

DOI <https://doi.org/10.30525/2592-8813-2024-spec-13>

## **ECONOMIC RESISTANCE OF THE POPULATION – PROBLEMS OF MEASUREMENT, MONITORING AND FORECASTING**

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**Abstract.** Underestimating the consequences of state actions in terms of potential public reactions always leads to negative outcomes and introduces additional risks to the life – rhythm of a country, continents, and at times, even the entire world.

Experts and practitioners assert that numerous errors and miscalculations by the state are, in most cases, associated with a lack of understanding of public sentiments and expectations.

A solution can be found in a model for calculating behavioral factors of the population, representative of different social classes. At an expert level, the primary observable forms of economic resistance by the populace, inherent to specific regions or the entire nation, are determined. The calculation of an integrated resistance indicator and its monitoring is undertaken.

**Key words:** economic resistance, monitoring and forecasting, form of protest, integral index of resistance (R-index), forecast.

**Introduction.** A person living in the real economic world has his opponents. “Natural enemies”, if we use analogies with the animal world. These are other participants in economic life, whose interests do not coincide with his own, and most often directly contradict them

These enemies are many and strong. First, enemies can be other people: robbers, neighbors, competitors, etc. They encroach on our resources (e.g., disputing a piece of land we consider ours); robbers encroach on our goods; competitors prevent us from achieving our individual goals. Even people close to us sometimes get in our way, too.

In the second place, everyone else. All the enemies of the individual and/or household cannot be counted.

In these eternal conflicts there are always at least two major participants: the controlling object (central government, prime minister, president, Politburo, emperor, dictator, etc.) and the thinking object that is being controlled.

But in addition, big capital constantly defends its interests; often the mafia (sometimes under the guise of local self-government, supposedly independent of the center of power) pursues independent policy. Sometimes the army, sometimes the police, sometimes the secret police, and then there are even more participants with their own economic interests.

In general, there are enemies all around.

The enemies of the average person and household use a variety of means, available to them in this war.

Among them (if we do not even take into account purely forceful methods such as searches, arrests, criminal cases, confiscations, extrajudicial seizures, nationalizations and requisitions) there are very diverse measures of influence and coercion.

But, there is the main (natural) enemy, which encroaches not only on our resources. It encroaches on the most sacred thing – our freedom of thought and our way of life.

This main enemy is the state. It replaces our goals with its own, sometimes neutral for us, rarely friendly, more often alien, even more often hostile.

At least, it tries to do so.

**Basic theoretical and practical provision.** Let us repeat some words of thinkers of the past and present:

1. The population perceives the state as occupying power (A. Herzen).

2. There are two main types of power: a visiting gangster and a settled Bandit (M. Olson).

The state wages a punitive war against us, and we wage a guerrilla war against it – guerrilla warfare. (V. Shenderovich)

3. The state by various means, but with the help of more or less elaborate propaganda tries to impose on us the idea of its own sanctity, the legitimacy (or even the divine election) of its rulers, the priority of its (the state and/or the ruler's) interests over our selfish (petty and selfish) ones.

Sometimes this invasion takes place under the cover of national and/or religious traditions, sometimes under the guise of state security requirements, and sometimes simply for the purpose of intimidation.

The state, with the help of all means of influence available to it, claims that all it does is to think and worry about us day and night, and convinces us that we also love it, are proud of it, share its goals and are ready to sacrifice ourselves solely in its (the state's) interests.

It is wrong. Scientists and experts-practitioners have no doubt that numerous serious errors and miscalculations of governments in a large number of cases are associated with these misconceptions and lack of understanding of the moods and expectations of the population. Hence the unreliability of forecasts of the consequences of the authorities' actions.

This unpredictability of consequences arises constantly when behavioral factors that distort the results of decisions made by the state are not taken into account. There is always some mysterious “delta”, i.e. deviation of real consequences from the results planned by the authorities.

In the real practice of governance, the authorities do not listen to the opinion of the people, any talks on this topic, as a rule, are reduced to little constructive and very unspecific talks about the need to take into account the “human factor”.

In general, regimes without strong feedback do not live long, nobody likes them, nobody protects them in critical periods, and they collapse from relatively insignificant (both external and internal) shocks or combinations of unfavorable circumstances. Here it is appropriate to recall the well-known cases of observed sudden collapses of non-democratic regimes, and in very different conditions and forms.

For example, the mass overthrow of monarchies revered by the people a hundred years ago.

If we consider the example of the Russian Empire among other perished empires of Europe (the collapse of the German and Austro-Hungarian empires, the collapse of the British Empire), its demise was preceded by an unprecedented peak of people's love for the adored monarchy in 1913 (the 300th anniversary of the dynasty), accompanied by mass prayers for the health of the imperial family and all other available manifestations of national love, rallying all sectors of society, including opposition-minded. Immediately after this tide of love in 1914 and 1915, the country was hit by a ninth wave of unimaginable patriotism and other manifestations of national unity, superiority and imperial pride. This heat somewhat subsided by 1916, and in 1917 everything was over...

But here is a more recent and no less large-scale example – the collapse of the USSR. When it came to aggravation, it turned out that nobody: the army, the party apparatus, the secret police, the punitive apparatus, local authorities and organizations, and most importantly – the peoples of the Union – were going to defend the USSR (their beloved Motherland). No one came forward in defense, not a single word. On the contrary, the rise of public spirit, new moods, new expectations...

It should be noted that such collapses are most often sudden (by historical standards), and the factors that caused them are most often poorly understood even in hindsight. Maybe they (reasons) are irrational at all. It is impossible to predict them. But still we will try.

Resistance of the weak. Let us state: the importance of analyzing and forecasting the behavior of the population in response to the actions of the authorities in real political and economic practice is beyond doubt.

It is also obvious that it is the underestimation of “step-by-step” reactions of the population in the “step-by-step” economic policy of the authorities that constitutes the main reason for the failure of most reforms with simultaneous dissatisfaction and disappointment of the population in many countries.

It is like in chess: the most brilliant plan will not be realized if it does not take into account the reaction of the partner. That is why it is dangerous for all states to have self-righteous leaders who try to rule and dispose of people as uncomplaining objects, and do not intend to take into account their reactions.

If a central authority believes itself to be the only, eternal, sinless and omnipotent one, more often than not it is doomed.

Let us turn to the theory. The power, which does not take into account the reaction of the people or neglects it in the course of realization of its unilateral economic policy, applies various measures of influence and coercion. James Scott's classification is well known, who divides these measures into material, statutory and ideological [1]. He also owns a remarkable statement characterizing the reaction of the population to the coercive measures of their governments: “I obey, but I do not obey”. This already says a lot. But let's take it all in order.

So, material measures of economic coercion: legislative and regulatory restrictions, manipulation of resources, oppression of freedoms in general and entrepreneurship in particular. Underpayments, delayed payments, wages, aggressive taxes, extortion systems, etc.

Statutory includes public humiliation of the non-state economy – “speculators”, “thieves”. A pensioner is a “parasite”, a student a “slacker”. “Intellectual”-abusive. The word “commercial” is a rude swear word.

A house burned down – it means that a commercial firm illegally stored gasoline in the basement. Depositors cheated – commercial bank is to blame. Low quality of education – commercial university. The same is true of the opposition – corrupt, vain, hungry for power.

Typical techniques: delimitation of platforms, the policy of “bread and spectacle”, attempts to form an oprichnina.

Ideological measures: patriotism is the exclusive and basic virtue of the government; all those who resist the policies of the current government are enemies: the predecessors of the current regime are enemies, the supporters of the predecessors are also enemies. The opposition on the left is also enemies. And on the right... And in general, any groups of the population can be declared enemies by the authorities.

By the way, the list of current enemies can be expanded by adding to the admirers of the past (e.g., Communists) active and convinced ardent admirers of the beautiful future (e.g., Euro-optimists).

Seriously striving for a radiant future is not a good thing either...

It is not by chance that we use the expression “current” here, in the sense of “acting at a given moment of time”. At another moment of time everything may change. Current power, current opposition, current interests, enemies, etc. It is at the current stage that current measures of influence are applied to current enemies.

But here is what is important: in fact, the people have their own opinion about all these measures; they treat them indifferently, different groups of population – differently, but all without any reverence.

Let us consider the reactions of the population one by one.

How the population responds to the material impacts of the authorities:

1. Explicit and hidden sabotage, shadow activities, evasion of payments and other obligations, damage to property, stealing... In general, there is an obvious dialectical thesis: the state does not respect the property of the people, their property rights – the people reciprocate.

2. On statutory measures of influence: stories about stupidity of bosses, senselessness of their orders, stories about criminal past of current leaders and current abuses...

3. Ideological: anecdotes, counter-propaganda, protest votes, demonstrations, emigration.

Since the advent of the Internet, the capabilities of the public have changed dramatically. Whereas earlier theory spoke of “hidden” messages from society, explicit ones have emerged. New Internet-related opportunities have been added to the population's forms of protest. And in social networks, the most real wars are breaking out. “Bots”, “fakes”, “hacker attacks”, “viruses”, “interference in elections”, flash mobs... Here the picture for government officials is even more frightening.

Dispersing demonstrators with batons is becoming obsolete. Although some people try to combine weapons from different eras... Further, the classics of modern economics distinguish the main irrational factors affecting the behavior of the population and macroeconomic indicators of the country as a whole: trust, fairness, stories, abuses, money illusions [2]. In many countries these factors are not considered at all, their changes are not studied, their impact on the economy is not forecasted.

Meanwhile, today the general information background is as follows: trust is undermined, justice is vilified, illusions are debunked, abuses are on everyone's lips, etc. It is against this background that the economic resistance of the population (and business, by the way) emerges and develops.

The nature of economic resistance is extremely complex and interesting, it has a clearly expressed dual character, it is caused by both “external” and “internal” reasons.

The first type of resistance of the population is actually a direct response to sharp and or ill-considered actions of the authorities. Using the terminology of financial markets, we can say that it is a reaction to news.

Classic: a bounty in India for the head of a killed snake caused the emergence of clandestine cobra farms. Compensation during bird flu led to the killing of many innocent ducks, chickens and turkeys.

More recent examples: the monetization of benefits in Russia caused unexpected backlash in the form of mass protests by pensioners, veterans, and the disabled. Issuance of “Yulina thousand” in Ukraine caused reactions of the population in the form of buying up currency, Raising the single tax caused entrepreneurs to go into the shadows, exit from businesses, etc. [3]. These things are quite obvious for us.

But there is also a little-explored internal logic and inertia of people's behavior. These are traditions, historical habits, ingrained illusions, age-old misconceptions, and much more. It is important that these deep processes are not seriously affected by any actions of the authorities.

Alcoholic moonshine, communal outlook in Russia, individual (closed-hutorian) behavior in Ukraine, buying gold during the wedding season in India, irrational love for the dollar among the population of developing countries... These fundamental features of mass behavior of the population are not affected by the decisions of the authorities at all.

So, the interaction of endogenous and exogenous factors that induce economic resistance is not clear and has not been studied. It is only clear that there can be scenarios of economic policy, when external and internal factors generating economic resistance compensate each other (people are stroked on the wool).

But other scenarios are also possible, when the unjustified policy of the authorities intensifies manifestations of popular discontent. Then the power collapses, or becomes a tyranny (and thus collapses somewhat later).

In this report, we will touch upon rather obvious reactions of various population groups, which are amenable to relatively simple measurements. For example, for today's post-Soviet countries, we propose the following realistically observable forms of economic resistance (Tables 1).

Table 1

**The Forms of Economic Resistance**

<b>Form of protest</b>	<b>Groups of protesters</b>
Increase in the volume of currency purchase	The population of the country
Reduction of bank deposits volume in national currency	Mass Affluent class
Increase in bank deposits volume in foreign currency	Mass Affluent class
Increase in non-bank savings	Mass Affluent class, Pensioners
Deterioration of attitude to labor	Workers and Employees
Absenteeism, tardiness	Workers, Employees
Sabotage, damage of equipment	Workers, Employees
Stockpiling of foodstuffs	Mass Affluent class, Pensioners
Labor emigration	Intellectuals, low-paid employees
Closure of enterprises	SME (Small Medium Enterprises), Self – Employed
Going into the shadow	Mass Affluent class, SME (Small Medium Enterprises), Self – Employed
Capital outflow	SME, Large Corporate
Tax optimization	All participants
Evasion from mobilization	The population of the country
Protest actions :pot marches, road closures	?

This list can and should be changed, supplemented, reduced – only some part of it may be essential, sometimes only one component may be decisive (then we will talk about a one-parameter model of resistance). It is also possible (and sometimes necessary) to analyze in more depth, including the territorial component of economic resistance.

A detailed analysis of the behavior of special large groups: the military, special services, police, civil servants, self-employed, pensioners, etc. is probably required. In addition, the behavior of the population of certain territories (for example, autonomies or special zones) may be of special interest. However, the qualitative picture of the main forms of economic resistance is clear.

We can treat the above forms of protest as autonomous factors describing the process of economic resistance.

Let  $r_i(t)$  - the value of the  $i$ -th autonomous resistance factor at time  $t$ , then its change  $\Delta_i$  over the period  $(t_0; t_1)$  can be represented as a normalized difference:

$$\Delta_i = (r_i(t_1) - r_i(t_0)) / r_i(t_0).$$

Then the integral index of resistance (Resistance) as a function of time can be represented in the traditional additive form:

$$R(t) = \sum_{i=1-n} k_i \times \Delta_i,$$

$i=1-n$

Here the multipliers  $k_i$  play the role of weighting coefficients of individual autonomous resistance indices. The system of these weights should most likely reflect the contribution of each of the selected indicators to the inhibition of the national economy and in practice requires in-depth research.

Let us note the possibility of another approach: weighting coefficients can be used by the researcher as indicators of “danger to the state”, for example, in terms of the probability of social storms, riots and shocks caused by their growth.

It is necessary to study the accumulated experience: which of the authorities' decisions in the field of economy cause the loudest and most formidable protests of the population.



If a more careful study is necessary, we should consider the same problem in a kind of functional-spatial aspect, i.e. by introducing the functions  $R_{mn}(t)$  reflecting the economic resistance of the  $m$ -th category of the population living on the territory  $n$  and thus investigate the matrix:

$$\| \| R_{mn} \| \| .$$

In fact, the reality is even more complicated, since a truly meaningful analysis involves the study of a 3-dimensional matrix

$$\| \| r_{mni} \| \| ,$$

element  $r_{mni}$  of which describes the response of the  $i$ -th type of the  $m$ -th population living in territory  $n$ .

Moreover, if we take into account that the indicators  $r_{mni}$  are functions of time (and not continuous), we can get an idea of the complexity of the problem under consideration, i.e. the problem of practical accounting of behavioral reactions of the population to the tactics and strategy of the government's economic policy.

Monitoring. The question of the dynamics and graph of the function  $R(T)$ , as well as the methods of its study, remains open and unexplored. We have to find out which features of the graph contain signs of resistance fading in the future, and which ones carry the threat of social explosions, protests, revolutions, etc. Within the framework of this publication, we will only note the obvious similarity of this task with the studies of financial markets, where the disputes between the supporters of technical and fundamental analysis have not revealed the winners.

Let us note the possibility of using fundamentally simpler forms of express resistance measurements at the macro level, which do not require special statistical studies and detailed calculations. Let us assign one of five possible values to each of the selected types of economic resistance:

$\delta i = +0.5$ , if in the period under consideration ( $t_0, t_1$ ) the resistance by indicator  $i$  has slightly increased;

$\delta i = +1$ , if in the period under consideration ( $t_0, t_1$ ) the resistance for indicator  $i$  has increased strongly;

$\delta i = 0$ , if during the same period the resistance by indicator  $i$  did not change;

$\delta i = -0.5$ , if the resistance slightly weakened;

$\delta i = -1$ , if the resistance has weakened significantly.

In this formulation, the integral index of economic resistance will have the form:

$$\delta(t) = \sum_{i=1}^n \delta i,$$

$i=1 - n$

and the R-index (resistance index) will be written in the form:

$$R(t) = \delta(t) / n.$$

In this case, the values of the R-index will fluctuate in the range  $[-1; +1]$ .

It is necessary to clarify the problem statement and define what the expressions “strongly” weakened, “somewhat” weakened, etc. mean. At least two methods of specification can be applied here. Under the first one, we identify some threshold value

$q$  and claim that the resistance index of the  $i$ -th type has “strongly” increased or decreased if the value of the  $i$ -th factor has changed by more than  $q$  during the period, i.e.

$$|\delta i| = 1,$$

if the inequality is satisfied:

$$|\Delta i| \geq q.$$

For example, before starting the calculations, we assume that if the change in an indicator for a certain period exceeded 10%, it is considered “strongly” changed.

The second method is as follows: an indicator is considered “strongly” changed if its increment (positive or negative) for a period exceeds its increment for the previous period.

Forecasting. The dynamics of the R-index will be reflected by the graph of a broken line between levels -1 and +1, which is a very useful tool for practical tracking of the dynamics of protest moods and their short-term forecast.

The rapid assessment and primary interpretation of the results obtained by this method is as follows. The values of R-index for the period under study close to minus one mean that the population has come and or is coming to adapt to the economic policy of the authorities; positive values – the presence of economic resistance; values close to one – threatening conditions. For more in-depth conclusions, more in-depth studies on calibrating the scale of R-index values will be required. However, we note that the alarm signal for any authority is the crossing of the zero line by the R-index from bottom to top.

If the application of weighting coefficients  $k_i$  seems necessary to the researcher in this case as well, the formula will take a familiar form:

$$R(t) = \sum_{i=1}^n k_i \times \delta_i,$$

$i=1 - n$ .

An attentive and inquisitive researcher, based on the information available on the Internet, will be able to construct R-index graphs independently.

For example, with regard to Ukraine, our colleagues and collaborators noted the growth of the national R-index in 2012–2014, which may well have been a harbinger of future revolutionary upheavals.

Let us note the purely instrumental effect of the proposed index. Each realized and even assumed action of the authorities can be assessed in terms of growth or fall of the R-index, which in this formulation can be successfully used as a basic simulation express model of reactions and economic protests of the population.

Finally, a completely different (short-term operational) formulation of the same problem is possible. If there are difficulties (and they arise) with obtaining reliable and sufficiently regular information about changes in individual reactions of the population, it remains possible to carry out the forecast of economic resistance in the following way.

When determining the values of autonomous resistance factors, it is possible to use expectations of forthcoming changes rather than their changes already achieved during the time period under study. This approach is a typical expert study in content; in addition, the values of expectations can be obtained through sociological surveys or specialized network analyses. That is, we will assign a value of 0 to the  $i$  – component of the R-index if population surveys or expert opinions or network analysis show that the expected resistance to this factor will not change in the near future. A value of 0.5 is assigned if expectations on this factor are moderately negative; a value of 1.0 is assigned if active reactions of this type are to be expected.

The basic formula of the index remains the same, but the meaning of the obtained results is different: here we are actually talking about forecasts for a short period and factor-by-factor modeling of expected reactions of the population (or groups of the population) to news and even rumors about certain actions of the authorities or forthcoming economic changes. The natural lifetime of such monitoring and forecasting is the time before the appearance of new news (a week, a month).

**Conclusions.** The most important issue of behavioral synthesis has been left outside the scope of this publication. By analogy with natural sciences, we can formulate direct and inverse tasks in the research of economic resistance. Direct task: we know the actions of the authorities and external

conditions – model the reactions of the population. Inverse problem: the desired reactions of the population and external conditions are known – to determine possible actions of the authorities ensuring favorable calm of the people.

In the given formulations R-index is a tracking and even anticipating indicator of protest reactions of the population, which in our opinion is important for the economic theory and practice of predicting protests, rebellions and revolutions.

The authors consider this area open for further development of models for predicting mass resistance of the population, their calibration, detailing and concretization.

The authors take this opportunity to thank the Board of Trustees of the Institute of Political Philosophy.

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