

Developing the Methods of Estimation and Forecasting the Arab Spring

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Abstract *An assessment of the current state, and a forecast, of the social instability in the Arab world – re: in the Arab Spring processes – is an important, relevant and daunting task. Difficulties are related to the variety of factors affecting social instability, to individual peculiarities of historical, cultural, socioeconomic and political processes in the region. In this article we have identified a set of factors that allow for the evaluation of the current state of social and political destabilisation in the countries of the Arab Spring. These factors act in long- and medium-term and establish grounds for discontent with the existing situation among the wider population and elites. The most significant factors are identified as the: 1. in/ability of the government to reduce social tensions, 2. presence/absence of “immunity” to internal conflicts and, 3. internal contradictions level (especially the intra-elite conflict). Such indicators as structural and demographical characteristics and the external influences appear to be less significant as predictors of the actual level of socio-political destabilisation within particular Arab Spring countries in 2011. However, demographic structural factors turn out to be very important if we consider fundamental factors of the Arab Spring in general. It should be also mentioned that the significance of external influence indicators, increases while accounting for the death toll that resulted from destabilisation in respective countries.*

Keywords: Arab Spring, social instability, Middle East, demographics, forecasting

Introduction

This research aspires to contribute to the development of methodological tools for the assessment and forecasting levels of socio-political instability in the Arab world, as well as for the assessment of the effectiveness of measures to reduce social tensions in the Arab countries. The specific tasks of the research are: first to provide a clear selection of the main factors of socio-political destabilisation; second, present a quantitative assessment of the importance of such destabilisation factors; finally, to develop a specialised index to assess the current state and forecast social instability levels in the Arab world.

This is mainly an exploratory analysis.¹ The purposes of exploratory analyses are: the maximum “penetration” into the data, identification of major structures, choice of the most important variables, detection of deviations, verification of main hypotheses and the development of initial models.² In this regard, it is important to note that the preliminary study of data is only the first step in the process of analysis, since the results should be confirmed in other samples or independent sets of data.

Background to the Research and Problem

We commence our assessment of the methodological issues with an analysis of the research results produced by the Political Instability Task Force—a research project created in 1994 with the support of the US government. The main aim of its work was to create a database of key internal conflicts that could have led to state failure, and analysis of political instability indicators from 1955 to 2005. Over time, the working group began to study not only the cases of failed states, but also ethnic conflicts, the facts of genocide, as well as radical regime changes and issues of democratic transition modelling. The explanatory variables used in the project include the following: economic indicators (GDP, inflation, foreign trade, etc., as well as indicators related to the environment), social and demographic (population growth, mortality, etc) as well as political (ethnic discrimination, the level of democracy, etc) variables. Thus, one of the experts’ conclusions is the assertion that partial democracies with low involvement in international trade and high infant mortality are most prone to socio-political upheavals and regime change (re: Goldstone 2001). In this framework, a few interesting findings were observed and some predictive models (in particular, the Global Model for Forecasting Political Instability by

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Jack Goldstone) developed.

Goldstone and a group of his colleagues, analysing the emergence of political instability in various countries around the world from 1955 to 2003 have developed a model for forecasting political instability which, according to the authors, makes it possible to predict destabilisation with two years lead time and 80% accuracy.³ Goldstone notes that previous quantitative approaches to the study of civil wars causes – notably Fearon, Laitin, Regan, Norton (et al) – have focused mainly on the economic resources available for government and insurgents: in particular, Collier and Hoeffer stressed that the insurgents are able to provide themselves with necessary resources by looting; Fearon and Laitin considered the ability of states to finance an army in comparison with the possibility of insurgents to take an advantage of much of the population, rough terrain and the situation of political instability. Some researchers (Ross, Dunning, etc) focused on the state control of natural resources. Recent trends in the study of revolutions have moved in a different direction adopting however, a state-centric approach that focuses on the political structures and elite relationships as the most important factors in determining the time and place of the revolution.

Goldstone's model includes four independent variables: the type of regime that defines the models present in the process of executive recruitment and competitiveness of participation in the political life of the country; infant mortality which is logged and normalised to the global average in the year of observation; conflict-ridden neighbourhood, an indicator showing whether there are cases of four or more bordering states with major armed civil or ethnic conflict, as well as a binary measure of State-Led Discrimination. The model has been developed by comparing the cases of instability onset to a matched sample of control cases, and by testing the ability of variables to distinguish, in binary fashion, between the country-years when instability was imminent, from those followed by a period of stability.

This model uses multiple variables and a simple specification. The model shows accurate results in forecasting violent civil wars and non-violent democratic changes as well, suggesting the presence of common factors in both types of changes. While the type of regime is as a rule measured using linear or binary indicators of democracy/autocracy derived from the 21-point Polity scale, the model uses a nonlinear measure of regime type with five categories based on the components

of state structure. At that, when the model takes into account characteristics of political regime, the majority of other economic, political, social or cultural characteristics of under study countries in represented sample did not have a significant impact on the results of research. Moreover, the replacement of binary and categorical measurements by their continuous counterparts has not led to an increase in accuracy of the model. Such a method of measuring the type of regime acts as the most powerful predictor of instability onsets. In view of this it could be concluded that the political institutions, but not economic conditions, demographics, and geography are the most important predictors of political instability.

Russian economist and historian, Sergey Tsirel, developed a simple mathematical model of the transformation of a revolutionary situation into a revolution, showing the threshold nature of such transition (see figure 1).⁴ Noting that a revolutionary situation is an unstable condition in which a small impetus can bring no influence on the situation, or can cause an avalanche, Tsirel concludes that such signs and conditions of revolutionary situation as the delegitimisation of power, the availability of alternatives to the current regime, weakness of government or the presence of ‘combustible material’ (i.e., people who are ready to go into the streets and take part in revolutionary activities), are not able yet to give a more or less accurate picture of where and when a revolutionary situation can turn into a revolution, or at least into mass protests.

Figure 1 Tsirel’s Model of Transformation of a Revolutionary Situation into a Revolution

Graphics disabled

$f(N)$ denotes the density of those who are ready to protest (it is calculated taking into consideration numbers of those who have already ‘gone out to *al-Maydān*’ before them), where N is the number of those who have already ‘gone out to *al-Maydān*’, whereas $F(N)$ designates the distribution function. Thus, $F(N)$ is a total number of people who are ready to protest when the number of those who are already actually engaged in the protest activities is in the range between 0 $\leq N$. In other words, $f(N)$ is the number of people with a certain readiness to protest, whereas $F(N)$ is the total number of people with such a readiness

to protest or a higher degree of readiness—up to the most ‘straightforward insurgents.’ If we use the notation employed in mathematics we arrive at the following expression $F(N) = \int_0^N f(n) dn$. With the given $f(N)$ the number of protesters can be calculated with the following equation: $F(N)=N$ (if $F(N)$ is more than N , then new protesters will join them, whereas the opposite within the present model is impossible as it would imply that the protest participants are not ready to protest).

Thus, the development of a revolutionary situation in the model can be represented as a rise in the number of ‘straightforward insurgents’, reducing the threshold of fear to ‘go into the streets’ of the main mass of people, as well as a reduction in the number of people who are not ready for a protest ($A \rightarrow B \rightarrow C$).

Tsirel’s model illustrates a set of several important empirical circumstances, in particular, a significant increase of revolutionary mood in the transition from A to B does not lead to an evident increase in the number of protesters (N), but further growth of people’s discontent leads to an explosive increase in the number of insurgents.

On the basis of the theory described above, a set of variables describing the intensity of revolutionary actions in the Arab world for analysing the Arab Spring events has been offered.⁵ Thus, the legitimacy of political regime acts as a main variable (the correlation coefficient between the rank of political regime in the degree of legitimacy and scope of revolutionary actions is 0.88). Important factors are also the proportion of unemployed young people with higher education, the youth unemployment rate, the percentage of discriminated national and religious groups, as well as the intensity of riots and wars that have taken place in recent decades and contributed to ‘burnout of revolutionary combustible material.’ The resulting multiple regression with four independent variables explains 93.5% of intensity dispersion in the revolutionary events in the Arab world, which could be a good confirmation of the developed theory. The scale of actual destabilisation in the Arab Spring countries based on the scale we have developed⁶ (Table 1) has been chosen as a dependent variable:

Table 1 Index of the Scale of Actual Destabilization during the Arab Spring

Content of Events	Scale of Events (in scores)
Separate protests	I

Several noticeable anti-government protests	2
Numerous anti-government protests	3
Large-scale and prolonged anti-government protests with some violent confrontations	4
Large anti-government protests with bloody clashes which shook the government (rebel forces are comparable to government forces)	5
Civil war (approximate parity of forces)	6
Successful revolution (rebels' victory)	7

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From the data obtained from the equation of multiple regression (Table 2), Tsirel marked out four most significant factors in the destabilisation of social and political regime: type of political system ($p = 1 \times 10^{-7}$); a share of unprivileged groups and tribal structures ($p=0,001$); youth unemployment and a share of people with higher education among them ($p=0,0015$); combustible material 'burnout' ($p=0,005$).

Table 2 Tsirel's Multiple Regression Model with the Scale of Actual Destabilisation of the Arab Spring Countries as a Dependent Variable

Model	Non-Stan-dardised Coefficients		<i>t</i>	Statisti-cal signifi-cance (<i>p</i>)
	<i>B</i>	Statisti-cal error		
(Constant)	-1.0	0.35	-2.81	0.015
Type of political system	1.46	0.13	11.4	1×10^{-7}
Share of unprivileged groups & tribalist structure	0.69	0.16	4.40	0.001
Demographic structural component characterizing the rate of unemployment among the youth and proportion of people with university degrees among them	1.0	0.25	4.07	0.0015
Unrests and wars in recent years ('burn-out')	-0.52	0.16	-3.38	0.005
Dependent variable: scale of actual destabilization of the Arab Spring countries				

On the basis of indicators of social and political instability identified by us (see section: Analysis of the instability factors and their relative significance) we performed a multiple regression analysis (Table 3) whose results turned out to be rather similar to the ones obtained by Tsirel.

Table 3 Multiple Regression Model with the Scale of Actual Destabilisation of the Arab Spring Countries as a Dependent Variable

Model	Non-standardised Coefficients		Standardised coefficients	<i>t</i>	Statistical significance (<i>p</i>)
	B	Statistical error	β		
(Constant)	-3.977	1.448		-2.747	0.017
Contradictions indicator (I_1)	0.765	0.322	0.391	2.375	0.034
Indicator of 'combustible material' presence (I_2)	0.330	0.349	0.145	0.946	0.362
Indicator of political order sustainability (I_3)	0.475	0.225	0.30	2.112	0.055
Indicator of 'immunity' presence (I_4)	2.734	0.574	0.545	4.766	0.0004
External influence (I_5)	1.552	1.206	0.155	1.287	0.221
Dependent variable: <i>scale of actual destabilisation of the Arab Spring countries</i>					

The presence of 'immunity' indicator (that is similar to Tsirel's indicator of 'combustible material burnout' turned out to be the strongest and the most significant predictor ($\beta = 0.55$; $p = 0.0004$), followed by contradictions indicator⁷ ($\beta = 0.39$; $p=0.034$) and sustainability of political order⁸ ($\beta = 0.30$; $p = 0.055$).

The external influence indicator turned out to be statistically insignificant ($p = 0.22$). The presence of 'combustible material' (an analogy of Tsirel's component characterising the level of youth unemployment and the proportion of people with university degrees among them) also turned out to be statistically insignificant ($p = 0.362$). Of course, one should recollect at this point that in Tsirel's regression analysis it was found to be the strongest and the most significant predictor. The point is that Tsirel noted that the his indicators of the presence of 'combustible material' (level of unemployment among the youth people and percentage of the unemployed youth with university degrees) were strongly correlated with each other ($r = 0.79$) and with his political system type indicator ($r = 0.60-0.69$).⁹ Therefore, Tsirel decomposed his 'combustible material indicator' into two components, whereas one of those components was orthogonal to the political system indicator. In his multiple regression analysis, Tsirel used only this component.

In our case, the presence of 'combustible material' indicator turned out to be a very strong and significant predictor ($\beta = 0.569$; $p = 0.003$) when it was entered into our multiple regression model together with

the ‘immunity presence indicator.’ It remained quite strong and significant ($\beta = 0.360$; $p = 0.025$) when it was entered along with indicators of political system type and the presence of ‘immunity’. However, the significance of ‘combustible material’ indicator was considerably reduced ($\beta = 0.15$; $p = 0.36$, thus becoming statistically insignificant) with the introduction of the contradictions indicator. This is primarily due to the fact that these two indicators (‘combustible material’ and ‘contradictions’) are too correlated with each other ($r = 0.661$), that is why the ‘combustible material’ effect is screened by the influence of the ‘contradictions’ indicator as a result of the multicollinearity effect. This indicates that, in the construction of potential instability index for the Arab Spring countries of 2011 the presence of ‘combustible material’ can, in principle, be neglected (as a result of too high correlation of this indicator with the contradictions index observed for the Arab countries in 2010, just before the start of the Arab Spring); however, while developing potential instability indices for other regions and other time periods the indicator of ‘combustible material’ presence should be definitely taken into consideration.

The presence of external influence turned out to be another insignificant factor ($p = 0.221$) in our multiple regression analysis. However, this does not mean that the influence of external factor should be ignored. A closer analysis has shown that the abovementioned result was obtained because we chose the destabilisation scale as a dependent variable. If we had chosen the number of human casualties in each of the Arab Spring countries as a dependent variable and made a multiple regression equation, the external influence indicator would have immediately become statistical significant ($p = 0.002$) (see Table 4).

Table 4 Multiple Regression Model with the Number of Human Casualties in the Arab Spring Countries as a Dependent Variable

Model	Standardised coefficients <i>B</i>	Statistical significance (<i>p</i>)
(Constant)		0.602
Contradictions indicator (I_1)	-0.234	0.348
Indicator of ‘combustible material’ presence (I_2)	-0.019	0.933
Indicator of political order sustainability (I_3)	0.211	0.335
Indicator of ‘immunity’ (I_4)	0.160	0.365

Indicator of external influence (I_3)	0.701	0.002
Dependent variable: <i>number of human casualties in the Arab Spring countries</i>		

This allows us to argue that the influence of external factor mostly accounts for the death toll that resulted from the processes of socio-political destabilisation during the Arab Spring, rather than for the scale of social and political upheavals.

Analysis of Instability Factors and their Relative Importance

A considerable number of studies that analysed the Arab Spring events, at different times, are devoted to the empirical and theoretical study of social instability factors.¹⁰ The most important factors of instability detected include the:

1. presence of ethnic (interconfessional, interclan, intraelite) contradictions and conflicts;
2. instability within the political order;
3. uneven distribution of socio-economic and socio-political benefits;
4. high level of poverty;
5. presence of structural and demographic rises ('youth bulges');
6. excessive government corruption;
7. availability of attractive alternatives to the existing political regime and others.

In this case, the basic mechanisms and important factors of social instability are dependent on the specific country under inspection and its specific historical and socio-political situation.

Statistics by historical precedents are necessary in order to identify the factors of social and political upheavals in Arab countries; to determine their relative importance, and to form a quantitative index. The Arab Spring events (2011-2014+) provide rich materials for the analysis of sociopolitical destabilisation in modernising countries with strong clan traditions.

Analysis of Arab Spring events facilitates a reflection over facilitates the review of the following internal instability factors common to the countries of this type.

First, the **objective factors of instability in modernising societies**, includes: a) political preconditions (type of political order; the pres-

ence of intra-elite conflict; inefficient power transfer tools), b) social preconditions (the presence of internal social, religious, ethnic, and tribal conflicts), c) demographic factors (the presence of ‘combustible material’ which is based on the demographic component), d) external factors (the presence of a significant destabilising/stabilising external factor that influence the development of a situation in the country), e) the historical background (the presence of large-scale conflicts that led to the burnout of ‘combustible material’ in the near past and f) the Islamist factor (presence/absence of the legal basis for the functioning of an Islamist-oriented opposition).

Second, **subjective factors** (psycho-social, cultural and historical) of instability arising in a given period of time such as: a) a crisis of unfulfilled expectations of modernisation and b) the presence of an attractive (though perhaps imaginary) alternative to the existing regime.

These factors are discussed in some detail below:

The transitional nature of political regime: The second half of the 20th century saw the beginning of an intensive transition from authoritarianism to democracy in the majority of countries of Latin America, Asia and Eastern Europe. In view of this, the area of authoritarianism prevalence narrowed down to three main regions: the Arab world, Central Asia and Tropical Africa. Authoritarianism, originated in pre-industrial times when it was the dominant type of political system in the form of the absolute monarchy; afterwards it underwent significant change and remained, in its original form, in only one country in the world—Saudi Arabia.¹¹ In all other countries it has been modified into two main forms: the constitutional monarchy and the imitative republic. Thus, by the early 21st century, while generally moving toward democratic political structures; several Arab political regimes transformed themselves into so-called transitional regimes.¹² Powell and Almond wrote in the 1950s and 1960s about the transitional nature of many authoritarian regimes. This type of political regime is much less stable in the course of social and political upheavals than consistently authoritarian or democratic regimes, since the former (authoritarian) mechanisms of its functioning are being destructed, and the new democratic tools are not developed enough.

The presence of intra-elite conflict: As the events of the Arab Spring have shown again, one of the most destabilising factors is conflict among political elites. Obvious examples of this is Egypt (where there

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has been a conflict between the 'old guard' led by the top of the military, and the young reformers led by Gamal Mubarak), Tunisia (with conflicts between the army and the security forces whose numbers exceeded the military several times, and also between military and civil – first of all, party – bureaucracy¹³), and of course, Yemen and Libya (where tribal conflicts played a crucial role during the Arab Spring and in Libya even led to a temporary state breakdown).

The inefficiency of power transfer tools: Among the main features of authoritarianism two should be specially highlighted: national consolidation and primary modernisation. However, with the process of modernisation and the transition from pre-industrial to industrial societies (and the rejection of socialist experiments in the Arab countries) there has been a shift towards the establishment of democratic institutions and, first of all, the institution of general elections. However, while in monarchic states there has been developed real interparty competition (for example, in Kuwait, Jordan, Morocco and Bahrain, party systems emerged with winning parties having the right to form a government), in Arab republics the institute of elections had an imitative nature: in Egypt, Tunisia and Syria dominant parties existed, and in Yemen there had been a reliance on army and tribal alliances. The Algerian experience of democracy building in the late 1980s led to the landslide victory of Islamists and an ensuing civil war, after which President Abdelaziz Bouteflika returned to the authoritarian patterns typical of Arab republics. In Iraq and Libya, competitive multi-party elections were not possible at all due to the ideological component of Saddam Hussein's and Jamahiriya's regimes.¹⁴ All this has led to the fact that the republican authoritarian regimes in the Arab world have lost effective power transferring tools (this point was critical for the regimes of Hosni Mubarak in Egypt, Muammar Gaddafi in Libya, Ali Abdullah Saleh in Yemen), in contrast to monarchies whose system implies a legitimate transition of power from father to son.

The presence of internal social conflicts: Being extremely heterogeneous in several aspects – religious, ethnic, clan etc – Arab countries are vulnerable to social splits. Thus, the infringement of the rights of the opposition in the Arab countries during the period of authoritarianism (e.g., suppression of an uprising in Hama in 1982, the extermination of Shia and Kurds by Saddam Hussein in Iraq) only aggravated the situation by putting a number of Arab States during the Arab Spring events to the threat of their territorial integrity loss. Alleged violations

of the rights of the Shia population in Bahrain, from the ruling house of al-Khalifa related to Sunni Islam, has led to a long-running conflict in the country. The situation is similar in Syria, where the contradictions between the Sunnis, on the one hand, and the Alawites, on the other, led to the full-scale civil war with the threat of state collapse. A rivalry between Jordanian Palestinians and supporters of the Royal Family is also the major factor of destabilisation in Jordan which significantly complicates the process of urgent political reforms,¹⁵ the traditional division between the North and the South, has displayed with a new strength during the Arab Spring, again actualising a problem of the need to separate the state.¹⁶ Sharp clan differences, especially on the redistribution of power and economic resources, have declared themselves in Libya which is threatened of split into three parts: Cyrenaica, Tripolitania and Fezzan. We should not forget the traditional ethno-national conflicts in some Arab countries (mainly in Algeria and Morocco) between Arabs and Berbers.¹⁷ Additionally, a strong destabilising factor is the Kurdish issue¹⁸ which has become particularly acute after the fall of Hussein's regime in Iraq and the deterioration of the situation in Syria in 2011-2012.¹⁹

Combustible material: The beginning of sustainable escape from the 'Malthusian trap'²⁰ by definition means reduced mortality and, therefore, a sharp acceleration in population growth. The beginning of sustainable escape from the 'Malthusian trap' tends to be accompanied by particularly strong decrease in infant and child mortality. All this led to a sharp increase in the proportion of young people in the population in total and adult population, in particular (the so-called phenomenon of 'youth bulge').²¹ As a result, there occurs a sharp rise in the proportion of that very segment of population that is most prone to violence, aggression and radicalism, which itself is a powerful factor in political destabilisation. The rapid growth of the youth population requires a radical increase in the number of new jobs which is a very difficult task. Explosive increase in youth unemployment can have especially powerful politically destabilising effect, since it creates an army of potential participants ('combustible material') for all political (including revolutionary) shocks.

This is confirmed by the studies of Moller and Goldstone who maintain that

the rapid growth of youth can undermine existing political coalitions, creating instability. Large youth cohorts are often

drawn to new ideas and heterodox religions, challenging older forms of authority. In addition, because most young people have fewer responsibilities for families and careers, they are relatively easily mobilized for social or political conflicts. Youth have played a prominent role in political violence throughout recorded history, and the existence of a “youth bulge” (an unusually high proportion of youths 15 to 24 relative to the total adult population) has historically been associated with times of political crisis. Most major revolutions ... [including] most 20th-century revolutions in developing countries – have occurred where exceptionally large youth bulges were present.²²

Burnout of ‘combustible material’: The presence of recent large-scale conflicts can be considered as one of the major deterrent factors of social and political upheavals. As the events of Arab Spring have shown, those Arab countries which experienced recent major shocks, also managed to avoid a significant transformation of political system during the events of 2011–2012. Huge death toll produced by socio-political destabilisation in Algeria (during the civil war of the 1990s), in Sudan (especially, during the confrontation with rebels from Southern Sudan²³), Iraq (especially, after the invasion of coalition forces in 2003), Lebanon (especially, during the protracted civil war²⁴), and Palestine markedly reduced the protest activity in these countries during the Arab Spring events.²⁵ Indeed, against such a background the population of a respective country is becoming increasingly interested in the maintenance of stability and the existing *status quo*, rather than in radical changes.

The legal basis for the functioning of Islamist-oriented opposition: In many ways, the total suppression of Islamists in Tunisia, Egypt and Libya ultimately led to the point that Islamist forces played a very important role in the Arab Spring protest movements, whereas afterwards they became main contenders in the struggle for power. The Muslim Brotherhood in Egypt and Libya, al-Nahdah in Tunisia were under complete prohibition and had almost no opportunity to conduct legal political struggle. However, Ben Ali, Mubarak and al-Qaddafi, being confident in the complete elimination of the Islamist threat in their countries were disoriented by their rapid rise.²⁶ Contrarily, the continued participation of Islamists in the political life allows authorities to adapt to their political position, requirements and a format of political

activity. In cases where Islamists are in dialogue with a government, the government considers them as a political rival, which allows it to adequately assess their challenges. This is clearly seen on the case of Algeria. Since the transition to a multiparty system in 1989, Islamists played a key role in the political life of the country, which resulted in an open confrontation with the army. However, as the practice of the early 2000's showed, Abdelaziz Bouteflika managed to deal with the Islamist threat and achieved success; giving them the possibility to act within the country's legal framework. In the elections to the National People's Assembly in 2007, the "Green Algeria Alliance" consisting of 'The Movement for Peaceful Society' (Hamas), the 'Islamic Renaissance Movement' (al-Nahdah) and 'The Movement for National Reform' (al-Islah) received some 6.22% of votes and got 47 seats in the lower house of the parliament.²⁷ Relatively low results were also achieved by Islamists in Sudan and Yemen, where they also had access to the legal struggle for power through participation in the elections.

The crisis of unfulfilled expectations of modernisation: This factor is subjective (psychological), but very important. The fact is that modernisation usually generates high expectations in society that are fuelled by governments' promises (the latter gives inflated promises to secure the support of society). Sooner or later, after a period of steady improvements in the quality of life in a country, a certain decline is inevitable which may lead to emotional distress, increase public discontent, and even provoke riots. Moreover, the higher the economic successes of a country, the stronger the frustration in the case of recession or a significant slowdown. The more opportunities people had, the higher their expectations were, the greater the disappointment in case of the Government's failure to satisfy those expectations.²⁸

The availability of an attractive alternative: The probability that unfulfilled expectations can lead to social and political destabilisation increases if there are forces in the country actively offering a more attractive alternative. This alternative may be imaginary, or even false, but during the period of frustration and disappointment it has a real chance to attract attention, to form a protest movement and to undermine the existing regime.²⁹

Methodological Overview

This section is devoted to presenting the methodology of our quantitative analysis of the Arab Spring events. The basis of this methodology

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is the development of a specialised instability index which considers the cumulative impact of the described above factors and reflects the overall potential of instability. We consider a *potential*, that is, the objective possibility of social and political instability of a certain level (scale). Subjective and conjunctive factors are attached to the particular situation and should be considered in a separate way in assessing the probability of protests.

The task is to form a composite index which takes into account the most important factors of social and political instability and could be calculated on the basis of statistical data and expert assessments and would allow estimating the potential social instability and its possible scale. The values of this instability index have been compared to that how really stable Arab regimes turned out in the conditions of the Arab Spring. The estimation of sustainability of Arab socio-political systems to the wave of destabilisation of 2011 that was actually demonstrated during the events of the Arab Spring is introduced using a numerical scale. In the construction of multiple regression equation the scale of actual destabilization has been chosen as a dependent variable. However, when we studied the correlation between the potential (systemic) instability and the actual destabilisation amplitude, we have detected a power-law relationship between the instability index developed by us and the scale of actual destabilisation. That is why we decided to invert the scale of the actual destabilization index, which resulted in an index of actual resistance to destabilising impulses I_{RES} (Table 5):

Table 5 Index of Actually Manifested Resistance to the Arab Spring Destabilisation

Content of Events	Index of actually manifested resistance I_{RES} (in points)
The system has shown a very high degree of resistance, the pan-Arab wave of destabilisation produced just some small scale protest actions	7
A high degree of resistance: a few notable anti-government demonstrations	6
An average degree of resistance: numerous protests against the government	5
The resistance below the average: large-scale and prolonged anti-government protests with a few violent clashes	4

Low resistance: powerful anti-government protests with bloody collisions that shattered the power (strength of the rebel forces being comparable with the one of the governmental forces)	3
Very low resistance: civil war (with approximate parity of forces)	2
Extremely low resistance: a successful revolution (victory of the rebels)	1

In this case, the power-law dependence is interpreted in the following way: n times as high level of potential instability leads to an n times decrease in the level of actual resistance (1).

$$I_{RES} = \frac{k}{I_{UNST}^{\alpha}}, \quad (1)$$

where I_{RES} is an index of actual resistance, I_{UNST} is an index of potential instability, k and α are parameters.

Since, as noted, the index of potential political instability reflects the accumulated potential of instability in the society, then the objectively existing conditions of instability (political, social, demographic, economic, etc), as well as such important characteristics as 'historic immunity' and the presence of Islamists within the legal framework, which have a damping effect, should be considered. Accordingly, the index of potential instability is reasonable to be presented in the form of a multiplicative convolution of indicators reflecting the following:

1. internal contradictions (indicator I_1);
2. structural and demographical characteristics (indicator I_2);
3. ability of the government to reduce social tensions (indicator I_3);
4. presence of 'immunity' to internal conflicts (indicator I_4).

Therefore, the instability index I_{UNST} has the form:

$$I_{UNST} = I_1^{\beta_1} * I_2^{\beta_2} * I_3^{\beta_3} * I_4^{\beta_4} \quad (2)$$

where the exponents β_i reflect the relative significance of relevant factors and are determined by calibration of index on the real events.

The methodology of the quantitative assessment of indicators, as well as a calibration of the index is necessary for the index proposed above and could be used as a tool to assess the level of socio-political instability. This methodology is based on the analysis of Arab Spring events of 2011.

Sampling and Quantitative Assessment of Indicators

Contradictions Index I_1

For the calculation of this index we have taken into account the following instability factors:

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1. the presence of intra-elite conflict;
2. the presence of ethnic, inter-confessional, intertribal, and inter-clan contradictions;
3. the uneven distribution of socio-economic and socio-political benefits;
4. high levels of poverty;
5. excessive government corruption.

We omit the last two factors from this list due to the fact that – contrary to popular opinion about their importance in the Arab Spring – the results of the quantitative analysis of these parameters were not statistically significant. In particular, the correlation coefficient (r) of the poverty level with the scale of actual destabilisation of the Arab Spring countries is about – 0.05, and the coefficient of determination (R^2) is equal to 0.003 (i.e., it explains less than 1% of dispersion). Similar results were obtained with respect to corruption ($R = -0.04$, $R^2=0.002$, accordingly). Quantitative calculations are confirmed by purely empirical analysis of the situation. No Arab country has a poverty level which exceeds 20%, in contrast to, for example, India, Indonesia and several sub-Saharan African countries. And, the level of corruption in Middle Eastern countries is nearly identical to all other developing countries and regions.³⁰

As for the uneven distribution of socio-economic benefits, this indicator in the Arab world is comparable with that in the developed and developing countries, while being at the level of some Western European countries such as the UK and Spain and lower than in the US. In addition, however, this figure is similar in all Arab countries, so the use of it to detect differences in the Arab world does not make much sense.

In addition, we eliminate the ethnic diversity of the Arab countries from the number of indicators that make up the first indicator (I_1). This is due to the fact that this indicator did not play any destabilising role in anti-regime performances in 2011. So, the Arab Spring was ‘Arab’ – its main driving force included representatives of the Arab nation.

The two remaining factors (that were used to calculate the first indi-

cator I_1) – tribal and inter-confessional heterogeneity and the presence of intra-elite conflict – are rather complex and could be hardly measured quantitatively. That is why, in order to estimate them, we used procedures of experts' monitoring. The experts' views were further quantified using the following scale (Table 5).

Table 5 The Contradictions Scale

Scale of Conflict Potential	Value of Indicator (in scores)
Contradictions' scale is below average	1
Average	2
Above the average	3
High	4
Very high	5

The assessment of the contradictions index (indicator I_1) for the countries of the Arab Spring is presented in Table 6.

Table 6 Assessment of Contradictions' Indicator I_1 for the Arab Spring Countries

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Indicator of the Social 'Combustible Material' I_2

The 'combustible material' of social instability is, as a rule, disadvantaged social groups, and the youth is the most active in the protest movements. Since the possibility of social aggression in general has been taken into account in the preceding paragraphs, this index is appropriate to reflect a potential of the youth factor directly as a 'combustible material' of *conflict escalation*.

Due to the fact that Arab countries are mostly modernising, the phenomenon of the 'youth bulge' is typical for them as is generally characteristic for countries having to risk falling into a 'trap trying to escape a trap'.³² Accordingly, while assessing the presence of the 'combustible material', one should proceed from the data which show the influence of the 'youth bulge' on the overall level of instability.

On the basis of our analysis of the Arab Spring data, the following scheme has been detected. By itself, the 'youth bulge' as a demograph-

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ic phenomenon is (more or less) present in all countries of the Arab Spring, and (roughly) equally significant.³³ We should also assess youth unemployment rates, the proportion of unemployed young people in the total adult population and the proportion of unemployed people with higher education among youth.

Similar to the previous section, a grade scale has been introduced here, but only the indicator of ‘share of unemployed people with higher education among the youth’ (due to the lack of adequate statistical data) was estimated on the basis of the expert monitoring, the rest two had quantitative characteristics (see Tables 7 and 8).

Table 7 Scales for Estimating Values of the Index of the Presence of Social ‘Combustible Material’ I_2

Value of indicator (in scores)	weak (‘1’)	average (‘2’)	above the average (‘3’)	high (‘4’)	very high (‘5’)
Youth unemployment (20-29), % (expert estimates)	0-3	3-7	7-15	15-30	30-70
Share of unemployed young people (20-29) in the total structure of the adult population, %	0-2	2-5	5-7	7-10	10-25
Share of unemployed people with university degrees among the young unemployed	0-5	5-10	10-15	15-20	20-60

Table 8 Assessing ‘Social Combustible Material’ Indicator I_2

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As mentioned, a high level of correlation³⁴ ($r = 0,661$) between the presence of ‘combustible material’ (I_2) and the contradictions index (I_1) brings down the statistical significance of I_2 in our multiple regression, as this factor is shadowed by the contradictions index due to the multicollinearity effect.

Indicators of Political Order Sustainability: The Ability Governments to Ease Social Tension I_3

Previous studies demonstrated that this index is dependent on the type of political order in a country.³⁵ At the same time, the analysis

of historical events has shown that the most stable regimes are either consolidated democracies (because of their strong institutional mechanisms that are able to ease social tension), or absolute monarchies and autocracies (due to their having the lever of direct impact on the social environment—the authority of the monarch, authoritarian leader or fear of repressions). The least stable are transitional regimes. On this basis, an evaluation grade scale (Table 9) has been introduced.

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Table 9 Assessing the Political Type Scale

The Degree of Instability (ascending ordering)	Type of Political Order
1	Consolidated democracy / absolute monarchy
2	Non-consolidated democracy / forms of government transitional from absolute to constitutional monarchy
3	Constitutional monarchy
4	Autocratic or authoritarian government
5	Imitation democracy

In addition, a special role is played by the legitimate tools of power transfer. In this case, the least protected are authoritarian states with a republican (rather than monarchical) form of government. Moreover, the most prone to socio-political shocks are those formally republican states where the perspective to transfer the power within a family is maturing. On this basis, an evaluation grade scale has been developed (Table 10).

Table 10 The Scale of Assessment on the Availability of Power Transfer Tools

The Degree of Instability (ascending ordering)	The Availability of Power Transfer Tools
1	Absence of necessity for power transfer tools
2	The need to keep the power within the constitutional term
3	The need to keep the power out of the constitutional term
4	The necessity to transfer the power to the representative of the clan/tribe/party
5	The necessity to transfer the power to a family member

Table 11 Assessment of the Political System Sustainability Indicator
 I_3
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Indicator of the Presence of ‘Immunity’ to Internal Conflicts

I_4

Finally, we consider the fourth indicator (I_4) which is a combination of two factors: the presence of a large-scale conflict (we considered as large-scale conflicts the ones in which the death toll has exceeded 10 thousand people) in the recent past and the participation of Islamists in the political process. The first indicator appears in the countries that have endured civil war and unrest. The following should be noted.

First, this indicator can be evaluated in a manner close to the so-called ‘soft’ ranking (i.e., the indicator is assigned a value of either ‘1’ if it is the case, either ‘0’, in its absence). At the same time, we can hardly talk about the possibility of assigning a value ‘0’ since the ‘absolute immunity’ to social unrest is a theoretical abstraction. Score scaling is therefore advisable (Table 12).

Table 12. Scale for estimating the indicator of ‘immunity’.

Degree of the immunity of society to internal conflicts	Indicator value in scores
Almost absolute immunity	0,1
Strong immunity	0,3
Average immunity	0,5
Weak immunity	0,8
No immunity	1

Second, taking into account that one of the most common (especially in the Middle East and North Africa) factors affecting immunity to internal conflicts is the presence of prolonged internal conflicts in the recent past, as well as the presence of Islamist-oriented opposition within the legal framework of Arab States, this element should be considered more carefully. In particular, in the case of the Arab Spring, Algeria, Lebanon, Palestine, and Iraq were assigned with a score corresponding to an ‘almost absolute immunity’.

Table 12 Assessment of the Indicator of ‘Immunity’ Presence I_4

Calibration of the Index

The potential instability index (2) should be calibrated using historical data to be deployed in practical assessments. The subject of calibration is the selection of the exponents β_i and the correlation of the index with the events scale. Analysis of the Arab Spring events of 2011 has been used for the calibration.

Using non-linear regression method, we calculate the exponents of variables ($\beta_1 = 0.8$; $\beta_2 = 1$; $\beta_3 = 0.7$; $\beta_4 = 0.6$), in view of which the results of the calibration of potential instability index take the following form:

$$I_{UNST} = I_1^{0.8} * I_2^1 * I_3^{0.7} * I_4^{0.6} \quad (3)$$

It should be noted that another important additional factor – namely, the external influence – has been also taken into account during the calculations. This was done through the calculation of the external influence index I_s , according to the following scale:

- o.1 – limited distorted media coverage;
- o.2 – limited distorted media coverage, the presence of some information on financing of the opposition forces from abroad, some calls to resign from abroad;
- o.3 – large-scale distorted media coverage, connections of the foreign state actors with the opposition parties, strong pressure in the form of calls to resign;
- o.4 – information attack, reliable information on the funding of opposition forces from abroad, external pressure in the form of possible sanctions;
- o.5 – all previous points, as well as military intervention.

Using the same method of nonlinear regression we have estimated the value of exponent β_s to be equal to 1.0. Moreover, we note that taking into account this indicator is important primarily to account for the number of human casualties in the course of social and political upheaval. In the case of the evaluation of actual destabilisation scale its importance is greatly reduced.

As we remember, both factors (the presence of ‘combustible material’ I_2 and external influences I_s) have low statistical significance in the construction of multiple regression equation, and have shown themselves substantially less important than the other three in the construc-

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tion of the equation of nonlinear regression. However, the complete removal of these variables from the equation of nonlinear regression (Figures 2 and 3) leads to a significant reduction of its predictive power (from $R^2 = 0.91$ and $R^2 = 0.82$).

Figure 2 The Power-Law Correlation between Potential Instability Index (I_{UNST} , calculated **without taking into account indicators I_2 and I_5) with the index of actually manifested resistance to social and political destabilization (I_{RES}), natural scale**

Graphics disabled

Figure 3 Power-Law Correlation between Potential Instability Index (I_{UNST} , calculated **without taking into account indicators I_2 and I_5) with the index of actually manifested resistance to social and political destabilization (I_{RES}), log-log scale**

Graphics disabled

Thus, the final formula for calculating the index of instability (I_{UNST}) takes the following form:

$$I_{UNST} = I_1^{0.8} * I_2 * I_3^{0.7} * I_4^{0.6} * I_5 \quad (4)$$

An example of calculating the instability index and its comparison with the index of resistance (see Table 5) during the Arab Spring in 2011 is shown below (Table 13, Figures 4-5):

Table 13 Assessment of the Instability Index (I_{UNST})

Country	I_1	I_2	I_3	I_4	I_5	I_{UNST}	Resistance index
Tunisia	3.75	5	4	1	1.1	37.61	1
Egypt	3.5	5	5	1	1.2	50.43	1

Libya	4.25	4	4.5	1	1.5	54.72	1
Yemen	5	4	5	0.3	0.7	15.2	2
Syria	2.75	3	4	1	1.4	29.05	2
Bahrain	4.75	4.5	2	1	0.7	17.8	2
Algerie	2.75	4	4	0.1	1.1	6.55	4
Morocco	3.75	3	2	0.5	1.1	11.88	3
Iraq	3.5	5	2	0.1	1.1	5.5	6
Jordan	3	3	2	1	1.1	15.06	3
Saudi Arabia	2.5	3	1	1	0.9	5.62	6
Oman	1.75	2	2	1	0.9	4.58	5
Mauritania	2.25	4	3	0.5	1	10.89	5
Lebanon	3	3.5	1.5	0.1	1.1	3.66	4
Sudan	3.25	2.5	4	0.3	1	8.23	6
Palestine	3.25	5	2.5	0.1	1	6.12	6
Kuwait	2.5	2.5	2	1	1	7.07	4
Qatar	1.25	2.5	1.5	0.5	1	2.2	7
UAE	1.25	2.5	1.5	0.5	1	2.62	7

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Figure 4 Power-Law Correlation between Potential Instability Index (I_{UNST} , calculated taking into account indicators I_2 and I_5) with the index of actually manifested resistance to social and political destabilization (I_{RES}), natural scale

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Figure 5 Power-Law Correlation between Potential Instability Index (I_{UNST} , calculated taking into account indicators I_2 and I_5) with the index of actually manifested resistance to social and political destabilization (I_{RES}), log-log scale

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Figures 4 and 5 show the significant distance of Lebanon from the trend line. This is primarily because Lebanon takes the first place in the world for local ethnic and religious diversity of its society which, throughout the history of Lebanon, led to the growth of social and political instability. Therefore, despite the fact that Lebanon is an example of a rather successful developing country with stable democratic

institutions, the factor of ethno-religious fragmentation of society can cause serious conflicts (close to a civil war) against the background of successful economic, political and demographic development.³⁶ If we compare the index of instability and the resistance index in the period of the Arab Spring of 2011, excluding Lebanon from the list of the countries (Figures 6 and 7), a significant improvement in the correlation becomes obvious ($R^2 = 0.93$).

Figure 6 Power-Law Correlation between Potential Instability Index (I_{UNST} , calculated taking into account indicators I_2 and I_5) with the index of actually manifested resistance to social and political destabilization (I_{RES}), natural scale (excluding Lebanon)

Graphics disabled

Figure 7 Power-Law Correlation between Potential Instability Index (I_{UNST} , calculated taking into account indicators I_2 and I_5) with the index of actually manifested resistance to social and political destabilization (I_{RES}), log-log scale (excluding Lebanon)

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Conclusions

We have identified a set of factors that help in evaluating the current state of social and political destabilisation in the countries of the Arab Spring. These factors of instability act in the long and medium term, creating grounds for discontent with the existing situation among the population and elites. With respect to the Arab Spring, the most significant factors have turned out to be the following: the ability of the government to reduce social tensions, the presence of ‘immunity’ to internal conflicts as well as the internal contradictions level (especially the intra-elite conflict).

Indicators, such as structural and demographic characteristics and the external influences appear to be less significant as predictors of the actual level of the socio-political destabilisation within particular Arab Spring countries in 2011. However, the demographic structural factors turn out to be very important if we consider fundamental factors of the Arab Spring in general.³⁷ It should be also mentioned that the significance of the external influences indicator notably increases while

accounting for the death toll that resulted from the destabilisation in respective countries.

It is also note-worthy that some trigger is necessary for the latent discontent to grow in overt protest actions. Moreover, this trigger should affect the widest possible range of social groups so that the response to it would be not local, but universal, which dramatically reduces the ability of the government to control the situation. In the context of the Arab Spring the role of such a trigger was played by the following factors, the:

1. sharp and rapid increase in world food prices: the second wave of “agflation” that preceded the Arab Spring of 2011, and significantly deteriorated economic position of rather broad strata of citizens,³⁸
2. ‘effect of Al-Jazeera.’ It should be kept in mind that during the last 10-15 years in the Arab world, a media revolution took place which expressed in the appearance of super professional television satellite channels such as Al-Jazeera and Al-Arabiya. We are talking about unconditionally world-class television journalism and about television channels that had already got an immense popularity around the Arab world by the beginning of the Arab Spring,³⁹
3. rapid growth of the number Internet users in the first decade of the 21st century in all Arab countries which enabled political activists to use social media resources in organising protest activity and deprived (in conjunction with the activities of the satellite TV) authoritarian regimes of the power of effective information control.

The implementation of the ‘domino effect’ that leads to the accelerating rise of instability and its spread on new social strata and areas is necessary for most effective triggering of destabilisation. Because of this effect, social instability may proliferate beyond one country and be imported into the neighbouring states (as it was during the Arab Spring of 2011), but this was only possible within regional systems with relatively homogenous prerequisites to instability. Therefore, I_{UNST} gives only an idea of the potential and possible scope of socio-political upheavals, but it cannot be used to predict the level of actual destabilisation in a particular region at a specific time period.

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On the other hand, note that if we had calculated I_{UNST} , for example, for Egypt and Tunisia in 2000, the scores that we would get (13.23 and 13.83 accordingly) would rather correspond to the situation in 2011 in Yemen and Jordan. Indeed, the point that 10 years ago the regimes of Mubarak and Ben Ali would have fallen so fast, seems rather unlikely; more likely it can be argued that a slight advantage after all was on the side of the ruling regimes. And, the scores that equation (3) produces correspond to this point.

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