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THE DYNAMICS OF "UNFREEZING" NAGORNO-KARABAKH CONFLICT: EXPLORING ESCALATION PATTERNS AND THEIR POLICY IMPLICATIONS

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THE DYNAMICS OF "UNFREEZING" NAGORNO-KARABAKH CONFLICT: EXPLORING ESCALATION PATTERNS AND THEIR POLICY IMPLICATIONS

This article investigates the micro-dynamics of the Nagorno-Karabakh conflict by examining variation in the intensity of fighting on the line of contact in the period from 2010 to 2017. Cycles of escalation and de-escalation are presented along with the patterns identified by an approximation function. These patterns are interpreted regarding long-term trends and short-term spikes, each correlated with the intensity of the negotiation process. The discontinuous case of the April "4-day war", which falls outside of the statistical pattern, was studied through the application of a game-theoretic lens. The payoff function for initiator was derived from diversionary war theory, as well as rational choice calculations based on the dynamics of the military balance between Armenia and Azerbaijan. The model was tested against the empirical evidence and was sustained. Based on the findings of this study, several recommendations were proposed to mitigate the risks of new escalation around Nagorno-Karabakh.

KEY WORDS: ***Nagorno-Karabakh-conflict, micro-dynamics, line of contact, cycles of escalation***

INTRODUCTION

Recent years have witnessed several periods of escalation and de-escalation of violence along the line of contact (LoC) around Nagorno-Karabakh. The year 2016 attracted the attention of regional and foreign experts, as the bloodiest year since the ceasefire of 1994. However, despite the numerous pieces of policy analysis published on the subject, several vital aspects have been missing from the discussion. Specifically, a quantitative study of micro-dynamics of the conflict (Kalyvas et al. 2008) may push the discussion beyond the false dichotomy wherein a conflict is either "frozen" or "unfrozen" to allow a discrete analysis of specific escalations, such as the one that occurred in April 2016. This paper addresses the question as a security policy issue, aiming to derive recommendations for international, national and non-governmental actors on how to de-escalate the conflict and prevent avoidable casualties.

In the analysis that follows, we select the number of shots fired per day using regular firearms, by the Azerbaijani side, as reported by the Ministry of Defense of the Nagorno-Karabakh Republic (Nagorno-Karabakh Republic Ministry of Defense 2010– 2016), as a proxy variable for the intensity of fighting on the LoC. The selection of this variable assumes that higher levels of fighting intensity (which involve heavy artillery, tanks, drones and other weapons in addition to regular firearms) correspond to higher levels of regular firearm activity.

CYCLES OF ESCALATION

Below we present the graphs representing the fluctuations of fighting intensity from 2010 to 2017. The data is approximated by a polynomial curve. The highest R^2 was achieved when using a sextic polynomial, which indicates that the process is cyclic.

Between June and December 2010[1], the average daily number of shots fired was 243. That figure did not increase during the following three years, but instead declined to 172 in 2011 and fluctuated upwards only to 191 in 2012 and back down to 173 in 2013. Since 2014, however, remarkable growth has taken place, as daily shots fired averaged at 831, then reached 1,744 in 2015. We are unable to calculate a comparable average figure for 2016, as numbers were not reported for the April War and the weeks that followed.

Standard deviations for the period available were 185 for 2010, 74 for 2011, 109 for 2012 and 57 for 2013. Parallel to the growth in the average number of shots fired each day, the standard deviations have also gone up in 2014 and 2015, reaching 1,100 and 1,172 respectively. Although we are again unable to determine the exact value of standard deviation for 2016, because of missing data, the mere fact of the outbreak of the April War and the subsequent "normalisation" of the situation indicate a considerable variation in the level of violence throughout 2016.

1 Data were not provided systematically by the Nagorno-Karabakh Ministry of Defense until June 2010.

Figure 1
Shots fired by Azerbaijani forces at the NK LoC in 2010 (using regular firearms)[2]

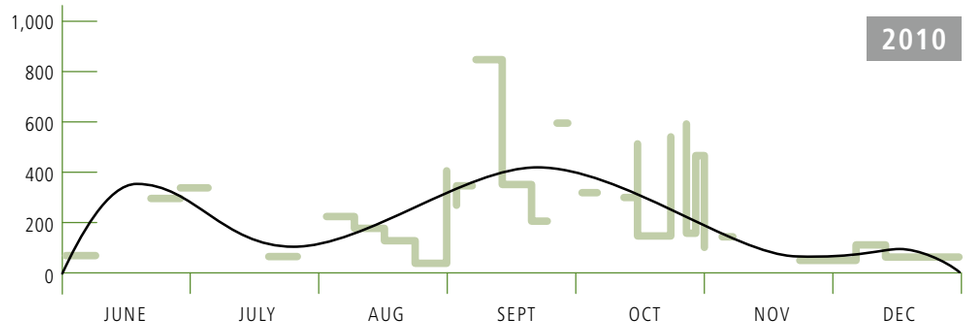
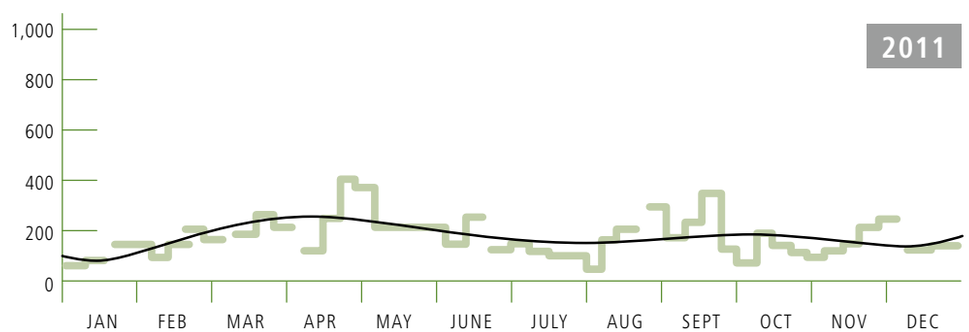


Figure 2
Shots fired by Azerbaijani forces at the NK LoC in 2011 (using regular firearms)



Overall, the number of daily shots from 2010 to 2013 was generally between 50 and 250 (this range encompasses 90% of cases). Since 2014, the situation has been radically different, with the first significant escalation occurring in the summer of 2014. This shift coincided and may have been connected with the rapid decline in world oil prices, which occurred after several years of consistent growth.

2 The discontinuity of this graph, as well as those presented in Figure 2, Figure 5, Figure 6 and Figure 7 results from the missing data. The number of shots was not reported by the Nagorno-Karabakh Ministry of Defense for several days.

The graphs showing wave-like patterns of escalation and de-escalation of violence on the LoC around NK testify to the cyclic nature of the process, while an upward transition also can be observed, in 2014. On average, one cycle lasts about 6.5 months. In all cases, the highest level of tension was attained at the interval of plus/minus one month from the maximum of the trend line. Thus, following these cyclic trends, it is possible to predetermine two periods of 2 months for each year when the fighting intensity is likely to reach its yearly maximum. This prediction carries several policy implications for de-escalating the conflict or reducing damage by taking the necessary tactical preparations.

Figure 3
Shots fired by Azerbaijani forces at the NK LoC in 2012 (using regular firearms)

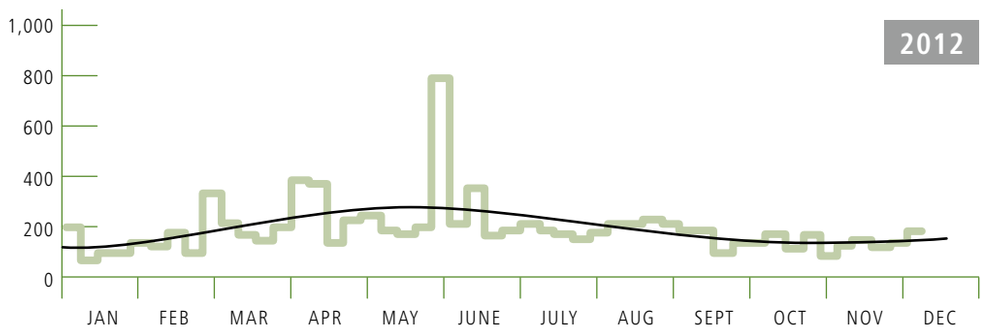


Figure 4
Shots fired by Azerbaijani forces at the NK LoC in 2013 (using regular firearms)

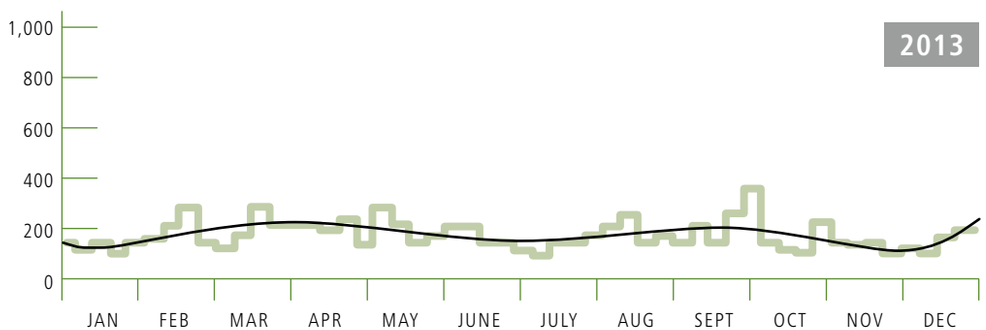


Figure 5
Shots fired by Azerbaijani forces at the NK LoC in 2014 (using regular firearms)

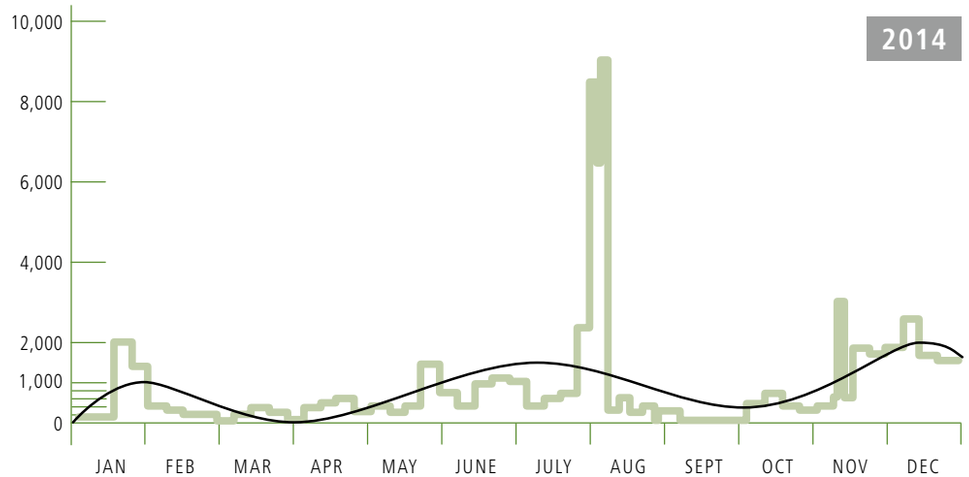
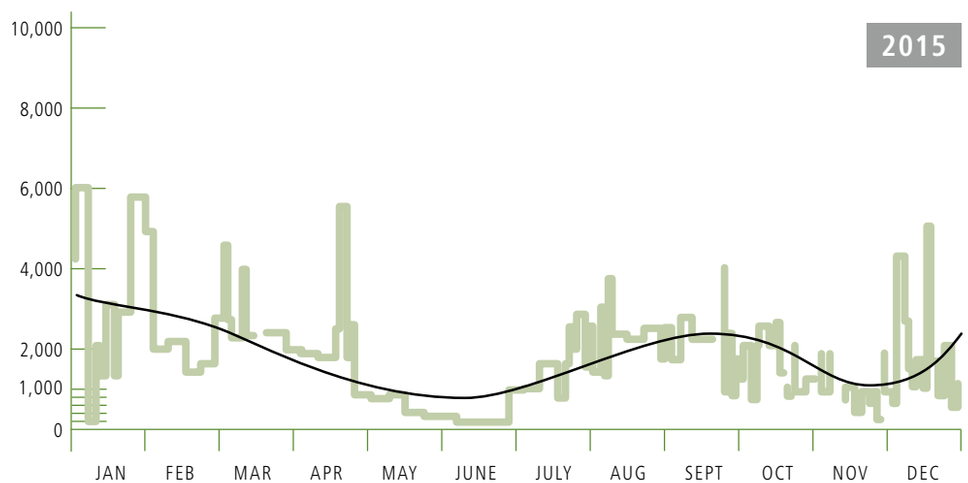


Figure 6
Shots fired by Azerbaijani forces at the NK LoC in 2015 (using regular firearms)

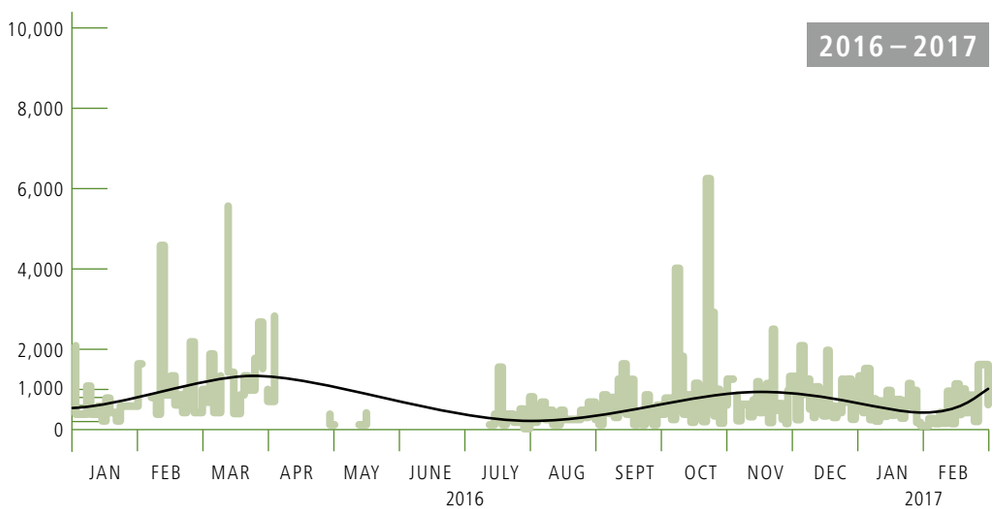


Approximately the half of the variation of conflict intensity (understood as escalation and de-escalation of fighting on the LoC, and measured in terms of R2) is explained by the cyclic trends.

Naturally, some of the variation in the trend line is influenced by other potential causal factors besides time (the only independent variable taken into consideration so far). The inclusion of these variables in the model may increase its descriptive potential.

In particular, the link between the micro-dynamics of NK LoC fighting intensity and the high-level negotiations and meetings between Sargsyan and Aliev, as well as Nalbandyan and Mamedyarov (the presidents and ministers of foreign affairs of Armenia and Azerbaijan) is intriguing. Levy and Thomson (2010, 9) argue that diplomacy and the use of military force have been falsely presented as two mutually exclusive options for protecting national interests. By contrast, some negotiating strategies may incorporate the use or threat of force, affecting the cost-benefit calculations of one's opponents and coercing them into altering their previous course. Such a strategy may aim at credibly signalling that the costs of persistent rivalry would be so high that it is rational to concede by agreeing to a negotiated settlement. To illustrate this concept, Levy and Thomson (2010, 9) cite the subtitle of Sisk's book (Sisk 2009) "bargaining with bullets".

Figure 7
Shots fired by Azerbaijani forces at the NK LoC in from January 2016 to February 2017



The negotiations on Nagorno-Karabakh mediated by the so-called Minsk group have been ongoing for years. Two Russian presidents, Medvedev and Putin, have also sponsored negotiations between Armenian and Azerbaijani heads of state, outside of the Minsk process. The periodicity of high-level summits and talks has varied, with intervals of frequent meetings followed by diplomatic inactivity. We can theorise that the desire to gain a military advantage before the ultimate talks and to use this situation as leverage at the negotiating table, can drive the escalation of fighting.

Figure 8
Shots fired by Azerbaijani forces at the NK LoC (by regular firearms) shown along with high-level meetings[3]

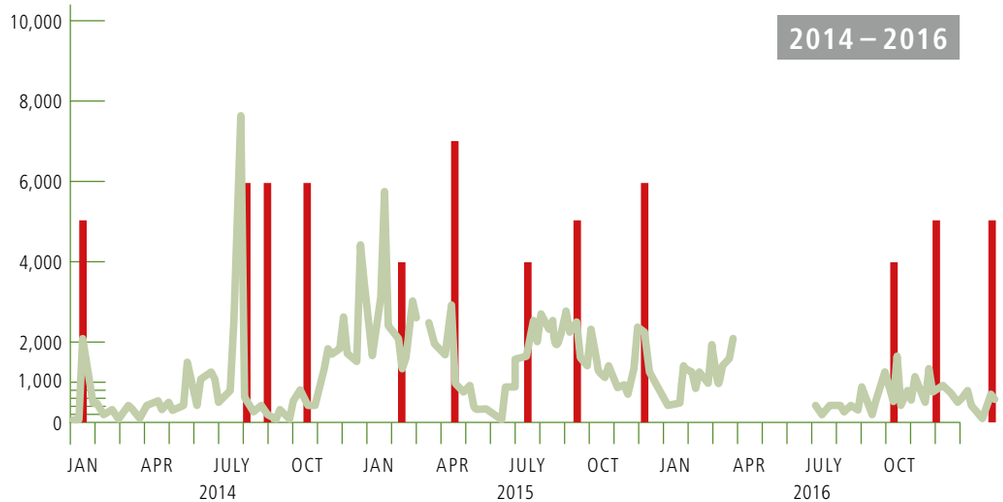


Figure 8 presents the average number of daily shots (calculated per week) between 2014 and 2017 in horizontal graph, while the verticals lines mark the dates of the negotiations process and meetings mentioned above, as well as the Centennial of the Armenian Genocide (24 April, 2015) when high-level visits were paid to Yerevan. Escalations of fighting preceding some of the red vertical lines are obvious. It is important to note that it is not the case that negotiations and meetings were held to de-escalate the situation after an incident because those meetings were scheduled and announced well in advance. Therefore, combining short-term spikes before meetings with longer cycles of escalation and de-escalation allows for a fuller understanding of the process.

3 The discontinuity of the graph in this case again results from the missing data, as explained in footnote 2.

This kind of descriptive statistical overview may point to long-term gradual escalations along with small, short-term hikes in the intensity of the fighting. However, perhaps more important for the policymakers are early warnings of massive short-term hikes as represented by the April War of 2016, which claimed more than one hundred lives from each side (by official count) in a matter of four days.

This paper interprets the intensity of fighting primarily as resulting from a strategy rationally chosen by the initiator. The range of possible strategies may vary from the total observance of the ceasefire to all-out war engaging the initiating country's full military capacity. Building on the assumption, familiar in the formal literature on international relations that actors make rational decisions to maximise their expected utility, I theorise that the choice of a specific strategy (corresponding to initiating a specific level of violence on the LoC) is stipulated by the initiator's utility function. One crucial specification, in this case, is that the utility function is mostly stable but is subject to minor changes over sufficiently long periods of time, as political elites may revise their perceived interests and opportunities about a changing political context (exogenous variables). Thus, the influence of other causal factors on the behaviour variable is not ruled out; instead it is mediated by the utility function of the player.

An essential point of departure for such analysis is determining the initiator. While both conflicting parties officially blame their opponents, Broers (2016, 16) mentions that *"few disagree that the overall strategic context points to Azerbaijani interests in destabilising the LoC as the front line of occupying forces"*. He adds that Azerbaijan has declined several proposed confidence-building measures, such as pulling the snipers back from the front line or implementing an incident investigation mechanism. Also, the seizure of strategic heights controlled and carefully fortified by Armenian forces, during the first hours of the "April War" (on 2 April 2017) indicate a well-planned offensive. Armenian positions near Talish, Seysulan and Lale Tepe, where the heaviest fighting took place, mostly coincided with easy-to-defend heights, while moving the LoC even a short distance into Azerbaijan-controlled territory would result in a less defensible line for the Armenian side, which seems unreasonable from the military point of view. It, therefore, seems logical to interpret the April War as initiated by Azerbaijan. Therefore, only the utility function of Aliev's regime, the decision makers on the Azerbaijani side, will be further considered as an explanatory factor.

UTILITY AND SHORT WAR

The payoff for initiating a short-term war aimed at seizing territory is given by the following function:

$$U_w = Pr(V)\,V + D_w - C_w \qquad (1)$$

where U_w is the above-mentioned payoff, $Pr(V)$ is the probability of victory and successful capture of the territory, V is the strategic value of victory, D_w is the domestic support in case of war (diversionary effect) and C_w stands for the losses that the Azerbaijani side will suffer including manpower and machinery.

On the other hand, the payoff for maintaining a level of conflict intensity n along the LoC (with no military action aiming at a territorial change) is:

$$U_n = D_n - C_n \qquad (2)$$

where D_n is the domestic support resulting from a level of violence n (the diversionary effect created by that level of violence), while C_n represents the corresponding costs. Thus, moving from level n to a higher level, $n+1$, would only be rational if:

$$U_{n+1} > U_n \qquad (3)$$

$$D_{n+1} - C^{n+1} > D_n - C_n \qquad (4)$$

$$D_{n+1} - D_n > C_{n+1} - C_n \qquad (5)$$

This representation indicates that it is rational to escalate if the utility from the growth of domestic support due to the stronger diversionary effect of the war is higher than the surplus in costs.

At the same time, the condition for rationally initiating a short war to capture territory is:

$$U_w > U_n \qquad (6)$$

$$Pr(V)\,V + D_w - C_w > D_n - C_n \qquad (7)$$

$$Pr(V)\,V + D_w - D_n > C_w - C_n \qquad (8)$$

Meanwhile, according to catastrophe theory[4], if the inequality did not hold initially, whenever the inequality starts to become true, as a result of smooth changes in the control variables, a sudden jump in the behaviour variable is expected to occur, expressed as the initiation of war. To interpret this process more precisely, the article will now offer a discussion of each variable included in the last inequality, in turn.

MILITARY FACTORS

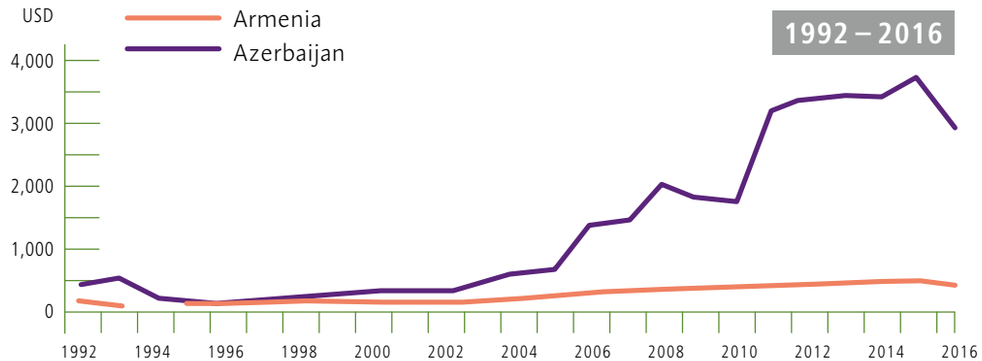
The first factor, the probability that Azerbaijan will achieve its military objectives, can be argued to be dependent on the ratio of Azerbaijani to Armenian military capacity (the latter representing the combined military forces available to the Republic of Armenia and the de facto Nagorno-Karabakh Republic). The larger the ratio is in favour of Azerbaijan, the higher the probability of winning in a clash. Military budgets can be considered to serve as proxies for military capacity. The trend lines for Armenia's and Azerbaijan's military budgets (SIPRI 2016) are presented in Figure 9[5].

Rational actors would opt to wait for an additional period while anticipating that the relation between the two sides' military capabilities will shift in their favour, and attack when this ratio, and the probability of winning, reaches its maximum. The decline in oil prices was a massive blow to Azerbaijan's economy, which made the Aliev regime initiate austerity and even reduce the military budget. Additional cuts were planned for 2017 (Kucera 2016), while Armenia announced that it would increase its military budget (Armedia 2016). This situation implies that the ratio between Azerbaijani and Armenian military expenditure was bound to decrease. The maximum was reached in late 2015 or early 2016, which represented an opportunity for Azerbaijan to attack.

4 Developed by French mathematician Thom (1989) and further elaborated and applied to social contexts by Zeeman (1977), catastrophe theory, in a nutshell, is a theory of "jumps" or abrupt changes in mostly smoothly changing systems. One of the early attempts to apply it in international relations (Holt et al. 1978) was aimed at building a system-level model for comparing the processes that led to the First and Second World Wars. Rummel (1987) has successfully tested his catastrophe theory model on India – Pakistan annual conflict-cooperation data from 1948 to 1973, explaining the outbreaks of two wars between those two nations.

5 There is no reliable data for Nagorno-Karabakh military expenditure.

Figure 9
Armenia's and Azerbaijan's military budgets in millions of USD



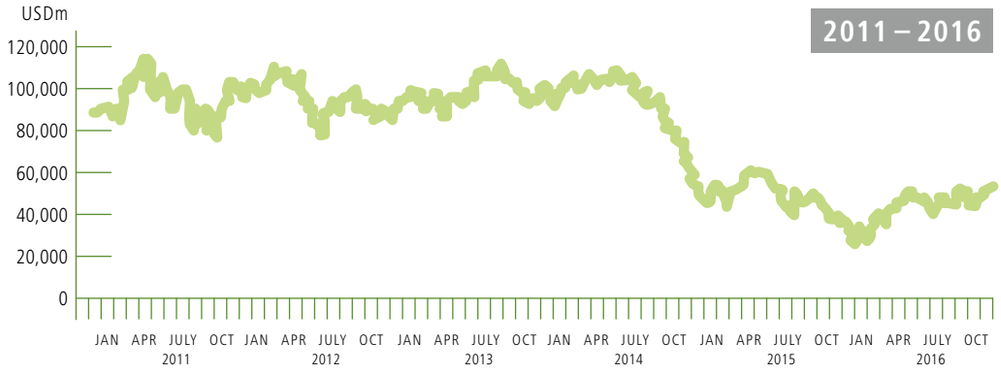
DIVERSIONARY WAR

I consider ***V*** to be constant in this context, as the geographic-military significance of a given territory is unlikely to vary significantly within the span of a few years. Therefore, the next factor to consider is the diversionary effect[6]. From formula (8) it follows that the more significant the difference, $D_w - D_n$, the higher the risk of war, which means that the smaller the domestic support for a government (D_n) at some pre-war level of violence (***n***), the more probable a war becomes. One of the essential factors determining domestic support in Azerbaijan is the world price of oil because the economy and the well-being of the population are heavily dependent on it. The dynamics of oil prices (Federal Reserve Economic Data 2011 – 2016) is presented in Figure 10.

The lowest value for domestic political support for the Azerbaijani government was attained in early 2016 when a wave of protests rolled through Azerbaijan and living standards declined significantly. Although the war took place in early April 2016, when oil prices had already started to climb slowly, it can be argued that the decision to initiate the war was probably made at least one or two months before its outbreak (when the world oil price was at its lowest), to allow for appropriate military preparations.

6 A number of studies have testified that external scapegoating and "rallying around the flag" is beneficial for democratic (Mueller 1973; Kernell 1978) and authoritarian (Haggard/Kaufman 1995; Geddes 2003; Treisman 2014) regimes.

Figure 10
End of day commodity futures price quotes for crude oil (WTI), 2011 – 2016



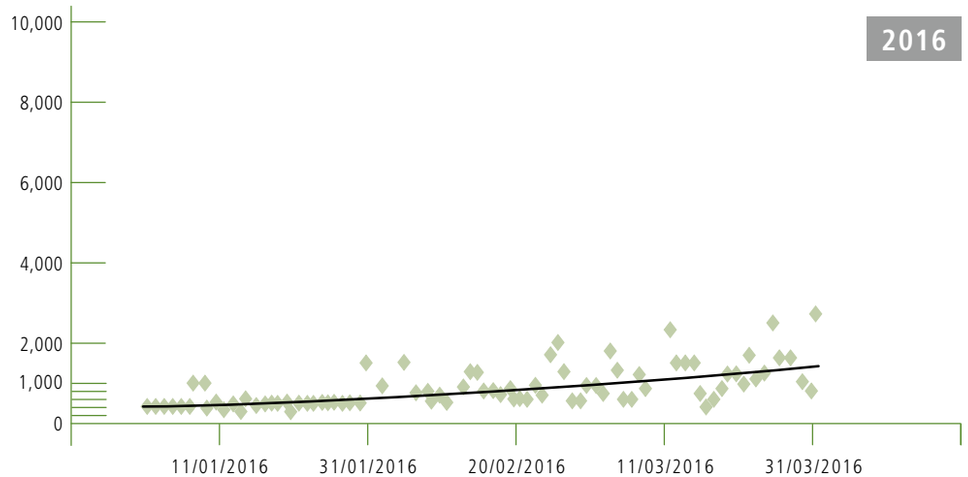
COSTS

The final control variable is the pre-war costs associated with different levels of fighting. Formula (8) implies that the smaller the right side of the inequality ($C_w - C_n$), the greater the risk of war will be. Thus risk increases along with C_n, because the larger C_n is, the smaller $C_w - C_n$ will be. Therefore, the costs associated with the pre-war levels of violence can also act as a causal variable that influences the calculations of the initiator of the short war. From inequality (5) it follows that the dynamics of the diversion effect may drive a pre-war escalation and the costs associated with it. At the same time, the increase in those costs may, in turn, increase the probability of initiating a short war.

On the eve of the April War, C_n was at its highest historical level. While no exact data on Azerbaijani casualties exists, most sources agree that the death toll was much higher in 2014 and 2015 than in 2013.

Also, it follows from formula (5) that the intensity of fighting on the LoC was growing during the first three months of 2016, in parallel to a deteriorating economic situation and growing unrest in Azerbaijan (the national currency, the manat, was rapidly losing value between mid-December 2015 and mid-March 2016). Figure 11 presents the daily number of shots fired by the Azerbaijani forces from regular firearms (y-axis) between 1 January and 1 April 2016 (Nagorno-Karabakh Republic Ministry of Defense 2010 – 2016). The graph also contains an added exponential trend line, resulting in an R square value of 0.47. Thus, not only historical but also the short-term C_n was reaching its maximum value on the eve of war, assuming that higher intensity of fighting corresponds to higher casualty rate.

Figure 11
Shots fired by Azerbaijani forces at the NK LoC
from January to March 2016 (by regular firearms)



It has been shown that initiation of a short war targeted at territorial acquisitions in the NK LoC is conditional on one or several causal variables reaching a critical point, specified through the utility function of the initiator. In turn, the end of the war is tangent on reaching the payoff outlined in formula (8).

Thus, the April War ended with a Moscow-mediated ceasefire after a significant rallying around the flag had taken place in Azerbaijan, with patriotic marches occurring in Ganja and Baku (Broers 2016, 13). The cessation of hostilities also happened after some territory (800 hectares) was captured by Azerbaijani forces, which was both a symbolic victory, galvanising the domestic support, and had some strategic significance as previously Armenian-held fortified posts had been located on militarily important heights transferred to Azerbaijan.

The fighting stopped after the war evolved after a few days into a painful stalemate. Armenian forces retook lost regions near Talish, and there was little perspective for further territorial gains (V) for either side. Finally, the short duration of the war did not let war costs (C_w), notably the casualty rate, significantly outgrow the yearly figures of pre-war costs (C_n) so that the right-hand side of formula (8) did not exceed the left-hand side in value.

RECOMMENDATIONS

Based on the fluctuations of violence intensity and conditions analysed in relation to the likelihood of a discontinuous jump in the behaviour of that variable akin to 2016 April War, we would like to provide the following recommendations to various actors.

TO MEDIATORS/OSCE:

- to boost monitoring activities on the LoC in the run-up to meetings and other identified risk periods (almost two per year), to deter the situation from escalating.

TO POLICYMAKERS:

- to be wary of escalation during the abovementioned periods, follow closely the dynamics of casualty rates and the possibility of exponential growth, as well monitoring the oil price dynamics, which may serve as early predictors of a potential outbreak of violence.

TO NGOs:

- to encourage peace-making discourse during risky periods (and in general).

TO RESEARCHERS:

- to pay more attention to the micro-dynamics of conflict and to stop employing false dichotomy of frozen vs. unfrozen conflict.
- to attempt to develop a statistical model including a comprehensive set of independent variables that would reveal the mechanisms by which the escalation of the fighting is influenced and determine the causal weight for each variable, i.e. its relative importance in increasing or decreasing the level of hostilities.
- Particular attention should be devoted to the variables that have a delayed effect, which means that knowing the value of those variables at some point in time would enable us to predict the outbreak of hostilities that would occur in the future, after the effect's delay period.

DISCLAIMER

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