{it} \) is the control variables (unemployment rate, logarithm of GRP per capita, divorce rate, number of mentally ill patients, average actual duration of the work week, number of alcoholics, crisis year); and \( \epsilon_{i,t} \) is the error.

A lagged dependent variable can correlate with fixed effects in the model, which can lead to “dynamic panel bias” (Nickell, 1981). This in turn increases the coefficient in front of the lagged dependent variable, giving it a predictive power that is actually attributable to the fixed effect of the region. To solve this problem and the potential problem of endogeneity of other variables, we consider it necessary to apply the system generalized method of moments (GMM). This approach was developed for panels with a small number of years of observation and a large number of observation objects, which is typical for the data set for Russian regions used in the paper. This method is often used in studies assessing the influence of various determinants on the suicide rate (Antonakakis and Collins, 2015; Goulos and Zervoyianni, 2016).

To assess the impact of loan obligations on the suicide rate, we used panel data for 2005–2018 in 80 federal subjects of Russia.5 Moscow, St. Petersburg and Sevastopol, the Republic of Crimea and the Chechen Republic were excluded from the sample. The dependent variable was the suicide rate per 100 000 population in the region (both rural and urban). The main explanatory variable is the volume of individual loan debts (RUB mln) to the economically active population (EAP) in the region (taking into account the interregional price index).

The control variables are: GRP per capita, the average actual duration of the work week, the number of persons with alcoholism, the number of persons with mental disorders, the unemployment rate, the divorce rate. All variables are presented in detail in Table 1.

Descriptive data statistics are presented in Table 2.

The following hypotheses have been proposed:

3 Mortality rate by main classes and individual causes of death per 100 000 population per year, Unified Interdepartmental Statistical Information System, 2021. https://fedstat.ru/indicator/31270 (accessed September 2021).

4 Mortality of the working-age population for January–December 2019, Federal Statistics Office, 2021. https://rossstat.gov.ru/folder/12781 (accessed September 2021).

5 In the article the borders of Russia are considered in accordance with the Constitution of the Russian Federation adopted by popular vote on December 12, 1993, with amendments approved during the All-Russian vote on July 1, 2020.
Table 1. Description of the control variables

| Variable                                      | Description                                                                 | Source                                                                 |
|-----------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------------|
| | **Dependent variable**                        |                                                                            |                                                                        |
| Suicides in the region, number                | Suicide rate per 100000 population in the region                            | Unified Interdepartmental Statistical Information System*               |
| Suicides in the region among the rural population, number | Suicide rate per 100000 population in the region among the rural population | Unified Interdepartmental Statistical Information System*               |
| Suicides in the region among the urban population, number | Suicide rate per 100000 population in the region among the urban population | Unified Interdepartmental Statistical Information System*               |
| | **Explanatory variables**                     |                                                                            |                                                                        |
| Volume of individual loan debts               | Volume of individual loan debts (RUB mln) to EAP in the region (taking into account the inter-regional price index) | Authors’ calculations based on Rosstat data**                         |
| GRP in base year prices                       | GRP in base year prices (taking into account the interregional price index) to the population size, RUB/person | Authors’ calculations based on Rosstat data***                         |
| Average actual duration of work week           | Average actual duration of the work week of the employed population         | Authors’ calculations based on Rosstat data****                        |
| Average actual duration of work week squared   | Average actual duration of the work week of the employed population squared  | Authors’ calculations based on Rosstat data****                        |
| Persons with alcoholism, number               | Morbidity with a diagnosis of alcoholism and alcoholic psychosis for the first time in life (persons per 100 000 population) | Unified Interdepartmental Statistical Information System*****           |
| Persons with mental disorders, number         | Morbidity with a diagnosis of a mental disorder and a behavioral disorder (persons per 100 000 population) | Unified Interdepartmental Statistical Information System*****           |
| Divorce rate                                  | Divorce rate per 1000 population                                            | Rosstat*******                                                        |
| Unemployment rate                             | Unemployment rate on average per year, %                                    | Rosstat*******                                                        |
| Crisis year                                   | Dummy variable (1 – 2008 and 2014; 0 – the rest)                            | Compiled by the authors                                               |

Compiled by the authors based on Rosstat and Unified Interdepartmental Statistical Information System data: *https://fedstat.ru/indicator/31270 (Accessed September 2021); **https://gks.ru/bgd/regl/b15_30/Main.htm (Accessed September 2021); ***https://rostat.gov.ru/folder/210/document/13204 (Accessed September 2021); ****https://gks.ru/bgd/regl/b15_30/Main.htm (Accessed September 2021); *****https://www.fedstat.ru/indicator/41703 (Accessed September 2021); ******https://fedstat.ru/indicator/41697 (Accessed September 2021); *******https://rostat.gov.ru/folder/210/document/13204 (Accessed September 2021); ********https://rosstat.gov.ru/folder/210/document/13204 (Accessed September 2021).

Table 2. Descriptive data statistics

| Variable                                      | Obs  | Mean  | Std. Dev. | Min  | Max  |
|-----------------------------------------------|------|-------|-----------|------|------|
| Suicides in the region, number                | 1119 | 26.449| 16.802    | 0    | 119.39|
| Suicides in the region among the rural population, number | 1120 | 40.311| 26.804    | 0    | 202.04|
| Suicides in the region among the urban population, number | 1119 | 20.538| 12.288    | 0    | 82.84 |
| Volume of individual loan debts               | 1120 | 98.891| 62.056    | 0.715| 359.622|
| GRP per capita                                | 1096 | 446645.81 | 623078.33 | 46523.385 | 6950415.5 |
| Average actual duration of work week           | 1120 | 37.901| 1.076     | 34.2 | 41.844|
| Unemployment rate                             | 1120 | 7.53  | 5.189     | 0    | 63.1  |
| Divorce rate                                  | 1120 | 4.589 | 1.063     | 0.5  | 8.3   |
| Persons with alcoholism, number               | 1162 | 115.499| 76.677    | 0    | 847.5 |
| Persons with mental disorders, number         | 1120 | 2824.951| 692.419   | 703.7| 6365.3 |

Compiled by the authors using Stata 14.
(1) an increase in the volume of individual loan debts leads to an increase in the suicide rate in the Russian regions;

(2) an increase in the consumption of alcoholic products, as well as the number of persons with mental disorders in the region, leads to an increase in the suicide rate;

(3) rising unemployment and the presence of a financial crisis lead to an increase in the suicide rate;

(4) the average length of work time has a U-shaped relationship with the suicide rate.

RESULTS OF THE ESTIMATION OF THE ECONOMETRIC MODEL

To estimate the impact of the volume of individual loan debts on the suicide rate in the Russian regions, using the system GMM, three models were built: for the population of the region as a whole, for the rural
population and for the urban population. A necessary condition for using this method is the absence of second order autocorrelation, which is observed in the estimated regressions. The quality of the instruments was tested using the Sargan test. Table 3 presents the final results with corrected robust errors.

Econometric analysis showed the following results. The lag of the dependent variable has a positive statistically significant effect on the suicide rate in the region, which implies that this indicator depends on the individual characteristics of the region.

The GRP per capita variable has a statistically significant positive (direct) effect on the suicide rate only among the rural population. In other words, an increase in economic activity in the country as a whole leads to an increase in the suicide rate among the rural population. This is partly due to the growing income inequality in rural areas and cities; due to this, GRP growth is most often ensured. However, it is important to emphasize that, in aggregate, the growth of GRP (at the national level, GNP) in Russia occurs primarily due to the extractive regions. However, in such leading regions, the suicide rate is low in general and among the rural population in particular. The problem of suicidal behavior is most acute in poor regions (often agricultural ones). When the GNP of the country as a whole increases the depressed regions do not feel much improvement. Thus, due to the growth of GNP, inequality among the leading and outsider regions increases, which may be the reason for the increase in the suicide rate among the rural population, especially economically disadvantaged regions. However, the extractive regions, although their GRP per capita is high (for example, in 2019, 5 federal subjects of Russia—the Yamalo-Nenets, Khanty-Mansi and Chukotka autonomous okrugs, Tyumen and Sakhalin oblasts—accounted for 25% of the total GRP), have their own problems as well. The implementation of major infrastructure and industrial projects is changing the landscape of the area, accompanied by environmental problems, significantly changing the familiar flora and fauna of the surrounding territories, which in turn has a negative impact on the life of the rural population.

The unemployment rate has a positive effect in all three models: the sign of the coefficient of the variable indicates that an increase in unemployment leads to an increase in the suicide rate. Lack of work, especially long-term work, not only reduces the level of material well-being, but also significantly limits the possibilities of social and creative realization, which often leads to alcohol abuse, which has long been recognized as one of the suicide triggers.

The increase in the number of persons with mental disorders leads to an increase in the suicide rate both in the region as a whole and among the urban population. This result can be explained by the fact that in rural areas the number of persons with mental disorders is often lower than in urban areas. Modern studies prove that the number of persons with mental disorders is much higher in cities, including due to high levels of air pollution (Khan et al., 2019). Therefore, it is quite logical that the number of persons with mental disorders does not have a statistically significant effect on the suicide rate in rural areas, even due to the lack of an appropriate level of mental healthcare there. This statement is indirectly confirmed by (Jiang et al., 2021), which proves that with a decrease in air pollution (an increase in the area of parkland) in a city, the mortality rate due to suicide decreases.

Variables for the actual duration of the work week confirmed a U-shaped relationship between suicide rates and work hours. With an increase in the length of work hours, the suicide rate decreases; however, having reached the optimal level of work hours, the suicide rate begins to increase (due to an excessive workload). It should be noted that for model 2 this variable turned out to be significant only at the 5% level, while for models 1 and 3 it was significant at the 1% level.

The divorce rate has a positive statistically significant effect in all three models. As the divorce rate rises, the suicide rate rises.

The increase in the number of persons with alcoholism has a positive statistically significant impact on the suicide rate in the regions. For model 2, the value of the coefficient is higher than for models 1 and 3. That is, with an increase in the number of persons with alcoholism, the suicide rate grows stronger among rural residents. This is probably due to the fact that the problem of alcoholism is most acute in rural areas.

During periods of crisis, as expected, the suicide rate increases.

Finally, the main tested variable, the volume of individual loan debts, turned out to be statistically significant, but with the opposite sign relative to our assumptions. This variable has a negative effect on the suicide rate in all three models. In our opinion, this can be explained as follows. First, the hypothesis was proposed on the basis of the results of studies analyzing mainly economically developed countries, where the level of the population debt burden is quite high, and in Russia it is much lower. Secondly, the problem is significantly influenced by social institutions: religion, family, as well as traditions, and moral norms. Financial support from relatives and friends, which is typical for Russians, significantly reduces suicidal stress. As well, in Russian society it is not customary to discriminate against a person if they are a debtor, as, for example, in Japan, where, due to unpaid debt, a person may lose the ability to get a well-paid job in the future. Finally, debt collection legislation in Russia is more lenient than in other countries. For example, in mortgage arrears, litigation can be lengthy due to appeals to higher courts and adjournments. In addition, there are debt restructuring mechanisms, as well...
as measures to support certain groups of the population.

CONCLUSIONS

The study of the causes of suicide remains relevant. Using the system GMM, we have proved based on the example of Russian regions (both in general and in the context of rural and urban population) that suicide is influenced by various socioeconomic factors, including unemployment, GRP per capita, the divorce rate, the number of persons with mental disorders, the average actual duration of the work week, the number of persons with alcoholism, and the situation of financial and economic crises. However, the greatest attention was paid to the analysis of the impact of the financial component on households, namely the volume of credit debt.

As a result of the study, a negative effect of the volume of individual debt on the suicide rate in the regions of Russia was revealed, which contradicts the results of similar studies conducted for developed economies. Thus, our main hypothesis about the positive effect of the volume of individual loan debts on the suicide rate was not confirmed. We assume that for a more complete assessment of the impact of the debt burden on the suicide rate it is worth using the variable of overdue individual debt. However, such data in the regional context are available for a shorter period than in the study. This will be the objective of future research on this topic.

At the same time, the analysis confirmed certain results obtained earlier in domestic and foreign studies, including a U-shaped relationship between work hours and the suicide rate and a direct relationship between an increase in the suicide rate and an increase in divorce rates, the number of persons with mental disorders, the situation of a general economic crisis, as well as unemployment, the consumption of alcoholic products. The latter manifestation is characteristic, first of all, of the population of rural areas, both in Russia and abroad.

The results we obtained make a certain new contribution to the scientific discussion on the problem under study. They indicate that not all countries see a positive effect of household debt on suicide rates, as, for example, in (Coope et al., 2015). No such influence was found in the data for Russia, which proves the importance of taking cross-country differences into account.

Russia has a long history of the formation of social institutions. Family and traditional values remain important components of Russian society, which often makes it possible to solve financial problems as well. When comparing these results with earlier ones, it can be noted that social and legal institutions in Russia work differently than in many countries and the credit burden does not contribute to the growth of suicidal behavior of citizens. Nevertheless, the situation needs to be monitored and periodically assessed, both by social groups and by regions.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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