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An Empirical Assessment of Social Unrest Dynamics and State Response In Eurasian Countries

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Abstract

This paper shows an empirical assessment of Social Unrest Dynamics in the Eurasian countries. We use a Big Database of social events (GDELT) to build several real time indexes of different stages of social unrest escalation consistent with the Unrest Lifecycle Theory and together with alternative measures of the state response. We build a Vector Autoregressive (VAR) model to analyse the Unrest Dynamic Cycle of social agents and the state response. Our results show that Eurasia is a fairly volatile region in terms of the size of social shocks and its responses, similarly to other regions such as MENA. While Social responses are relevant and stronger at the initial stages of unrest, they decay rapidly as the intensity of shocks increases. This is partially the result of an adaptive behaviour of the sate response (from coercion at the early stages of the unrest cycle to cooperation when instability escalates). This state response is consistent with the standard U-shaped relation between repression and conflict, frequently found in the literature

Social Unrest and State action are not homogenous across the Eurasian region. In fact, as we move to the West and Central Eurasia, population is more prone to conflict escalation and the enforcing ability of the State is lower as the backlash theory (U-Shaped) explains.

We also find traces of spill over-effects or contagion of social unrest between the population and to a lesser extent between State responses, among countries who share boundaries.

Keywords: GDELT, Social Unrest, Conflict, State, Repression, VAR Models, Eurasia.

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1 Motivation and Introduction

In this paper we make an effort to contribute to the understanding of the dynamics of social unrest and the State response. Getting a better insight of the mechanisms of conflict generation and transmission seems relevant nowadays as markets and society apace in their integration and globalization process. Geopolitical strains quickly impact local and global markets in the form of heightened risk aversion and policy mismanagement with negative spill overs for the economy in many ways. Recent episodes (as the Arab Spring in 2011 or the Ukraine-Russian conflict in 2014) have evidenced how heightened geopolitical risk can morph into extreme financial, macroeconomic and political conditions.

There are different approaches to tackle the analysis of unrest dynamics, from Agent Based models (i.e Epstein, 2001, 2002) to Statistical Models. Only the second one breaches the boundaries of aggregation of social trends, while the first one is more theoretically grounded and matches better individual behaviour.

Statistical models so far have little exploited other social science techniques to analyse joint dynamics of social unrest variables, accounting thus with little track record in pinning down and analysing mass behaviour from unitary agents such as the population and state.

Besides, empirical work has normally focused only in the core interest of normative policy making: the anticipation of conflict by means of early warning systems (EWS), and less attention has been given to analyse the dynamics and interrelation o social unrest variables and its link to the state policy response.

On the other hand, being this an empirical approach not many analyses have tried to match stylized facts with general paradigms of social unrest theory.

This work tries to contribute to this strand of literature in several ways. First, it tries to pin down and analyse the social unrest dynamics in the region of Eurasia, considering not only escalation dynamics within the different unrest variables but also the interaction between two agents: the State and the society. On the other hand, we believe that notable effort has been made in matching stylized facts and the main strands of theoretical literature. And last, but not least, we deem also a contribution our utilization of the massive event based database GDELT to find a simple taxonomy of unrest variables that serves both to measure current state of events and to analyse joint dynamics in real time.

The structure of this work will be the following: section 2 reviews available literature on the current topic, section 3 presents and justifies our database (GDELT) and the extracted social unrest variables, section 4 describes relevant theoretical paradigms applicable for this analysis and justifies the use of Vector Autorregressive Models, section 5 exposes the empirical findings and translates them into a common language of stylized facts, section 6 concludes and suggest possible further research. Section 7 is the appendix.

2 Literature Review

The nature of social unrest is changing significantly and it is becoming increasingly important. Thus, the "Global Awakening" (Brezinsky, 2011) has continued to manifest and extending through the world. Moreover, the threat of instability has become more relevant and systemic nowadays given the evolution of technologies and social media, which enables protest to trigger suddenly and in a coordinated way across many locations at once. In that framework, the study of social unrest's evolution and the dynamic relationship between different degrees of instability is becoming crucial. The goal of the paper is to give insights about social unrest's dynamics in Eurasia distinguishing between private agents (the population) and the public sector (the State) from 1995 to the present. The dynamics are analysed on monthly basis but these can be even be updated on daily basis.

Our literature review revealed that social unrest dynamics has not been broadly studied from an empirical point of view. Previous research has addressed this question before, but with different perspectives. Some former studies have been done to understand the causal relationship between protest and repression, ranging both from low to high intensity conflictive behaviour such as the work of Carey (2002). This approach uses data from nine Latin American and African countries from the late 1970s to the early 1990s to analyse the dynamics behind domestic conflict. She distinguishes two types of unitary actors, the public sector and the private one, as we do and we explain in part 3. She employs a vector autoregression to account for the interdependence of the behaviour of the state and the population. While we use a similar approach, our main contribution here is to use a much richer database with a longer time span as we describe in section 3. Furthermore, we also deepen more in social unrest's dynamics examining the relationship between different degrees of social unrest in the population. We find similar results showing that protest, and state repression present high inertia (i,e response are highly autoregressive).

Bischoff and Fink (2013) give a further step in this analysis, demonstrating that repression can explain the variation of political violence in the MENA (Middle East and North Africa) region since repression is related to political violence in a U-shaped fashion (i.e increasing repression decreases political violence, but after a turning point, repression generates it). To test it, they do a time-series-cross-section analysis of repression and political violence using a panel dataset of the MENA countries from 1950 to 2006 from Menaldo (2012). They also argue that institutional arguments neglect the role of repression in explaining the variation of political violence.

One of the main advantages of our database is that it allows us to feed up our monthly indices on daily basis, giving real time information, while most quantitative studies of conflict and social sciences use data aggregated annually ignoring short-term dynamics. Zeitzoff (2011) attempts to fill this gap analysing the short-term dynamics of military conflict using a dataset of hourly dyadic conflict intensity scores drawn from Twitter and other social media sources during the Gaza Conflict in 2008 and 2009 and employing a vector autoregression. Using monthly indices, updated on daily basis, we also address short term dynamics and, given our larger time horizon, we also account for long term patterns.

3 The Data

The GDELT Database

We investigate the dynamics of social unrest by means of Big Data Analysis, we use the *"Global Database of Events, Language and Tone* (GDELT)[5]" dataset created by Leetaru and Schrodt (2013). GDELT is an open access database containing a comprehensive and high resolution catalogue of geo-referenced socio-political events from 1979 to the present. It contains over 250 million records casting over 300 categories of classified events during the last 35 years with daily updates.

GDELT pins down and processes news in broadcast, print and web media globally in over 100 languages. The information is extracted from the media and systematized using the *"Textual Analysis by Augmented Replacement Instructions* (TABARI)" algorithm[6], a machine coding procedure of events that uses pattern recognition to find "*Dyadic Relations*" and track Events of Interest (EOI). A Dyadic Relation is any relational structure where *"active"* and *"passive"* subjects interact by means of an "action", creating thus an *"event".*

Every type of processed event is then coded using the "*Conflict and Mediation Event Observations,* (CAMEO)" event coding system developed by Schrodt and Yilmaz (2007). CAMEO is a broadly used coding scheme to systematise the analysis of political and social events. Each CAMEO event code is assigned a numeric score from the Goldstein Scale, which captures the intensity of the events. The Goldstein Scale developed by Goldstein (1992) is a conflict-cooperation scale from -10 to +10, capturing the theoretical impact that each type of event will have on the stability of a country. In the ordinal scale, -10 indicates an extremely negative action such us detonate nuclear weapons, 0 denotes no action taken and +10 extremely positive actions like surrender militarily and peacekeeping. Thus, GDELT identifies the actors, the actions and the intensity of the events on a daily basis.

There is not much literature that uses this database given its recent appearance in 2013. Previous related literature uses other event datasets such us the integrated Conflict Early Warning Systems (ICEWS) project like in the work of Ward et al. (2012). ICEWS is an early warning system designed to help US policy analysts to predict a variety of international crises to which the US might have to respond. These include international and domestic crises, ethnic and religious violence, as well as rebellion and insurgency. The main advantage of GDELT with respect to ICEWS is that GDELT is open and freely available[7], while ICEWS event data was available only for US State use. Besides, the scope and length of both widely differ. ICEWS event data go back to 2001 while GDELT has data since 1979. Moreover, GDELT collects many more events with more precise geographic locations than ICEWS, having then a much larger volume of data. On the other hand, ICEWS is strongly conditioned to its original mandate, survey of South East Asia, so the bias of the information to that region is high[8].

Other works such as Carey (2002) use data from the Intra-national Political Interactions (IPI) Project to analyse social behavior. This project measures intrastate political conflict and cooperation on a ten-point scale through coding news sources, covering only nine middle powers from Latin American and Africa between 1974 and 1992. This database covers much less events than GDELT, in a shorter period of time and with very lower disaggregation and space location.

Most of the previous studies use yearly or quarterly data for the analysis of social unrest. GDELT allows us to use monthly data whose values may be updated on a daily base. This fact seems more appropriate to capture the dynamics of the interactions between agents in the society on a real time basis.

5 See wwww.gdelt.org for further information.
6 See Leetaru and Schrodt (2013) for further information.
7 After Obama's Fair Access to Science and Technology Research Act (FASTR), a mandate that gives public access to publicly-funded federal research.
8 More details on the advantages of GDELT vs ICEWS can be found in Arva et al. (2013).

The Variables

We use the Conflict and Mediation Event Observations events and actor code (CAMEO) taxonomy to define our variables. Similar attempts to exploit this taxonomy can be found in Zeitzoff (2011).

Like in Carey (2002), Bueno de Mesquita (2005) and Bischoff and Fink (2013), we distinguish between two unitary actors: the population and the State. Also we distinguish between two events: unrest and state action. Social unrest (for the population) is scaled into three variables representing increasing levels of unrest: vindication or low intensity unrest, protests (high intensity unrest) and conflict (violent social action) (see Figure 3.1). Each categorical variable is calculated as the ratio of observations falling into each category per month in each country divided by the total number of all events recorded in GDELT during the same period of time and in the same location. These ratios are interpreted as real time intensity or diffusion indices showing the behaviour of these unrest variables. In order to correct for the exponential rise in media coverage over time and the imperfect nature of computer processing of the news, we normalise events to reference point in time. The State Response is calculated with a unique measure, a diffusion index (like in Oliver, 1998) that casts the net balance of the state responses towards unrest. This balance takes positive values for increasing repression or negative values for degrees of accommodation or state cooperation.

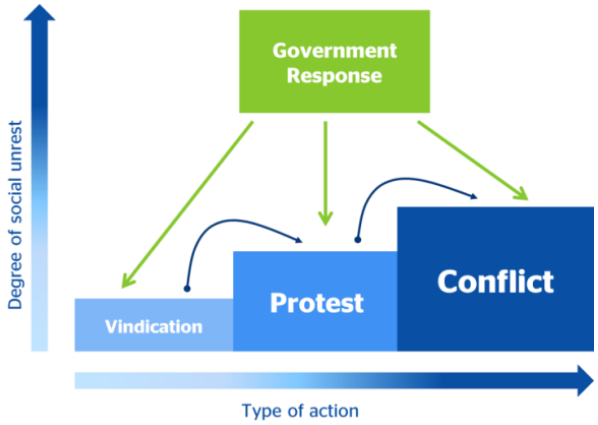
The extracted indices or levels of unrest are intimately linked to the qualitative assessment (made using the Goldstein Scale of events of the news casted into each category (Goldstein, 1992)). As mentioned above we define four "state" variables, three related to social unrest in the sense of "dissatisfaction in the perception of perceived and imposed social and political reality "(as Renn et. all, 2010) and one related to state or State response (in the sense of Carey, 2002). Please see Table A.1-A.4 in the appendix to see the type of events according to CAMEO falling into each of the following four categories.

- Vindication. This category expresses the first grade of social unrest and includes events related only to verbal discontent ousted by private individuals. It does not include actions but words such us a spoken criticism, threat, accusation, etc. It identifies with CAMEO categories from 10 to 13. It represents the earliest state of unrest and they are thought to be the least endogenous variable from the rest of variables.
- Protest. It represents an escalation of social turmoil and includes physical acts where private agents actively in all forms of protest, demonstrations, strikes, riots, etc. This variable falls within categories 14 to 16 of the CAMEO taxonomy and carries a more negative tone than vindication.
- Conflict. It exhibits the highest degree of social unrest and includes actions like armed attacks, destruction of property, assassination, insurgencies, civil-war, armed clashes, etc. Events compiled within categories 18 to 20 in CAMEO taxonomy belong to this definition and it represents the most negative events according to Goldstein scale[9].
- State response. It relates to public (State) actions aimed at containing social unrest or enforcing the rule of law. The balance of diffusion index is constructed as the sum of all casted coercive-like State responses to unrest such as curfews, charges, etc., subtracting the state cooperation/accommodation related events (ceasefire, de-escalate military engagement) and divided by this latter number. The index turns positive when the amount of coercive events excesses the amount of cooperative ones and negative or null if the opposite. Events casted here match categories 7, 8 and 17 of the CAMEO taxonomy. Similar approaches can be found in Carey (2002) and Bishoff and Fink (2013).

In general, the extracted variables are not attempting to describe a discrete set of conflict events (as in Brandt et al., 2013), but rather at offering a general level of unrest intensity and a measure of interaction between the two acting agents: the state and the population.

9: The nature of the conflict variable has been validated twofold: the conflict track record 1995 2013 given at the Global Terrorism Database (GTD) from the National Consortium for the Study of Terrorism and Responses to Terrorism at the University of Maryland and against the Conflict Index created by Daniel Bishoff and Simon Fink (2013).

Figure 3.1
Stages of Social Unrest and State Response



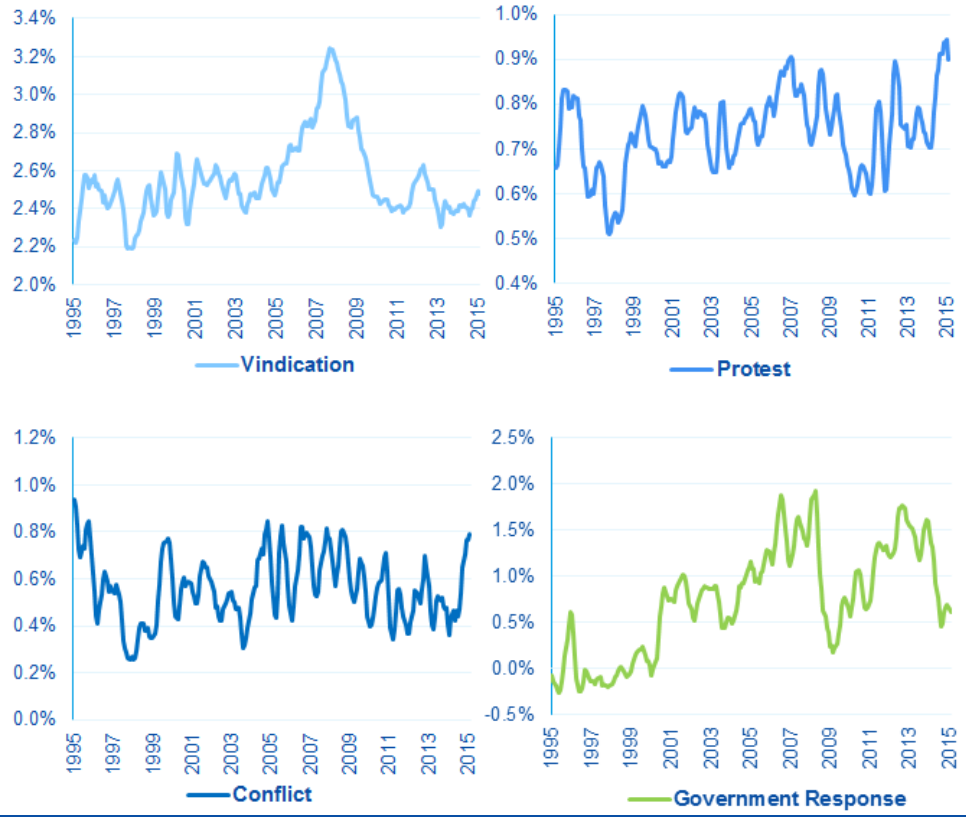
Source: BBVA Research

Using these categories, we collect time series for each variable inside Eurasia to construct real time social indices showing its behaviour over time (see Figure 3.2). The Eurasian region considered herein refers to Bulgaria, Moldova, Ukraine, Belarus, Serbia, Georgia, Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan and Uzbekistan. Besides, we compute three different aggregates for the Eurasian region, including the West, Central and East Eurasian sub-regions (see Figure A.1 in the appendix). Finally, we use the MENA region as control group for the analysis. MENA region includes Algeria, Libya, Tunisia, Egypt, Morocco, Syria, Israel, Jordan, Turkey, Iran, Bahrain, UAE, Saudi Arabia, Qatar, Oman and Iraq. We have followed earlier similar approaches dealing with similar regions (Pevehouse-Goldstein, 1999).

The time span includes monthly data from January 1995 to February 2015. Previous years are discarded to avoid distortions generated with the fall of the Soviet Union. Besides (as Brandt et al. 2013), we justify the use of short samples to construct our interdependence models of social unrest due to the changing volatility regimes found in the data.

All in all, our dataset is a collection of four stationary time series of each social unrest state in each country or region as well as an indicator of the State policy option. The panel has two hundred and thirty cases, four categories and twenty five countries.

Figure 3.1
Indices of Social Unrest Variables and State Response in Eurasia
(As share of news of each category to total news, in %)



Source: BBVA Research and GDELT

4 The Model

The Approach

The main goal of this paper is to understand the dynamic relationships between the different intensities of social unrest (vindication, protest, conflict and State response) by two actors (the Population and the State). In our models, the population can exert different intensities of social unrest from vindication to protest and finally to material conflict. The State response is expressed in one variable but admit both coercion and cooperation.

The conceptual framework of unrest dynamics rests on three paradigms (A) *"The unrest life cycle"* (Renn et al., 2010), (B) the *"Repression and Reaction"* paradigm (Tilly 1984, Moore 1995, Lichbach 1995) and (C) the *"inertia of social dynamics"* (see Brandt, 2009).

The Unrest Life Cycle explains the process of escalation of events from early stages of discontent (Vindication) to full blown crisis (Conflict). Under this scheme, the likelihood of the next step in unrest is conditional to cumulative events preceding it. This escalation process is defined by four features that set the stages of social action and reaction explained in part 3:

1. Vindication: Collective feeling of dissatisfaction caused mainly by the perception of policy mismanagement, unfair treatment or loss of trust, mobilizing public opinion yet not actions at this stage.
2. Protest: Ability of collective actors to organize and publicly demonstrate or protest. It activates when legitimized positions from the previous stage are not correctly managed.
3. State response: (In)ability of state forces to de-escalate protest (due to lack of legitimacy, low coercion capacity etc.) or enforceability of the rule of law .
4. Conflict: escalation of protest into an "open physical confrontation between collective actors" over socio-political, ethnographic or religious issues, in the words of Gurr and Lichbach (1986)

The interaction between the State response variable and the conflict variable is explained under the *Repression and Reaction paradigm* in Tilly's view (1984). According to this, conflict is a sustained reciprocal interaction between rational and unitary actors (social challengers and opponents) in context limited information where both act based on the observed behaviour of the opponent. Under this framework, State response in the form of repression succeeds in containing revolt as long as agents can identify that the cost of rebellion overrides that of remaining calm (deterrence effect). However this concept also states that if the scope and intensity of repression is enhanced the deterrence effect may dissolve such that increases in repression may end up causing more violence. Three concrete scenarios arise from this view in the interaction of state and population.

1. A scenario where the increase of repression increases frustration, protest and conflict (*Deprivation approach*, as in Lichbach, 1987) and the relation between repression and conflict is linear and increasing.
2. A scenario where the increase repression raises the cost of rebellion (*Deterrence theory*, as in Lichbach, 1987) leading to a decreasing relationship between State coercive action and conflict.
3. A scenario where either insufficient or excessive and indiscriminate repression bring heightened conflict (Francisco, 1982 and Carey, 2002) yielding a U-shape form in the relation between State action and conflict reaction *(Backslash Theory)*.

Finally, the concept of inertia and institutional behaviour states that their behaviour is stable through time since the assumed sunk costs of decisions have already been taken place, reducing the incentives to change strategies.

The three conceptual approaches shape the dynamics and the interaction pattern of social unrest variables and State response that we have defined above (see Figure 3.1), determining the specification and identification scheme of our model.

Our analytic choice

The discovery and interpretation of patterns in large number of events, the analytic specification of choices and the observation of aggregate behaviour arising from the interaction of large numbers of actors, traditionally takes three types of approaches: *Agent Based Models*, *Formal Models* and *Statistical Models*. We have opted for the third option as it appeals more focused to the subject of this analysis, which strongly relies on the time dynamic interdependence of actors and events. Besides the other two require an approach that is far from the scope of this work.

Statistical modelling of socio-political dynamics is complex for four reasons (Brandt and Freeman, 2009):

1. Model Scale or the number of endogenous dyadic relations.
2. Persistence or inertia of social events through time.
3. Endogeneity (a closely related to the model scale problem) linked to the need to identify the causal order among variables.
4. Specification.

Regarding the Model Scale problem, in our case, as our analysis tries to disentangle very concrete features of social unrest and state response (see part 5), we have limited our model to the necessary four variables capable of describing these features, so the Model Scale problem has been -a priori- limited.

The Endogenity problem arises as it is difficult to establish the causal relationship among variables. This holds especially true in political and social interaction analysis as events are mutually caused, and there is no theoretical background to set one (Carey, 2002). In this analysis however, we have identified a specific causality order consistent with the rationale of our two previously explained theoretical rationalii: "*The unrest life cycle*" and the "*Repression and Reaction*" paradigm**.** According to those, Vindication stands as the least endogenous variable, followed by Protest, State Response and Conflict. Causal order between state and population is articulated through State action preceding conflict for the sake the action and reaction paradigms explained before, but our analysis shows that being mutually causal, the order does not truly matters.

With respect to inertia, in our case, the behaviour of both institutions and individuals is expected to be relatively stable assuring a high degree of persistence. In general terms, we expect our four variables (vindication, protest, conflict and State response) to be stable most of the sample. Besides, protest variables and State responses usually show reinforcing patterns which we can clearly identify with high persistent processes during the conflicts. As explained by Carey (2002), protest by individuals at time t is expected to lead to further protest in time t+1. Once dissidents have successfully invested the costs of organising themselves and carrying out protest against the State, they try to maintain the momentum and to sustain the protest (Lichbach 1995). The main argument behind these concepts is that "small numbers of people trigger the participation of larger numbers of people over time" (Rasler, 1996). This persistence is also normal in the State response. In the case of state coercion, policy inertia dampens radical change of the State's behaviour. Therefore, the State tends to maintain strategies, once they have been adopted.

Finally, the theoretical underpinnings of social unrest are still not conclusive. The specification problem remains also important in our object of study. Rather of relying of a theoretical structure we will carry out an empirical assessment of social unrest dynamics. Thus, we just rely of little priori information in our models. First, we believe that the dynamics and interaction between the agents play an important role in the social unrest process. Second, as mentioned above, we include some a priori ordering or sequencing in the

intensity of the social unrest by the population (from vindication to protest and conflict). Finally we do not establish a priori information about the causality relation between population and State and we will test both possibilities.

A suitable model to analyse the dynamics of social unrest and limit the a priori order causality are the Vector Autoregressive Models (VAR) developed by Sims (1980). In these models, all the included variables are endogenous and by including lags of all the variables the dynamics and persistence can be included. The original VAR models were later complemented with Bayesian Vector Autoregressive models (BVAR) developed by Doan, Litterman and Sims (1984) and Litterman (1986) in which a priori information on the behaviour of the variables and lags can be contrasted with the data to find posterior estimates of the coefficients. Another possibility is Structural Vector Autoregressions (SVAR) or Bayesian Structural Autoregression (B-SVAR) in which the researcher can restrict the covariance matrix to include short term, long term and even sign restrictions in the relationship among the variables in the first case (SVAR) and even combine them with a priori restrictions on the parameters (B-SVAR).

In our case, we opt for VAR models for several reasons. First, the number of variables is only four so the advantages of using the BVAR models are limited. Second, and more important, we rely in a "let's the data talk" strategy and we want to limit as much as possible the a priori restrictions on the behaviour and interactions of agents (population and State) and the dynamics and persistence of their behaviour.

The Model

The general representation of a Vector Autoregressive model for a vector of variables Y and lags l is expressed in equation (1):

$$Y_{t=}AY_{t-l} + E_t \quad \text{Where } E_t \sim (0, \Sigma_t) \qquad (1)$$
$$Y_{t=}(V_t, P_t, C_t, G_t) \qquad (1.a)$$
$$Y_{t=}(V_t, P_t, G_t, C_t) \qquad (1.b)$$

In (1) the Y_t stands for a vector of endogenous variables at time t and with the number of lags (l). The matrix A is the coefficient matrix and E is the vector of error terms at time t. In our case the vector of variables Yt includes four variables representing the behaviour of population in terms of Vindication (V), protest (P) and conflict (C) at time t and including also the response of the State (G). The number of the lags will be tested (l) with LR and information criteria. There is also the possibility that the State response precedes the conflict, in this case the reaction of the State will precede the conflict as shown in (1.b). We will test both possibilities in our exercise.

The identification of the system is achieved through the order of the variables. As we don't include restrictions either in the coefficients or the errors we opted for a causal relationship in a Cholesky fashion. In this sense, the contemporaneous relationship among the innovations goes from Vindication, Protest, Conflict and State Response in the first option (1.a). However, there is also the possibility of the escalation to conflict being the result of the State Response. In this case, the Cholesky casual relation will go from vindication, protest, State reaction and Conflict as specified in 1.b. In terms of testing both possibilities, we will check the Granger causality test to check for some conclusions .

We extended our analysis to check the possibility for spill overs or contagion by means of including the same variable for the neighbour country. In this sense, we account for the possibility of contagion not only in the population but also in the States response to unrest. In this case, we estimate eight variables with the N subscript accounting for the neighbour country whose social unrest dynamics can spill over into our country of interest:

$Y_{t=}AY_{t-l} + E_t$ Where $E_t \sim (0, \Sigma_t)$ (2)
$Y_{t=}(V_{Nt}, P_{Nt}, C_{Nt}, G_{Nt}, V_t, P_t, C_t, G_{t.})$ (2.a)

Once we have estimated the different models we can analyse the effect that shocks in one of our state variables creates in the rest by checking the impulse response analysis under the Cholesky identtification explained above. Shocks are given in terms of standard deviations of the series. Particularly, we are interested in the transmission of shocks in the social unrest intensity (i.e how rapid and strong is the transmission between Vindication and Protest and Conflict), how the behaviour of people influence in the State's response and how the people respond to the State coercive/repressive or cooperative/accommodative action.

The results of the impulse response analysis are summarized at the end of the document. For the sake of clarity, they are shown in terms of colour codes (darker are more intense, reddish positive impact, green carry an impact with reverse sign). Impulse Response Functions have been displayed also along the document, but they are represented as the accumulated response of each variable relative to the shock exerted. They are cumulative because -in line with the Unrest Life Cycle Theory- we want to gauge an insight of the long run effects of each shock in determining the potential escalation of events as each shock cumulates the likelihood of transiting to the next level of unrest. The IRFs are given in relative terms to the shocks because we want to normalise the cumulative effects to a common standard.

5 Analysis and Results

Analysis

The objective of this section is to analyse the dynamics of social unrest in Eurasia. We will do this by showing how social unrest and State policy react to local and foreign shocks by means of Impulse Response Analysis of the VAR model described in section 4. We will run this analysis at the aggregate regional and sub-regional level (West-Central-East Eurasia).

As commented in part 3, Eurasian region refers to *Bulgaria, Moldavia, Ukraine, Belarus, Serbia, Georgia, Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan and Uzbekistan.* We have chosen this set of countries as they account for the wide spectrum[10] of social unrest processes that range from moderate civil transformation (Rose, Orange, Tulip Revolutions as example of protest events) to more-conflict-like events such as political, religious and ethnic clashes (Karabakh conflict in Armenia, Abkhazia conflict in Georgia, etc.). We are not taking into consideration Russia due to its regional dominance and the border-shifting nature of events related to the country[11].

The control region to whom findings will be contrasted against will be the Middle East and North Africa. In MENA we consider the following countries: *Algeria, Libya, Tunisia, Egypt, Syria, Jordan, Turkey, Iran, Bahrain, UAE, Saudi Arabia, Qatar and Oman*. We believe that both share a rich and comparable "event" history that permits the analysis using the social unrest taxonomy presented above.

We cast events only in a timeframe that runs from January 1995 until February 2015. We have not used data before 1995 as social events were strongly conditioned by the fall of the Soviet Union and the emergence of Post -Soviet[12] states (1991 -1994).

The results of the analysis of social unrest dynamics will be described in terms of the following concepts that will help to systematize the stylized facts of social unrest interaction and State response in the region and that are broadly in line with the three paradigms of social unrest described above:

1. *Volatility* of the society will be measured in terms of *the Intensity and the resiliency* of shocks that it generates as more volatile indices register stronger shocks. This is concept is in line with the concept of *inertia* of social unrest described before.
2. *Reactivity* of the society measured in terms of
   a. *Escalation potential* or the intensity and resiliency of the responses in the rest of unrest variables that follow "up the ladder of the shock"[13] (see Figure 3.1) such as vindication creating protests and protest generating conflict.
   b. *Self-reinforcing potential* or feedback intensity of the response "down the ladder of the shock" (protest creating vindication, conflict creating protest and vindication). Both concepts are intimately linked to the concept *of interdependence of unrest variables* described in the *Lifecycle Theory of Unrest.*
3. *Spill over* of social unrest dynamics as seen of same sign responses of unrest variables to shocks in variables in the neighbours *(contagion of unrest)* or as the replication of the State Response to civil unrest between countries *(mimic of policy response).*

10: Examples: Rose Revolution in Georgia, leading to the fall from office of Eduard Shevardnadze. The Orange Revolution in Ukraine, bringing into power Viktor Yushchenko. The Tulip Revolution in Kyrgyzstan, leading to the resignation of Askar Akayev. The Georgian Civil War between the forces of Zviad Gamsakhurdia and Eduard Shevardnadze. The Tajikistan Civil War that lasted 1992 to 1997.
11: Gagauzia [Moldova/Russia 1990] Dagestan, Ingushetia and North Ossetia [Russia 1990], Transnitria [Moldova/Russia 1992], Abkhazia & South Ossetia [Georgia/Russia 2008], Crimea, Lugansk & Donesk [Ukraine/Russia 2014]
12: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Ukraine, Turkmenistan, Uzbekistan
13: A shock in vindication creates reaction in protest, a shock in protest creates responses in conflict, and a shock in vindication creates response in conflict

4. *Policy option* to enforce the rule of law. It can be either *repressive (coercive),* or *cooperative (accommodative)*. Coercive/Cooperative action comes with a positive/negative sign in the State Response Index. The definition of this concept bodes well with the broad strand of literature analysing the *incentives to state repression or accommodation* as mentioned before.
5. *Enforceability of the rule of law* or how the State response achieves soothing the level of unrest (exhausting protests or ending conflicts, for instance)

We believe these concepts suffice to describe the most important stylized features of unrest dynamics in the region of Eurasia and that are in line with the main theoretical rationalii of social unrest as explained above.

Estimation results and Granger Causality

We have estimated several VAR models. One for each of the 25 countries and one for each considered region (Eurasia, West Eurasia, Central Eurasia and East Eurasia). We have included enough lags to fully incorporate the short and medium term response of unrest shocks. According to our information criteria (AIC and SC) and LR test, between 3 and 5 lags are enough to support the specifications of our VAR models in each case.

From the estimation results, we asses that most of the parameters that establish the relation between our four regressors are significant and carry the expected sign. Only the coefficients relating State response to the rest of the variables show inconclusive signs. We think it is a consequence of the nature of the variable (a balance between both coercive and cooperative responses). Besides, it is widely documented that not every country reacts in the same manner to the policy option implemented. This can be shown empirically on inspection of Figure 5.5 graph 3 below.

For the regional VAR model, results of the lag specification tests suggest we should use four-lag model. Thus, using this specification, we test whether vindication, protest, conflict and State response Granger cause each other. The null hypothesis is whether a specific social unrest variable does not Granger-cause another.

In line with the *Unrest Cycle Hypothesis* and our causal ladder of social unrest, we observe that vindication stands as the least endogenous variable since we cannot reject the null hypothesis that the rest of variables (protest, conflict and State response) do not cause vindication (see Table A.5 in the appendix).

On the other hand, for the rest of variables we actually find mutual causality and interdependence, supporting the empirical evidence of unrest escalation (vindication causing protests, protests causing conflict, etc.) and self-reinforcing dynamics across different unrest levels. Particularly striking is the effect of protest and conflict causing State response (in line with the specification 1.a of the model). Further, we also observe that State response Granger causes conflict, according with the results we present below, but with lower intensity than in the other way around.

Regional aggregate analysis

In this part we run comparative analysis of the concepts stated above between the region of Eurasia and our control group: the MENA region. We retrieve the stylized facts from both the graphs and the colour maps provided in the appendix of the document. According to these:

1. Eurasia and MENA are comparable in terms of social volatility. The intensity and resiliency of shocks to vindication and protest is high and similar in both countries (see Figure 5.1 graph 1).
2. Eurasian society is less reactive than MENA as shocks to vindication and protest do not escalate into heightened protest or conflict levels as much as MENA does. Besides, self-reinforcing dynamics are also

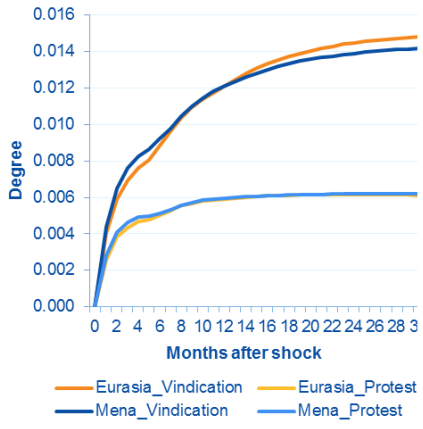
stronger in MENA as shocks to protest feed-back into vindication with a stronger contribution than they do in Eurasia. This contributes to the differential reactivity patterns between both regions (see Table A.6 in the appendix).

3. State reaction to unrest in Eurasia and MENA is conditional to the current level of unrest (see Figure 5.1 graph 3). In fact, policy response to mild social unrest (Vindication) is coercive but as turmoil escalates to Protest or Conflict, it switches to a cooperative mode. This finding is in line with the U-shaped protest/repression binomial found in the literature (Carey, 2002 among others).
4. Enforceability is low in both regions but lower in MENA (see Figure 5.1 graph 2). The natural social reaction to a repressive State response is Conflict. This feature is starker in MENA than in Eurasia and creates incentives to switch a cooperative response.

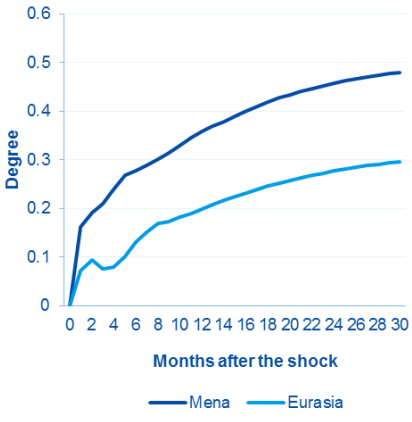
In general, one may say that Eurasia is a fairly volatile region. Shocks are moderately intense and generate resilient dynamics consistently with the inertia paradigm stated above. They generate resilient and intense unrest responses too, that obey to the escalation potential of the region: unrest escalates smoothly and with significant intensity helped by self-reinforcing forces. This bodes well with the standard results of the Unrest Life-cycle Theory. State policy has limited enforcing ability as coercive or repressive action contains but does not suffocate the escalation of unrest into conflict. This feature is consistent with both the Deterrence and Backslash Theories of State repression (see above) and could be the rationale to explain why States switch from coercive to cooperative or accommodative measures as the level of unrest escalates (repressive/coercive when unrest is vindication but cooperative/accommodative as it turns intense protest or conflict). The latter is pretty much in line with Carey's U-shaped reaction of unrest to State action. Finally, Eurasia and MENA share similar features in terms of volatility and reactivity but in MENA, the unrest generation and State reaction are in general more extreme (see Figure 5.1 graph 1). This is believed because the region might also have comparably less enforcing ability than Eurasia has.

Figure 5.1
Regional case

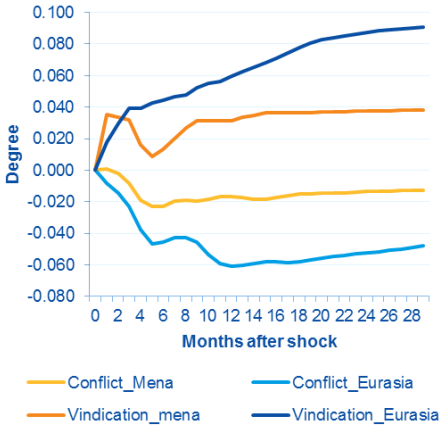
Volatility
(Intensity and resiliency of Shocks)



Enforceability Slack
(Reaction of conflict to coercion)



Policy Option
(State response to unrest)



Source: BBVA Research and GDELT

Inside Eurasia (a sub-regional analysis)

Being Eurasia a varied geographical, ethnic, religious and political conglomerate, we have taken a closer approach to disentangle the different dynamics within the region. To that end, we follow NATO's sub-regional classification of the area and consider three out of the four classified areas: West Eurasia (or Eastern Europe), Central Eurasia (North and South Caucasus) and East Eurasia (Central Asia). All these have in common the border with Russia which we are not going to consider in the analysis (see Figure A.1 in the appendix).

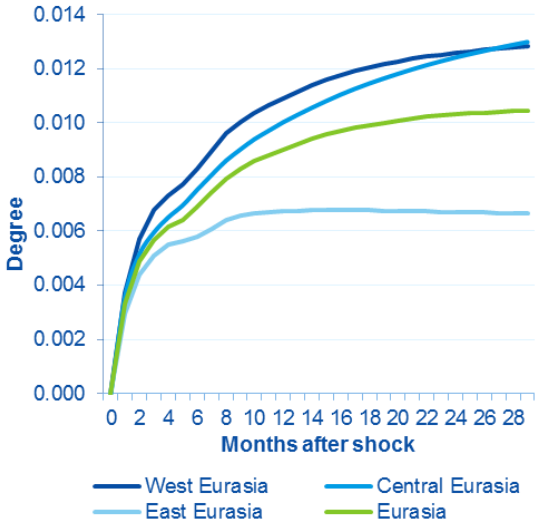
On inspection of impulse response colour map in the appendix (Table A.7 in the appendix) the following stylized facts are observed:

1. Intensity and resiliency of social volatility is higher in the West and Central Eurasia than in the East (shocks to the three variables are bigger and last longer). Probably as a result of available resources and civil population share. (see Figure 5.2 graph 1).
2. Social reactivity is also higher in West Eurasia. Vindictive shocks trigger the fastest and most intense responses in Protest and Conflict registered in this region ("Escalation", see Figure 5.2 graphs 2 y 3). Reactivity in East Eurasia however is more muted (see Figure 5.2 graph 3).
3. Self-reinforcing dynamics are dominant in Central Eurasia as shocks to protest produce great reaction in Vindication (almost double as much as they are produced on average in Eurasia) what could explain the resiliency of unrest shocks mentioned before.
4. State reaction is asymmetric between the West and Central/East Eurasia. While it turns increasingly repressive with the level of social unrest in the West, it loosens its policy towards cooperation in the Caucasus and even more in East Eurasia (see Figure 5.2 graph 4).
5. Enforceability is weak in West Eurasia as coercion creates increasing levels of conflict. The same pattern but with lower intensity is observed in Central Eurasia. East Eurasia is once again an exception: coercive measures by the State reduce the intensity of conflict (but with delay).

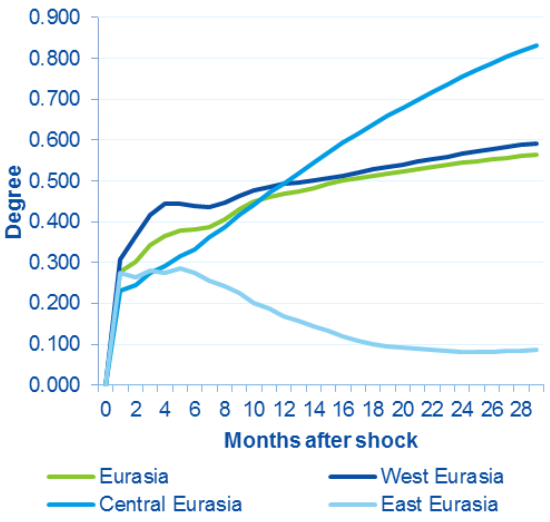
All in all it seems that the features of aggregate unrest dynamics (intensity, reactivity and enforceability) conceal divergent patterns across the sub-regional levels. The most volatile and thus prone to create stronger and swifter shocks are Western and Central countries that stand above the regional average. The intensity of social shocks is decaying as we move to the East. Most reactive countries are countries in the Caucasus to a large extent due to the feed-back effects of social unrest responses. That is to say: the Unrest Lifecycle Theory and the Inertia Theory are more palpable as we move to the West of the region. Enforceability is weak in the West and in the East, meaning that Conflict increases when State policy enters into action no matter if it prefers repressive (West) or cooperative (East) action. In the Caucasus however, State Response has some effect as it dampens the escalation of unrest into conflict.

Figure 5.2
Inside Eurasia

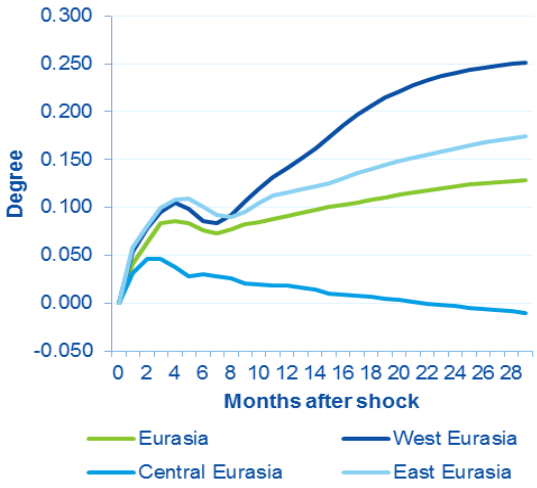
Social Volatility
(Intensity and resiliency of Shocks)



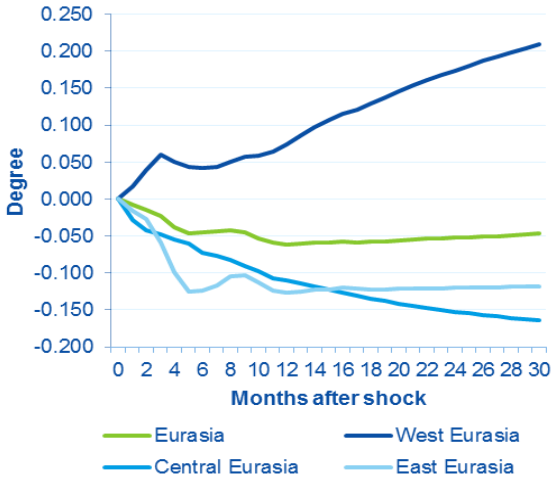
Escalation Potential (from vindication to protest)
(Transmission or response to shocks)



Escalation Potential (from protest to conflict)
(Transmission or response to shocks)



Policy Option
(State response to unrest)



Source: BBVA Research and GDELT

Contagion (Inside Central Eurasia)

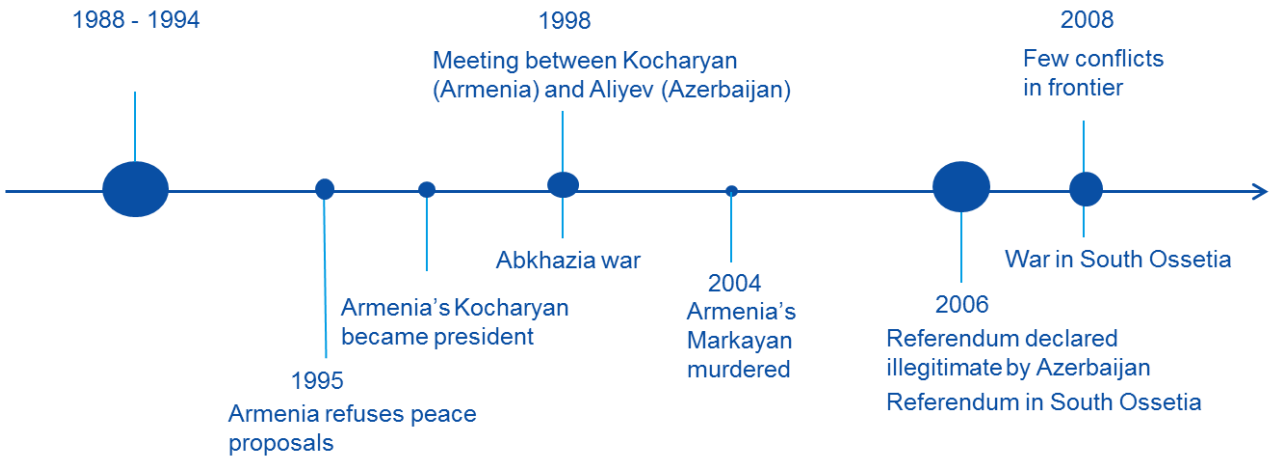
A question that arises when analysing social response dynamics at the sub-regional level is to what extent actions are conditioned by those taken in the neighbouring countries. That is, to what extent there are spill over effects (Carey 2002) play a role at the civil and institutional level. The experience from the Arab Spring in MENA gives insight of the rapid transmission of shocks between countries that share common institutional, religious or ethnographic features. This feature is well documented in Carey 2002 when analysing the spill

over potential of conflicts in Sub-Saharan Africa and Latam and on Arva et all (2013) at the regional level using statistical techniques (Getis-Ord and AI tests).

In order to run a comparable analysis we have decided to look inside the Central Eurasian region (Caucasus). We opted for these region bis-a-bis the others because the size of states is comparable (once we dismiss Russia) in population, border limits and income per capita and all share the same origin (post-soviet states).

Three countries have been considered: Georgia, Armenia and Azerbaijan. We chose them because they share vast communalities in unrest generating events (Armenia/Azeri war, Russian/Georgian War, etc.) that we deem useful to trace interaction and join dynamics within the region.

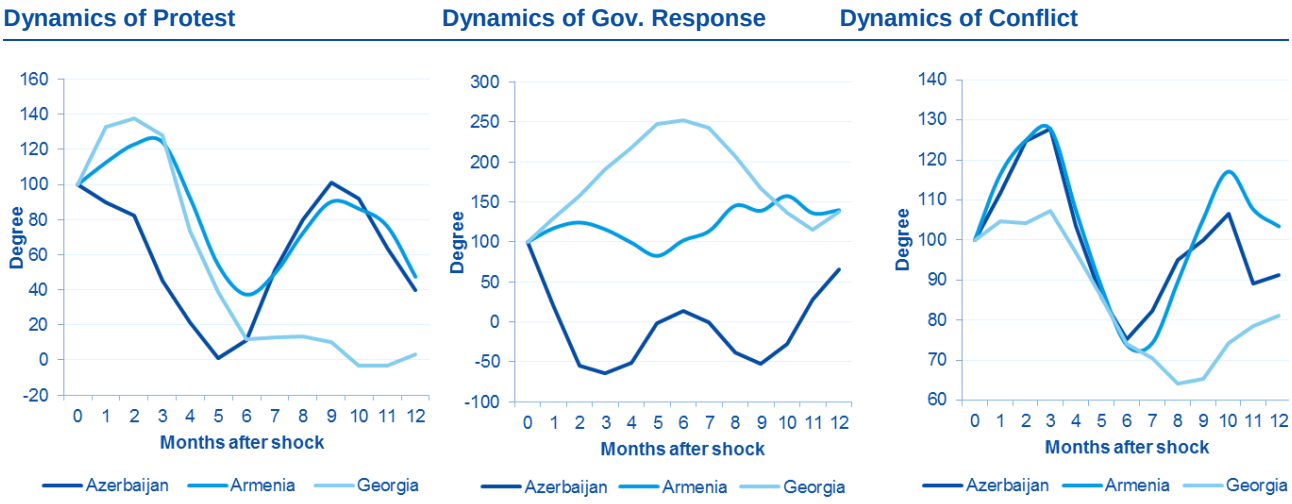
Figure 5.3
Dated Unrest Events in Central Eurasia (Armenia, Georgia and Azerbaijan)
(Source: Rule of Law in Armed Conflicts Project, Geneva Academy of Humanitarian Law and human rights)



Source: BBVA Research and GDELT

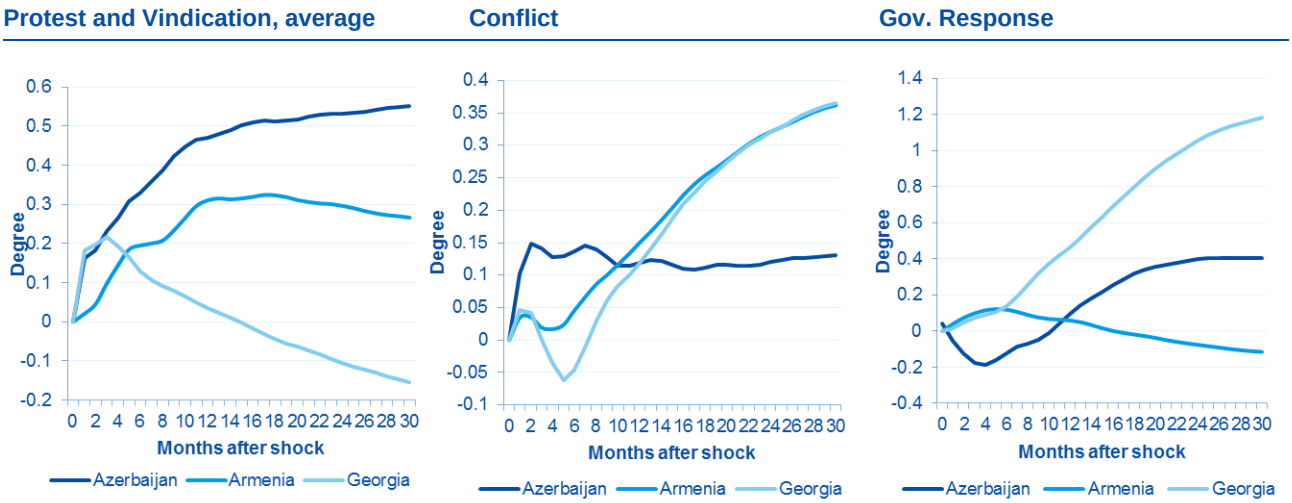
The time range that goes from the mid 90's until today accounts for a vast number of socio-political and ethnographical events that fall within the categories of low (Vindication) and high protest (Protest), Conflict and institutional or State response to civil unrest (see Figure 5.5 and Chronology in Table A.8 in the appendix). Most of these events account for relational features between the three neighbours that allow identifying shared social unrest and State reaction patterns between neighbours and identifying the traces of contagion.

Figure 5.4
Median Event Normalized Unrest Dynamics and State Response in Central Eurasia
(X-Axis means months since dated-event Y-Axis unrest variable is 100 in the origin, Source own calculations)



Source: BBVA Research and GDELT

Figure 5.5
Contagion case in neighbours



Source: BBVA Research and GDELT

On Figure 5.4 we may see the join normalized time dynamics of protest, conflict and State response to the events dated in the chronogram given in Figure 5.3 (more detailed information about the chronology of social unrest events in Central Asia can be found in Table A.8 in the appendix). We normalize the series to be 100 at the date of each the event and then take the median of the dynamics. We find that the three countries in Central Eurasia have distinguishing features in the evolution of unrest and State response and that interaction matters in the sense that –overtime- countries neighbouring others that experience certain levels of unrest (conflict) experience similar features (spill over effects, Arva et al. 2013). In this regards we may asses that:

1. Vindictive and protest dynamics look similar in the three countries but conceal different messages when analysed through time after the outburst of a social event. In the outburst of unrest some follow similar patterns sometimes with delay (Georgia first Armenia follows, Figure 5.4 graph 1). While others reaction has the opposite sign (Azerbaijan).
2. State reaction also varies among members of the Caucasus, while Georgia normally exerts repression to dampen unrest, Azerbaijan is more prone to cooperate and bend to demands (Figure 5.4 graph 2).
3. Conflict in the three follows similar patterns with different intensities (see Figure 5.4 graph 3). Georgia seems having the least volatile conflict dynamic after an outburst of violence, probably due to the amount of exerted State coercion during the same time (see below in bullet point number 5).
4. When analysing contagion dynamics we find that in all cases contagion is a fact, but the intensities vary with the country and the scale of unrest. In general terms (see Figure 5.5 graphs 1 y 2) unrest contagion happens instantly when unrest is mild but it takes some time (6 to 9 months) when unrest escalates to conflict. Armenia is the most vulnerable to contagion as it outperforms the rest in all cases.
5. Policy options are also unevenly transmitted across borders (see Figure 5.5 graph 3). Georgia is the most prone to learn from coercive measures taken from its neighbours while Azerbaijan's first option is for the opposite (cooperation). Armenia does not seem to replicate others coercive measures.

All in all contagion exists at every level of social unrest (from vindication to conflict) but is uneven in intensity and timing and conditional on the nature of the unrest event that has taken place in the neighbour. Low levels of unrest are likely to spread more swiftly and with higher intensity than conflict. At the same time, State policy option is replicated also unevenly across countries; some are prone to mimic the neighbour State's policy while others tend to be neutral or even loose when the neighbours exert coercion. The results of Central Eurasia countries are comparable with those of MENA (see Table A.9 and A.10 in the appendix).

6 Conclusion

Eurasia is a fairly volatile region in terms of social unrest dynamics and particularly in terms of intensity and persistence of the shocks. However, social unrest escalation and self-reinforcing potential decays as turmoil escalates. State reaction follows a similar pattern, starting with repression when unrest is mild but as soon as it escalates into protest and conflict, coercion tends ameliorate ore even switch to cooperation. The reason behind it might be the relatively enforcing ability (coercive) of the rule of law of States in the region.

These features are similar to those seen in MENA but the latter is a more extreme case in all terms and cooperative State responses are more frequent in some countries (i.e the Gulf countries).

Additionally, Volatility, Reactivity and Coercion are higher as we move to the West of the Eurasian Region and this goes in line with the decaying enforcing ability of coercion of each state. Similarly the enforceability via coercion in MENA is even lower, justifying the process of change experienced during the last years. Spill-over effects are a fact and they are comparable for both private and public actors. Besides they have the same nature and display similar features in Eurasia and MENA. Features amid the processes lived in the MENA region over recent times justify remaining alert and aware of the dynamics of the countries in the Eurasian Region.

The findings of this empirical work bode well with the generalised assumption that there is a lifecycle of social unrest, though its intensity and severity, is uneven across the region and remains conditional of the social and State -momentum. On the other hand, action and reaction theories that explain the effects of State repression on civil population also seem to happen, but results related to dominating paradigm (Deterrence effects, backlash effects etc) are so far inconclusive. This is partially the result of the lack of cooperative State responses in this region.

This work represents an empirical assessment of social unrest dynamics. Other analytical approaches to contrast some of the findings against a firm theoretical framework would be advisable. As such, Agent Based Models are promising means of closing the gap between empirical and theoretical assumptions. If relying on empirical methods and more specifically on VAR models, circumventing some data problems such as changing volatility regimes (especially in MENA before and after 2011 due to the Arab Spring) would be advisable, in this sense, a Bayesian approach could be convenient to select shorter sample sizes without loss of generality. Alternatively a Panel VAR could be used to exploit the information across the different countries on expense of shorter time series. This is left for further research.

7 Appendix

Table A.1
Figure State response' definition

CAMEO Event Code	Event's description	Goldstein Scale
7	**PROVIDE AID**	**7.0**
70	Provide aid, not specified below	7.0
71	Provide economic aid	7.4
72	Provide military aid	8.3
73	Provide humanitarian aid	7.4
74	Provide military protection or peacekeeping	8.5
75	Grant asylum	7.0
8	**YIELD**	**5.0**
80	Yield, not specified below	5.0
81	Ease administrative sanctions, not specified below	5.0
811	Ease restrictions on political freedoms	5.0
812	Ease ban on political parties or politicians	5.0
813	Ease curfew	5.0
814	Ease state of emergency or martial law	5.0
82	Ease political dissent	5.0
83	Accede to requests or demands for political reform not specified below	5.0
831	Accede to demands for change in leadership	5.0
832	Accede to demands for change in policy	5.0
833	Accede to demands for rights	5.0
834	Accede to demands for change in institutions, regime	5.0
84	Return, release, not specified below	7.0
841	Return, release person(s)	7.0
842	Return, release property	7.0
85	Ease economic sanctions, boycott, embargo	7.0
86	Allow international involvement not specified below	9.0
861	Receive deployment of peacekeepers	9.0
862	Receive inspectors	9.0
863	Allow delivery of humanitarian aid	9.0
87	De-escalate military engagement	9.0
871	Declare truce, ceasefire	9.0
872	Ease military blockade	9.0
873	Demobilize armed forces	9.0
874	Retreat or surrender militarily	10.0
17	**COERCE**	**-7.0**
170	Coerce, not specified below	-7.0
171	Seize or damage property, not specified below	-9.2
1711	Confiscate property	-9.2
1712	Destroy property	-9.2
172	Impose administrative sanctions, not specified below	-5.0
1721	Impose restrictions on political freedoms	-5.0
1722	Ban political parties or politicians	-5.0
1723	Impose curfew	-5.0
1724	Impose state of emergency or martial law	-5.0
173	Arrest, detain, or charge with legal action	-5.0
174	Expel or deport individuals	-5.0
175	Use tactics of violent repression	-9.0

Source: CAMEO taxonomy

Table A.2
Figure Vindication's definition

CAMEO Event Code	Event's description	Goldstein Scale
10	**DEMAND**	**-5.0**
100	Demand, not specified below	-5.0
101	Demand information, investigation	-5.0
1011	Demand economic cooperation	-5.0
1012	Demand military cooperation	-5.0
1013	Demand judicial cooperation	-5.0
1014	Demand intelligence cooperation	-5.0
102	Demand policy support	-5.0
103	Demand aid, protection, or peacekeeping	-5.0
1031	Demand economic aid	-5.0
1032	Demand military aid	-5.0
1033	Demand humanitarian aid	-5.0
1034	Demand military protection or peacekeeping	-5.0
104	Demand political reform, not specified below	-5.0
1041	Demand change in leadership	-5.0
1042	Demand policy change	-5.0
1043	Demand rights	-5.0
1044	Demand change in institutions, regime	-5.0
105	Demand mediation	-5.0
1051	Demand easing of administrative sanctions	-5.0
1052	Demand easing of political dissent	-5.0
1053	Demand release of persons or property	-5.0
1054	Demand easing of economic sanctions, boycott, or embargo	-5.0
1055	Demand that target allows international involvement (non-mediation)	-5.0
1056	Demand de-escalation of military engagement106:[-5.0] Demand withdrawal	-5.0
107	Demand ceasefire	-5.0
108	Demand meeting, negotiation	-5.0
11	**DISAPPROVE**	**-2.0**
110	Disapprove, not specified below	-2.0
111	Criticize or denounce	-2.0
112	Accuse, not specified below	-2.0
1121	Accuse of crime, corruption	-2.0
1122	Accuse of human rights abuses	-2.0
1123	Accuse of aggression	-2.0
1124	Accuse of war crimes	-2.0
1125	Accuse of espionage, treason	-2.0
113	Rally opposition against	-2.0
114	Complain officially	-2.0
115	Bring lawsuit against	-2.0
116	Find guilty or liable (legally)	-2.0

Continued on next page

Table A.2 (cont.)
Figure Vindication's definition

CAMEO Event Code	Event's description	Goldstein Scale
12	**REJECT**	**-4.0**
120	Reject, not specified below	-4.0
121	Reject material cooperation	-4.0
1211	Reject economic cooperation	-4.0
1212	Reject military cooperation	-4.0
122	Reject request or demand for material aid, not specified below	-4.0
1221	Reject request for economic aid	-4.0
1222	Reject request for military aid	-4.0
1223	Reject request for humanitarian aid	-4.0
1224	Reject request for military protection or peacekeeping	-4.0
123	Reject request or demand for political reform, not specified below	-4.0
1231	Reject request for change in leadership	-4.0
1232	Reject request for policy change	-4.0
1233	Reject request for rights	-4.0
1234	Reject request for change in institutions, regime	-4.0
124	Refuse to yield, not specified below	-4.0
1241	Refuse to ease administrative sanctions	-4.0
1242	Refuse to ease popular dissent	-4.0
1243	Refuse to release persons or property	-4.0
1244	Refuse to ease economic sanctions, boycott, or embargo	-4.0
1245	Refuse to allow international involvement (non mediation)	-4.0
1246	Refuse to de-escalate military engagement	-4.0
125	Reject proposal to meet, discuss, or negotiate	-5.0
126	Reject mediation	-5.0
127	Reject plan, agreement to settle dispute	-5.0
128	Defy norms, law	-5.0
129	Veto	-5.0
13	**THREATEN**	**-6.0**
130	Threaten, not specified below	-4.4
131	Threaten non-force, not specified below	-5.8
1311	Threaten to reduce or stop aid	-5.8
1312	Threaten to boycott, embargo, or sanction	-5.8
1313	Threaten to reduce or break relations	-5.8
132	Threaten with administrative sanctions, not specified below	-5.8
1321	Threaten to impose restrictions on political freedoms	-5.8
1322	Threaten to ban political parties or politicians	-5.8
1323	Threaten to impose curfew	-5.8
1324	Threaten to impose state of emergency or martial law	-5.8
133	Threaten political dissent, protest	-5.8
134	Threaten to halt negotiations	-5.8
135	Threaten to halt mediation	-5.8
136	Threaten to halt international involvement (non-mediation)	-7.0
137	Threaten with violent repression	-7.0
138	Threaten to use military force, not specified below	-7.0
1381	Threaten blockade	-7.0
1382	Threaten occupation	-7.0
1383	Threaten unconventional violence	-7.0
1384	Threaten conventional attack	-7.0
1385	Threaten attack with WMD	-7.0
139	Give ultimatum	-7.0

Source: CAMEO taxonomy

Table A.3
Figure Protest's definition

CAMEO Event Code	Event's description	Goldstein Scale
14	**PROTEST**	**-6.5**
140	Engage in political dissent, not specified below	-6.5
141	Demonstrate or rally	-6.5
1411	Demonstrate for leadership change	-6.5
1412	Demonstrate for policy change	-6.5
1413	Demonstrate for rights	-6.5
1414	Demonstrate for change in institutions, regime	-6.5
142	Conduct hunger strike, not specified below	-6.5
1421	Conduct hunger strike for leadership change	-6.5
1422	Conduct hunger strike for policy change	-6.5
1423	Conduct hunger strike for rights	-6.5
1424	Conduct hunger strike for change in institutions, regime	-6.5
143	Conduct strike or boycott, not specified below	-6.5
1431	Conduct strike or boycott for leadership change	-6.5
1432	Conduct strike or boycott for policy change	-6.5
1433	Conduct strike or boycott for rights	-6.5
1434	Conduct strike or boycott for change in institutions, regime	-6.5
144	Obstruct passage, block	-7.5
1441	Obstruct passage to demand leadership change	-7.5
1442	Obstruct passage to demand policy change	-7.5
1443	Obstruct passage to demand rights	-7.5
1444	Obstruct passage to demand change in institutions, regime	-7.5
145	Protest violently, riot	-7.5
1451	Engage in violent protest for leadership change	-7.5
1452	Engage in violent protest for policy change	-7.5
1453	Engage in violent protest for rights	-7.5
1454	Engage in violent protest for change in institutions, regime	-7.5
15	**EXHIBIT FORCE POSTURE**	**-7.2**
150	Demonstrate military or police power, not specified below	-7.2
151	Increase police alert status	-7.2
152	Increase military alert status	-7.2
153	Mobilize or increase police power	-7.2
154	Mobilize or increase armed forces	-7.2
16	**REDUCE RELATIONS**	**-4.0**
160	Reduce relations, not specified below	-4.0
161	Reduce or break diplomatic relations	-4.0
162	Reduce or stop aid, not specified below	-5.6
1621	Reduce or stop economic assistance	-5.6
1622	Reduce or stop military assistance	-5.6
1623	Reduce or stop humanitarian assistance	-5.6
163	Impose embargo, boycott, or sanctions	-8.0
164	Halt negotiations	-7.0
165	Halt mediation	-6.5
166	Expel or withdraw, not specified below	-7.0
1661	Expel or withdraw peacekeepers	-7.0
1662	Expel or withdraw inspectors, observers	-7.0
1663	Expel or withdraw aid agencies	-7.0

Source: CAMEO taxonomy

Table A.4
Figure Conflict's definition

CAMEO Event Code	Event's description	Goldstein Scale
18	**ASSAULT**	**-9.0**
180	Use unconventional violence, not specified below	-9.0
181	Abduct, hijack, or take hostage	-9.0
182	Physically assault, not specified below	-9.5
1821	Sexually assault	-9.0
1822	Torture	-9.0
1823	Kill by physical assault	-10.0
183	Conduct suicide, car, or other non-military bombing, not spec below	-10.0
1831	Carry out suicide bombing	-10.0
1832	Carry out car bombing	-10.0
1833	Carry out roadside bombing	-10.0
184	Use as human shield	-8.0
185	Attempt to assassinate	-8.0
186	Assassinate	-10.0
19	**FIGHT**	**-10.0**
190	Use conventional military force, not specified below	-10.0
191	Impose blockade, restrict movement	-9.5
192	Occupy territory	-9.5
193	Fight with small arms and light weapons	-10.0
194	Fight with artillery and tanks	-10.0
195	Employ aerial weapons	-10.0
196	Violate ceasefire	-9.5
20	**USE UNCONVENTIONAL MASS VIOLENCE**	**-10.0**
200	Use unconventional mass violence, not specified below	-10.0
201	Engage in mass expulsion	-9.5
202	Engage in mass killings	-10.0
203	Engage in ethnic cleansing	-10.0
204	Use weapons of mass destruction, not specified below	-10.0
2041	Use chemical, biological, or radiologicalweapons	-10.0
2042	Detonate nuclear weapons	-10.0

Source: CAMEO taxonomy

Table A.5
Granger Causality Tests

Dependent variable: PSVINDICATION		
Excluded	Chi-sq	Prob.
PSPROTEST	4.109309	0.3914
PSCONFLICT	3.139065	0.5348
GOVRESPONSE	0.877303	0.9278
All	7.395765	0.8304

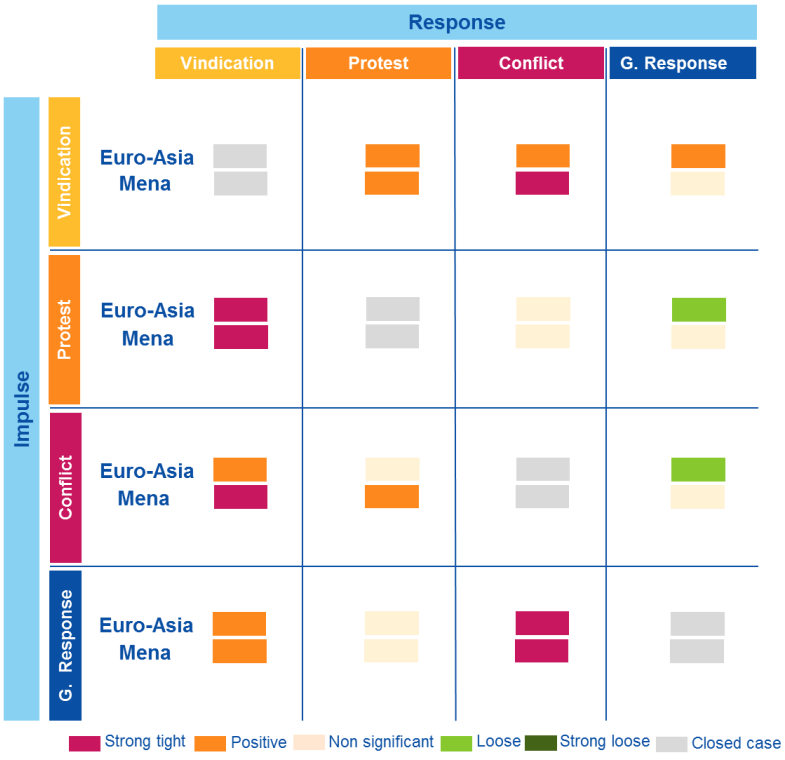
Dependent variable: PSPROTEST		
Excluded	Chi-sq	Prob.
PSVINDICATION	8.394849	0.0481
PSCONFLICT	3.895887	0.0403
GOVRESPONSE	15.354549	0.0228
All	38.30861	0.001

Dependent variable: PSCONFLICT		
Excluded	Chi-sq	Prob.
PSVINDICATION	5.303688	0.0575
PSPROTEST	2.227042	0.0641
GOVRESPONSE	27.16272	0
All	33.5228	0.0008

Dependent variable: PSPROTEST		
Excluded	Chi-sq	Prob.
PSVINDICATION	8.11017	0.0876
PSPROTEST	0.350147	0.0364
PSCONFLICT	13.303107	0.0084
All	32.16286	0.0043

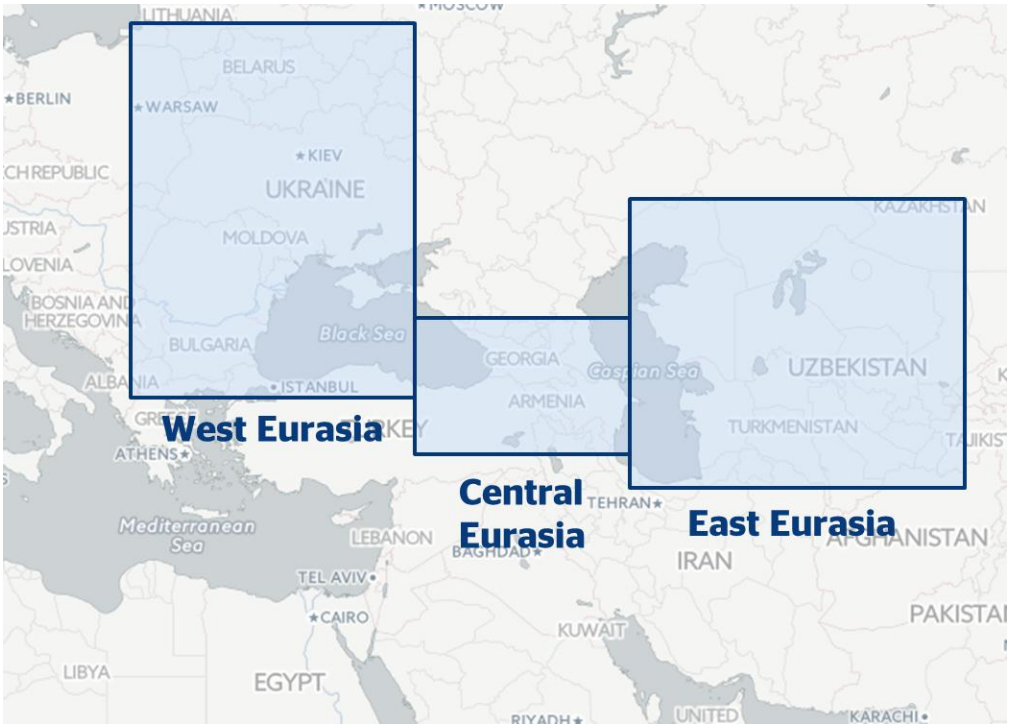
Source: BBVA Research

Table A.6
Impulse Response Analysis of Eurasia and MENA



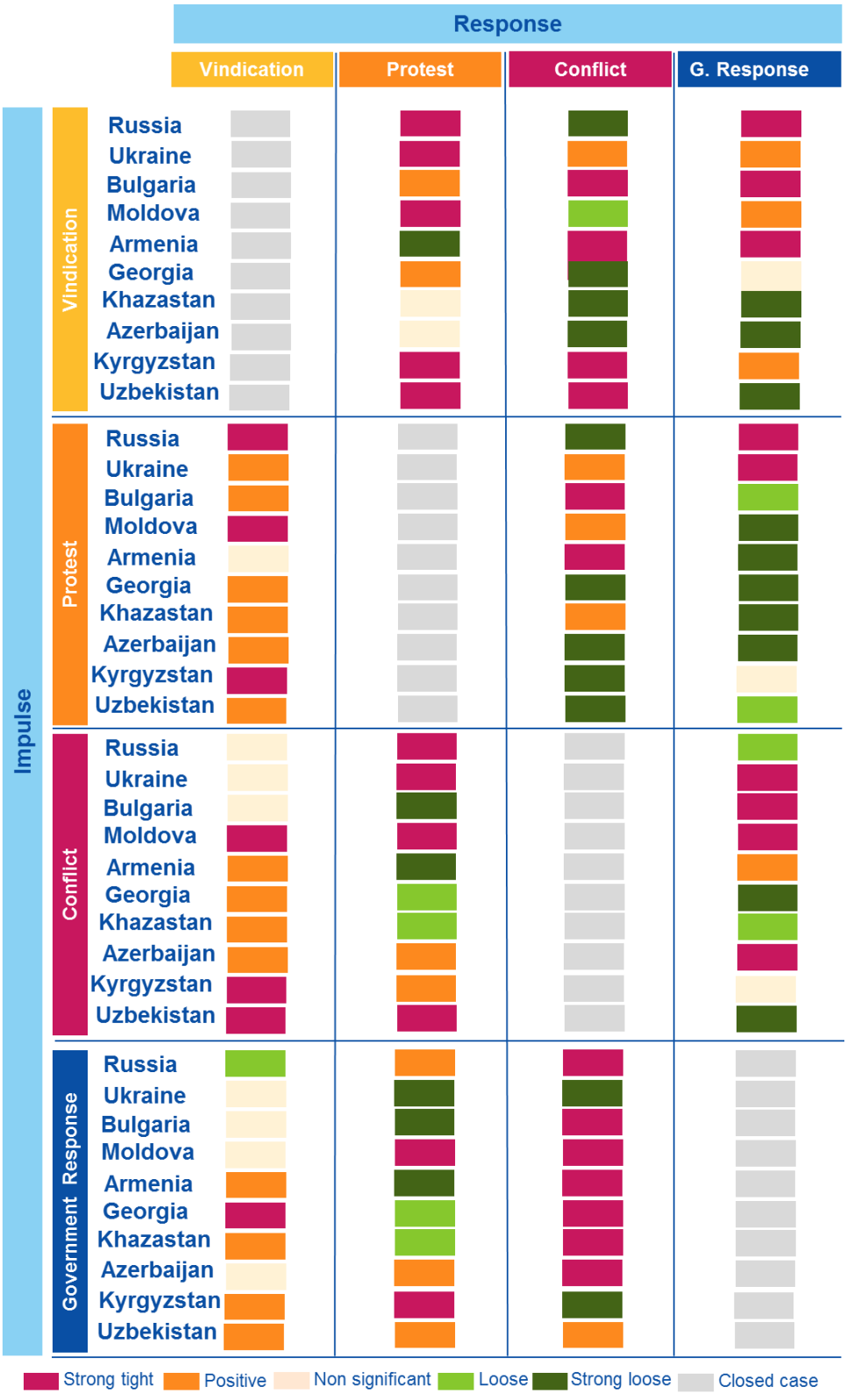
Source: BBVA Research

Figure A.1
Tactic Sub-regional division of Eurasia
(Source: Rule of Law in Armed Conflicts Project and NATO)



Source: BBVA Research

Table A.7
Impulse Response Analysis of Countries under separate VAR models



Source: BBVA Research

Table A.8
A Chronology of Social Unrest Events of Interest in Eurasia
(Source: Rule of Law in Armed Conflicts Project, Geneva Academy of Humanitarian Law and human rights)

Central Asia		
Conflict	**Start**	**End**
Civil War In Taijikistan	1992	1997
2010 South Kyrguzstan ethnic clashes	2010	2010
Tajikistan Insurgency	2010	2012
North Caucasus		
Conflict	**Start**	**End**
East Prgordony Conflicf	1992	1992
First Chechen War	1994	1996
War of Dagestan	1999	1999
Second Chechen War	1999	2009
War of Ingushetia	2007	—
Insurgency in the North Caucasus	2009	—
South Caucasus		
Conflict	**Start**	**End**
Nagorno-Karabakh War	1988	1994
1991–92 South Ossetia War	1991	1992
Georgian Civil War	1991	1993
War in Abkhazia (1992–93)	1992	1993
War in Abkhazia (1998)	1998	1998
Pankisi Gorge crisis	2002	2004
2004 Adjara crisis	2004	2004
Russo-Georgian War	2008	2008
East Europe		
Conflict	**Start**	**End**
Transnistria War	1992	1992
Euromaidan	2013	2014
2014 Ukrainian revolution	2014	2014
2014 pro-Russian unrest in Ukraine	2014	—
War in Donbass	2014	—
2014 Russian military intervention in Ukraine	2014	—
Other		
Conflict	**Start**	**End**
1993 Russian constitutional crisis	1993	1993

Source: BBVA Research

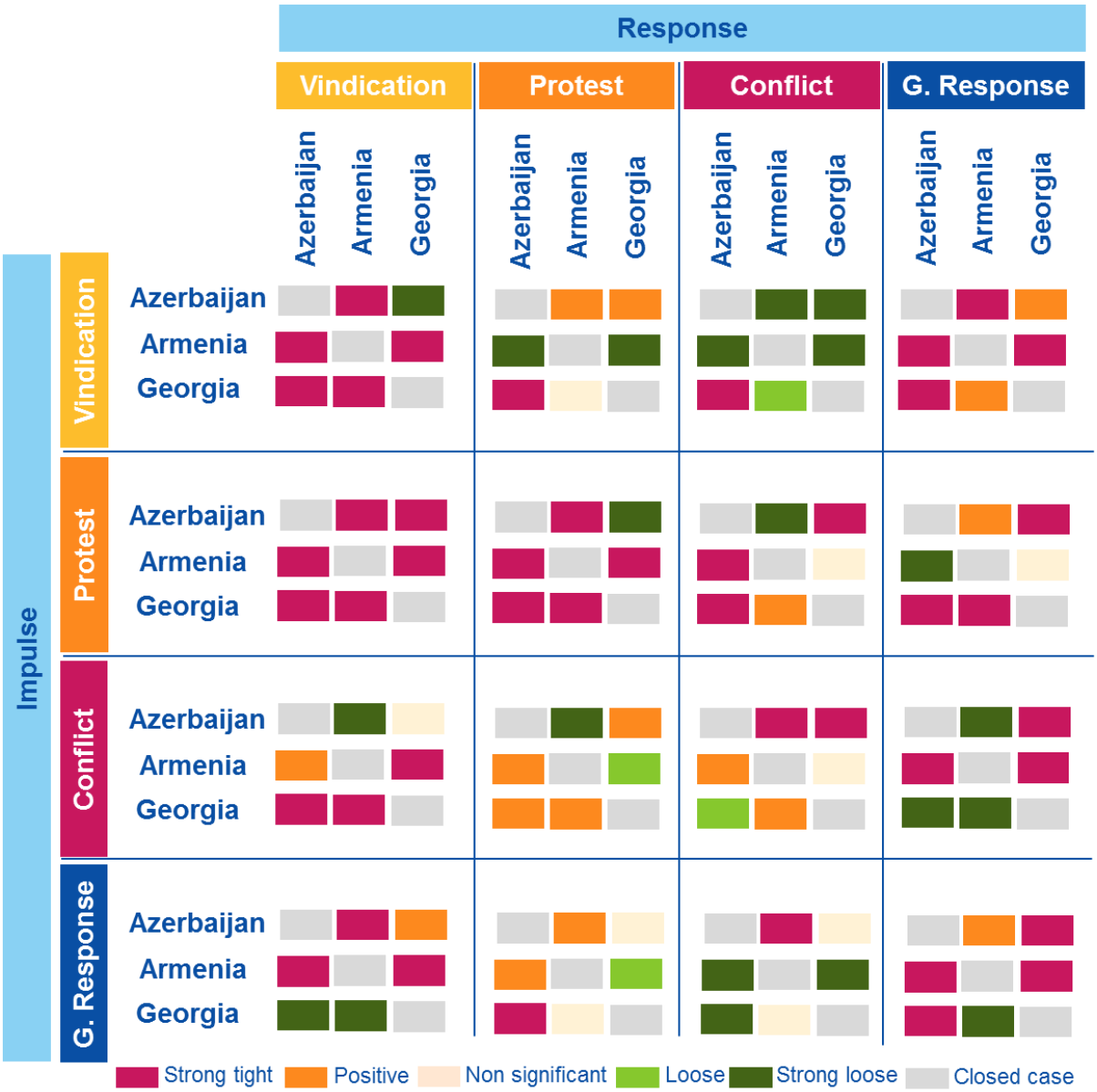
Chronology of Recent Events

Georgia. Since emerging as an independent state from the Soviet Union in 1991, Georgia has attracted the US and Russia. Tense relations with Russia have been further exacerbated by Moscow's interest of both the separatist regions of Abkhazia and South Ossetia. The US now has a major strategic interest in the country, having invested heavily in an oil pipeline from Azerbaijan via Georgia to Turkey. The Georgian armed forces have been receiving US training and support. Increasing US economic and political influence in the country has long been a source of concern for the Kremlin, as have Georgia's aspirations to join NATO and the European Union.Since independence, the people of Georgia have endured periods of internal armed conflict and unrest as well as violence related to the regions of Abkhazia and South Ossetia. Both regions have close ties with Moscow, and in August 2008 tensions between Moscow and Tbilisi flared up into an armed conflict, triggered by clashes between Georgia and South Ossetian separatist forces and an assault on South Ossetia by Georgian troops. Russia intervened on behalf of the South Ossetian forces resulting in an armed conflict between Georgia and Russia and occupation of Georgian territory by Russia that continued as of September 2009 (see Applicable international law section). Russia announced that it was formally recognising the independence of the two breakaway regions. The UN operates a military observer mission alongside Russian peacekeepers in Abkhazia.

Armenia and Azerbaijan. An independent Republic of Armenia was proclaimed at the end of the 1914-1918 War but it lasted only until the beginning of the 1920s when the Bolsheviks incorporated it into the Soviet Union. Armenia's return to independence in 1991 was overshadowed by the conflict over Nagorno-Karabakh, the predominantly Armenian-populated region in Azerbaijan (see Current conflicts section). Full-scale war broke out the same year as ethnic Armenians in Karabakh fought for independence, supported by troops and resources from Armenia proper. A ceasefire in place since 1994 has failed to deliver any lasting solution.

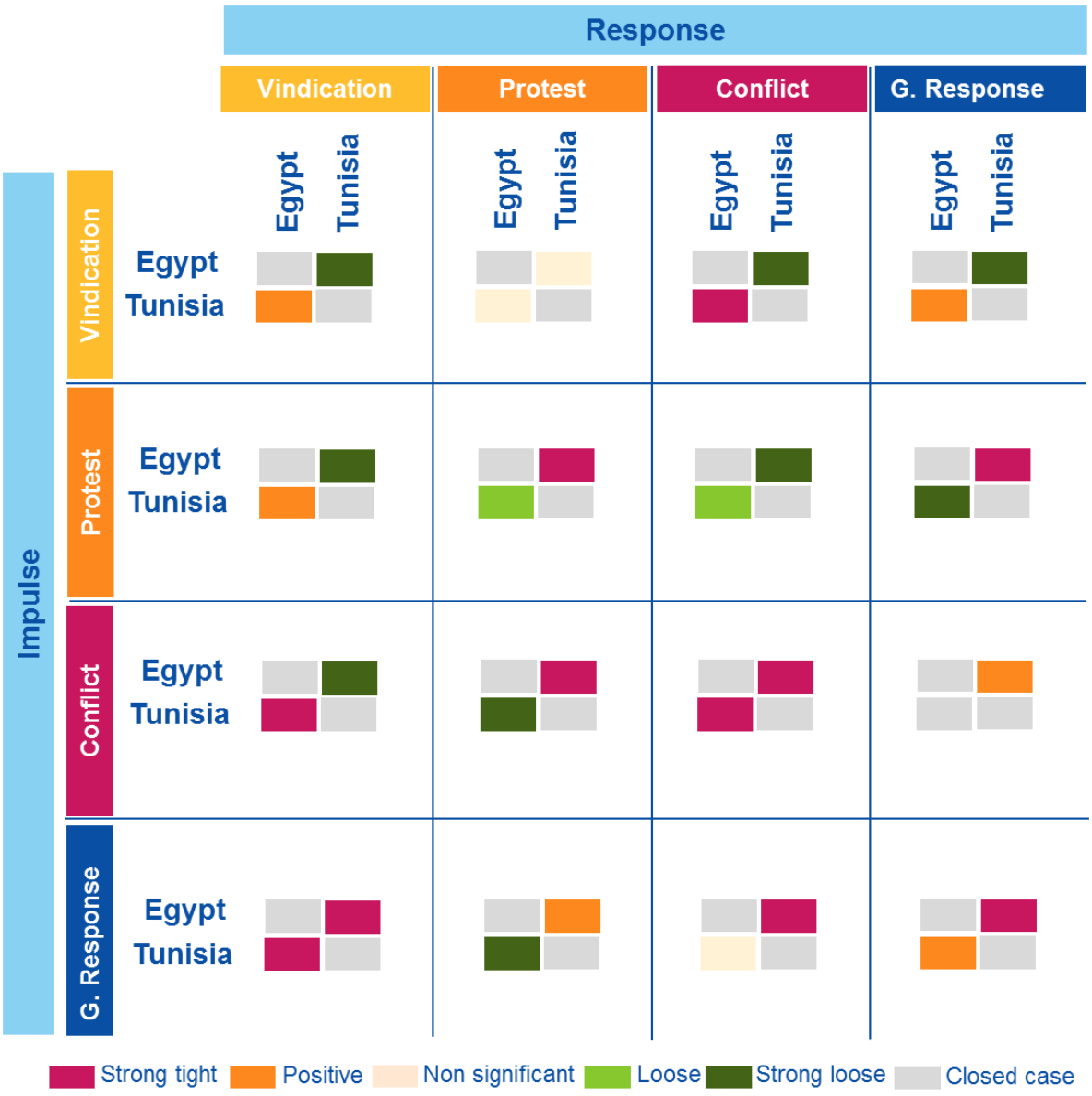
Russia, France and the US co-chair the OSCE's Minsk Group, which has been attempting to broker an end to the dispute for over a decade. In 1997, the group tabled settlement proposals seen as a starting point for negotiations by Azerbaijan and Armenia but not by the de facto authorities in Nagorno-Karabakh itself. When the then-Armenian-president Levon Ter-Petrosyan tried to encourage Nagorno-Karabakh to enter into talks he was forced to resign amid cries of betrayal. Azerbaiijan declared illegitimate a referendum held in the region in December 2006. Armenia's president Serzh Sarkisian and Azerbaijan's Ilham Aliyev agreed in November 2008 to intensify their efforts to find a political settlement to the dispute over Nagorno-Karabakh. They claimed to have made significant progress at talks in Prague in May 2009 on the sidelines of the EU's Eastern Partnership summit.

Table A.9
Cross Country Impulse Response Analysis for Contagion in Central Eurasia



Source: author's calculations

Table A.10
Cross Country Impulse Response Analysis for Contagion in MENA



Source: author's calculations

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