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The nexus between social unrest and economic growth in Middle East and Central Asia countries

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Abstract

Purpose – Conflict and civil strife adversely affect the economy since it severely disrupts the normal, daily routine of economic activity. Similarly, economic downturns can trigger discontent that has the potential to escalate into social unrest and strife. Using the recently compiled index on social unrest (RSUI) of Barrett *et al.* (2020), the paper sets out to examine the nexus between economic growth and social unrest in the case of 29 Middle East and Central Asia countries over the period 2000–2018.

Design/methodology/approach – To probe into the issue at hand, the paper adopts a panel causality approach. To this effect, two panel causality tests are used. The first is the heterogeneous panel causality model proposed by Dumitrescu and Hurlin (2012) is employed. The second panel Granger causality test is the frequency domain causality test constructed by Breitung and Candelon (2006) and extended for panel testing by Croux and Reusens (2013).

Findings – The results of the causality tests indicate a strong bidirectional nexus between civil unrest and economic growth. The findings support the contention that civil strife adversely affects economic performance and economic downturns can trigger discontent and unrest.

Research limitations/implications – Albeit consistent and robust, the results reported herein concern the specific sample of countries under scrutiny. Extending the analysis to other groups of countries will offer better insights into the nexus between civil unrest and economic performance.

Originality/value – To the best of the authors' knowledge, the present paper is the first to address the nexus between social unrest and economic growth for this group of countries using the recently compiled index on social unrest (RSUI).

Keywords Social unrest, Economic growth, Middle East, Central Asia, Causality

Paper type Research paper

Introduction

Ample evidence shows that political instability, social strife and unrest, civil disorder and conflict, terrorism, intra and interstate wars exert a negative effect on the economy (*inter alia*: Bozzoli *et al.*, 2010; Iqbal *et al.*, 2021; Smith, 2014). Such events abruptly and violently disrupt the normal, daily routine of economic and social life. Invariably they generate widespread disorder and turmoil. Apart from the human suffering and casualties they cause, capital and infrastructures are damaged or destroyed, trade is interrupted. Moreover, given that such events invariably generate uncertainty, investment is dissuaded as domestic and foreign

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investors temporarily cancel or abandon investment plans with the concomitant adverse effect on the economy. In other words, such events act as exogenous shocks; the impact of which is not limited to the sphere of politics but has direct economic effects. For instance, they have the potential to impact capital markets directly affecting market risk premia, highly increasing volatility and thus exert an adverse impact on asset valuation, portfolio allocations and investment decisions (*inter alia*: Polachek and Sevastianova, 2012; Brune *et al.*, 2015; Acemoglu *et al.*, 2018; Guidolin and La Ferrara, 2010). Indeed, in the presence of sociopolitical uncertainty and instability generated by civil strife and social unrest, investors may revise their expectations and investment strategies. Given that investment is universally considered to be the steam engine of growth, events that cause through falling confidence and increased uncertainty a decrease in investment, evidently impede and retard growth. As noted by Hadzi-Vaskov *et al.* (2021), the extent and duration of the economic repercussions are determined both by the type of the event as well as by the institutional and other political traits of the country. They report findings indicating that institutionally weaker countries tend to experience a comparative larger adverse economic impact. Moreover, as has been shown, the extent and duration of the negative economic impact dependents on the severity of the events, their duration as well the institutional framework and the effectiveness of the responses by the authorities (Schneider and Troeger, 2006; Gaibulloev and Sandler, 2019; Barrett *et al.*, 2021).

Albeit not a frequent occurrence, such violent events are nevertheless omnipresent, and many countries are afflicted by them. Middle East and Central Asia are regions that invariably suffer from civil upheavals, intra and interstate strife and conflict with the concomitant impact on their national economies (*inter alia*: Abu Murad and Alshyab, 2019; Worth, 2016; Costalli *et al.*, 2017; Sweidan, 2016). A representative, prominent example of such civil strife and unrest in the Middle East region is the Arab Spring. Depending on the country, it involved massive and often violent demonstrations and anti-government protests, uprisings and armed rebellions that affected many countries such as for instance Tunisia, Egypt, Bahrain, Oman, Yemen, Libya (*inter alia*: Cambrini and Zanotti, 2021; Matta *et al.*, 2019; Hatab, 2019; Echevarría and García-Enríquez, 2019; Bettarelli, 2017; Anderson, 2011). However, as studies have shown the nexus between conflict and strife with the economy can be bidirectional. Reported findings indicate that a slowdown in economic performance especially sharp economic downturns that cause acute income reductions, increase economic and social inequalities and result in widespread economic hardship, can act as inflamers that trigger-off social unrest and fuel civil strife (*inter alia*: Paasonen, 2020; Ponticelli and Voth, 2020; Weinberg and Bakker, 2015; Weezel, 2015). Economic recessions lead to increased unemployment and sharp reductions in households' income with the concomitant economic hardship. Thus, they amplify economic and social inequalities and heighten existing tensions or generate new ones. In turn, these form the fertile ground where dissatisfaction, frustrations and grievances grow and boil-over in widespread social unrest and civil strife. In turn, as already noted, mass civil protests and social unrest test and shake governments and have the potential to generate political instability. The latter is defined by Alesina *et al.* (1996) as the propensity of a government collapse. They show that during periods with a high propensity of government collapse, economic growth tends to be significantly lower compared to periods with no such instability and uncertainty over the government's stability.

In the context of this literature, the present paper examines the nexus between economic performance as reflected by GDP growth rates and social unrest in the case of 29 Middle East and Central Asia countries for which data are accessible. To probe into the issue at hand, we use the recently compiled *Reported Social Unrest Index* (RSUI) of Barrett *et al.* (2020). To the best of our knowledge, this is the first time this index is used to explore the causal nexus between social unrest and economic growth for this specific group of countries. The nexus is examined empirically for the period 2000–2018 via the Dumitrescu and Hurlin (2012) panel

Granger noncausality model and a temporary and permanent causality approach. The rest of this short paper is structured as follows. The two variables are briefly presented in the next section that focuses on a comparative descriptive presentation. Section 3 includes a bird's eye view of the empirical methodology employed and a discussion of the findings of the estimated causality tests. Finally, section four concludes this note.

Social unrest and growth rates: a comparative descriptive presentation

As noted in the introduction, the recently compiled Reported Social Unrest Index (RSUI) of Barrett *et al.* (2020) is used to probe into the issue at hand. Briefly, social unrest is defined as the occurrence of events defined as protests, riots and other forms of civil disorder and conflict (Barrett *et al.*, 2020). Recent examples include the Gilets Jaunes protests in France, Occupy Wall Street and Black Lives Matter in the USA, the Arab Spring in the Middle East countries included in the empirical examination that follows. Several intertwined underlying causes can trigger such events that include political, economic such as food prices, social, ethnic and religious distress, social exclusion, grievances and frustrations that have either accumulated over a longer period or are triggered off by specific developments. As already noted, the effect of such social turmoil and mass civil protests is seldomly confined to the political sphere. Invariably it spills-over to the economy through various channels including, capital markets and investment decisions that can be dissuaded in view of the uncertainty the social turbulence and upheaval tends to generate (*inter alia*: Abu Murad and Alshyab, 2019; Aisen and Veiga, 2013; Dorsett, 2013). Matta *et al.* (2021) argue that mass protests and social unrest could be construed by economic agents as signaling the possibility of a major or indeed fundamental political and economic regime change and this possibility exacerbates the negative impact exerted on the economy and economic activity. Veninga and Ihle (2018) note that political instabilities do not only cause uncertainty that affects economic agents such as consumers and traders but can also render institutions dysfunctional. In turn, this impedes trade and economic activity.

Using text search methods, Barrett *et al.* (2020) compile the index through relevant media reports and press coverage of events that constitute occurrences of social unrest. As explained in more detail in their paper, the primary source on which the construction of RSUI is the *Dow Jones*' *Factiva* news aggregator and they draw from news and media articles published by major English-language newspapers and networks in the USA, UK and Canada (p. 4). The events are traced and collected via key words that are used to report civil unrest events, including protests, riots, major demonstrations, and other forms of unrest (p. 5). Other such indices that rely on text search methods include the Caldara and Iacoviello (2019) Geopolitical Risk Index, the Baker *et al.* (2016) Economic Policy Uncertainty Index. All have been used extensively in the relevant academic literature (*inter alia*: Aloui and Hamida, 2021; Hadzi-Vaskov *et al.*, 2021; Kyriazis and Economou, 2021; Nowzohour and Stracca, 2020). The RSU index used herein was initially featured in IMF's Regional Economic Outlook for Middle East and Central Asia in April and October 2019 [1]. Briefly, the index [2] is constructed by selecting and coding major events as these are reported by the media that includes major English-language newspapers and networks (Barrett *et al.*, 2020). For instance, it has been used to assess the social repercussions of pandemics such as COVID-19 (Barrett and Chen, 2021). RSUI is of monthly frequency. Higher values indicate increased levels of social unrest. However, due to the fact that growth rates series are not readily available in monthly frequency for the countries included in the group examined herein, an annual average value of RSUI is used in the estimations that follows. Moreover, the downloadable RSUI data series for the 29 [3] Middle East and Central Asia span the period from January 2000 to July 2019. Hence, the annual series used here cover the years 2000–2018, allowing for well over five hundred observations for the panel of countries used in the empirical investigation that follows in the next section.

Figure 1 offers a bird's eye view of the two variables: average RSUI values and GDP growth rates for the entire period and sample of countries under scrutiny here. As can be seen, the greatest variation between the twenty-nine countries is observed in the case of the GDP growth rates (Figure 1b), whereas in terms of the RSUI the group of countries presents a fairly homogenous picture. However, as presented in Table 1 where additional descriptive statistics are included–maximum and minimum values as well as the standard deviation – it is evident that the RSUI values recorded for each country present a noteworthy variation with higher values of the index indicating higher levels of social unrest and vice versa. The United Arab Emirates (UAE) with an RSUI average score of 102.0 record a maximum value of 463.2 and a minimum of zero during the period in question. Similarly, Mauritania's average RSUI score is 99.5 whereas the maximum score is 469.9 and the minimum zero. Similar indicative cases of RSUI score variation can be found in many other countries such as for instance Armenia, Egypt, Turkmenistan and Yemen (Table 1).

In terms of GDP growth performance, the average annual GDP growth for the entire group of countries stands at 5% during the period under scrutiny here. As can be seen in Figure 1b as well as Table 1, Turkmenistan's average of 11.8% is the highest among the 29 countries of our group, followed by that of Iraq (9.9%) and Qatar (9.4%). The lowest average growth rate is that of Yemen (0.1%) followed by that of Sudan (2.6%) and Libya (2.9%). Libya is in fact the country with the highest fluctuations in terms of GDP (max: 124.7%, min: −66.7%, std. dev.: 39.4) followed by Iraq. Evidently, this is attributable to the ongoing civil war in Libya and the continuous violent strife in Iraq (Table 1).

Methodology and empirical findings

To empirically probe into the nexus between social unrest as quantified by the RSUI of Barrett *et al.* (2020) and economic growth we opt to use two panel Granger causality tests. The sample choice of the 29 Middle East and Central Asia countries (Table 1) used here to examine empirically the issue at hand was purely dictated by data availability constraints since the entire dataset of the RSUI is not readily available. As previously noted, the tests cover the period 2000–2018 for which the downloadable series are available. We start the empirical analysis by looking at the relationship between the two variables that is the growth rates of GDP and the RSUI. Table 2 reports the findings from tabulating the correlation matrix between the social unrest index and economic growth. As can readily be seen in Table 2, the two variables are negatively correlated (−49.99%).

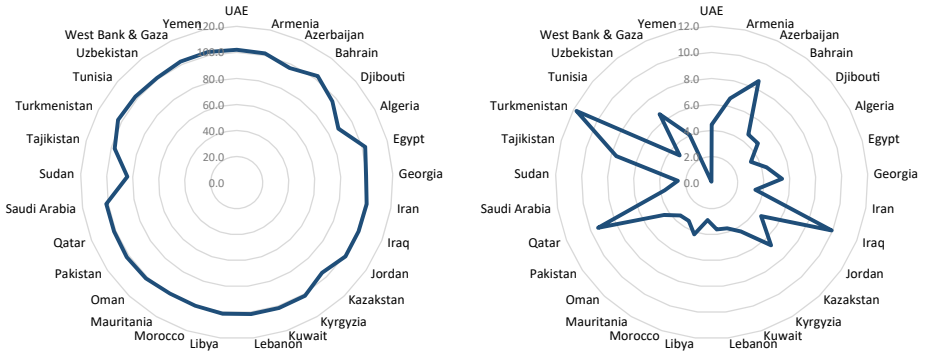

Figure 1.
Average RSUI values and GDP growth rates 2000–2018

		Mean	Max	Min	Std. dev.
UAE	RSUI	102.0	463.2	0.0	116.7
	GDP%	4.5	12.3	−5.2	3.8
Armenia	RSUI	101.6	816.9	7.7	176.9
	GDP%	6.6	14.8	−14.1	6.6
Azerbaijan	RSUI	96.9	233.4	15.7	67.6
	GDP%	8.6	34.5	−3.1	9.9
Bahrain	RSUI	102.8	1059.5	2.4	238.6
	GDP%	4.6	8.3	1.7	1.9
Djibouti	RSUI	96.4	429.4	0.0	106.4
	GDP%	4.7	8.5	0.7	2.1
Algeria	RSUI	88.4	339.2	10.7	83.2
	GDP%	3.4	7.2	1.2	1.5
Egypt	RSUI	102.4	684.3	2.4	178.1
	GDP%	4.4	7.2	1.8	1.5
Georgia	RSUI	99.5	185.7	23.4	39.4
	GDP%	5.4	12.6	−3.7	3.6
Iran	RSUI	101.2	279.4	38.8	59.0
	GDP%	3.4	13.4	−7.4	5.1
Iraq	RSUI	100.8	183.0	50.1	35.0
	GDP%	9.9	81.8	−7.8	21.2
Jordan	RSUI	100.9	593.5	12.2	130.5
	GDP%	4.6	8.9	1.9	2.4
Kazakhstan	RSUI	95.3	284.1	13.7	69.7
	GDP%	6.6	13.5	1.1	3.5
Kyrgyzstan	RSUI	101.6	352.1	7.8	87.6
	GDP%	4.4	10.9	−0.5	3.1
Kuwait	RSUI	101.6	488.9	15.1	114.7
	GDP%	3.7	17.3	−7.1	5.7
Lebanon	RSUI	101.6	358.2	16.4	92.3
	GDP%	3.6	10.2	−1.9	3.4
Libya	RSUI	101.3	764.2	3.4	173.4
	GDP%	2.9	124.7	−66.7	39.4
Morocco	RSUI	99.8	425.4	15.2	100.0
	GDP%	4.2	7.6	1.1	1.6
Mauritania	RSUI	99.5	469.9	0.0	114.5
	GDP%	3.4	18.3	−3.9	4.6
Oman	RSUI	101.4	1273.1	0.0	281.0
	GDP%	3.5	9.1	−2.7	3.0
Pakistan	RSUI	102.0	266.8	10.2	76.4
	GDP%	4.4	9.0	0.4	1.8
Qatar	RSUI	101.4	379.5	0.0	113.0
	GDP%	9.4	28.1	−1.5	7.4
Saudi Arabia	RSUI	101.5	430.3	20.3	101.4
	GDP%	3.7	11.2	−2.8	3.7
Sudan	RSUI	84.2	181.7	17.0	46.1
	GDP%	2.6	10.9	−17.0	5.9
Tajikistan	RSUI	97.3	339.5	13.5	80.6
	GDP%	7.6	10.6	3.9	1.6
Turkmenistan	RSUI	103.1	320.4	0.0	82.1
	GDP%	11.8	20.4	6.1	4.3
Tunisia	RSUI	102.1	900.3	0.8	204.4
	GDP%	3.2	6.7	−1.9	1.9
Uzbekistan	RSUI	101.1	440.6	9.2	94.6
	GDP%	6.6	9.5	3.8	1.7
West bank and Gaza	RSUI	102.5	270.2	28.1	72.0
	GDP%	4.0	21.9	−12.5	8.1
Yemen	RSUI	102.7	965.0	2.8	212.1
	GDP%	0.1	7.7	−28.0	8.4

Table 1.
Descriptive statistics of RSUI and economic growth (GDP%) 2000–2018

The next step in the empirical analysis involves the estimation of causality tests in order to establish the nexus between the two variables. The first causality test applied is the heterogeneous panel causality model by Dumitrescu and Hurlin (2012). In brief, the benefits of this procedure are as follows: Cross-section dependence and heterogeneity are taken into account, the temporal dimension and the size of the cross-section in relation to each other are not related and it is a model also applicable for unbalanced data. Methodologically the following equation is estimated:

$$K_{i,t} = \pi_i + \sum_{i=1}^{\delta} \rho_i^{(\delta)} K + \sum_{i=1}^{\delta} \tau_i^{(\delta)} Z_{i,t-\delta} + \omega_{i,t} \tag{1}$$

π_i is the constant term, $\rho_i^{(\delta)}$ shows the lag parameter and $\tau_i^{(\delta)}$ indicates the coefficient slope. K and Z are the two variables examined here, that is RSUI and the growth rate of GDP as presented in the previous section. Additionally, two tests are examined for the validity of panel Granger causality. The first one is obtained from the Wald statistics (Z_{Wald}) and the second is derived from the calculated moments for limit T datasets (Z_{bar}).

As a second panel Granger causality test, we employ a frequency domain causality, at permanent and temporary periods. In brief, the traditional causality methods cannot analyze the causality nexus at various frequencies. Therefore, a Wald pattern is established by Geweke (1982) in order to investigate the presence of Granger causality in the frequency domain. The test procedure developed by Breitung and Candelon (2006) was extended by Croux and Reusens (2013) to be used in cases of panels. As noted by Ehigiamusoe (2021), the Breitung and Candelon (2006) causality has many advantages in contrast with the classical Granger causality models. The panel technique of Croux and Reusens (2013) can be estimated through a seemingly unrelated regressions (SUR) procedure:

$$M_{i,t} = \sum_{e=1}^{q} \theta_{i,e} M_{i,t-e} + \sum_{e=1}^{q} \xi_{i,e} N_{i,t-e} + \omega_{i,t} \quad \text{for} \quad i = 1, \ldots \Phi, \tag{2}$$

$M_{i,t}$ and $N_{i,t}$ are the two variables (RSUI and GDP%) for which we explore the causality hypothesis as a pair, q is the lag length, Φ is the sample of countries and $\omega_{i,t}$ is the error term. Moreover, the SUR model calculated by the feasible generalized least squares estimator [4].

The empirical investigation begins with a preliminary analysis of the two variables. Specifically, we start by examining the stationary of each variable by applying two classical panel unit root tests. Those of Im *et al.* (2003) and Pesaran (2007). The findings of the unit root estimations are shown in Table 3. Both variables are not stationary at levels, but the null hypothesis of a unit root can be rejected at first differences. Consequently, the RSUI and GDP growth series are integrated at order one, $I(1)$. In the next step of the empirical investigation, we can check the cointegration association between the variables before we test the panel Granger causality. Table 4 presents the findings of the panel cointegration estimations. To verify the validity of the cointegration assumption, we implemented two panel cointegration methods, those of Pedroni (1999) and Kao (1999). The findings are robust and consistent.

Sample: 2000–2018
Observations: 551

Correlation probability	RSUI	GDP
RSUI	1.0000	−0.4999
GDP	−0.4999	1.0000

Table 2.
Panel correlation matrix

The null hypothesis of no cointegration cannot be accepted at the seven panel cointegration tests (as proposed by Pedroni, 1999). Likewise, outcomes of Kao (1999) denote that variables are panel cointegrated with 1% significance levels. However, the aforementioned panel cointegration tests cannot account for cross-sectional dependence. Therefore, as a complementary test the panel cointegration method of Westerlund (2007) is implemented because it can control for cross-sectional dependence. The findings suggest that we cannot accept the null hypothesis of no cross-sectional dependence.

The results from estimating the two panel Granger causality models presented above are shown in Tables 5 and 6, respectively. As a first broad and general observation, the results offer robust evidence in favor of a bidirectional causal nexus between the two variables under scrutiny, that is the social unrest index (RSUI) and the GDP growth rates.

In Table 5 the results of the Dumitrescu and Hurlin (2012) panel causality estimations in different lag lengths are presented. The findings are consistent and robust. As can be seen in the table, both test-statistics, that is Z_{Wald} and Z_{bar}, indicate the presence of a bidirectional nexus between the two variables concerned. That is between social unrest, as encapsulated by the index of Barrett *et al.* (2020), and the growth rate of GDP that reflects the overall performance of the economy. The bidirectional causality finding is consistent throughout all the different lag lengths (Table 5). As already pointed out, economic slumps and recessions invariably cause unemployment to rise. Higher levels of unemployment bring about reductions in households' income, generating and/or augmenting economic hardship. Similarly, shocks in world markets that lead to price spikes exert a pressure on households' income and adversely affect their well-being. Such economic and social conditions have the potential to trigger-off social unrest and mass civil protests (*inter alia*: Paasonen, 2020;

Table 3.
Findings of panel unit root tests

		RSUI	GDP%
Level			
Pesaran (2007)	*t*-bar	−1.546	−0.378
Im *et al.* (2003)	*t*-bar	−2.863	−1.784
First difference			
Pesaran (2007)	*t*-bar	−7.251*	−5.493*
Im *et al.* (2003)	*t*-bar	−12.230*	−11.563*

Note(s): *Shows significant at the 1% level

Table 4.
Findings of panel cointegration tests

	Test	Statistics
Pedroni (1999)	Panel *v*	2.408*
	Panel rho	−2.135**
	Panel PP	−6.482*
	Panel ADF	−3.760*
	Group rho	2.562*
	Group pp	−1.702**
	Group ADF	−7.922*
Kao (1999)	*t*-stat	−2.636*
Westerlund (2007)	Group *t*	−2.876*
	Group *a*	−6.574
	Panel *t*	−13.240*
	Panel *a*	−11.156**

Note(s): ** and * indicate significant at the 5 and 1% level, respectively

Table 5. Findings of heterogeneous panel causality model

Null hypothesis	$K = 1$		$K = 2$		$K = 3$		$K = 4$	
	W-bar	*Z*-bar	*W*-bar	*Z*-bar	*W*-bar	*Z*-bar	*W*-bar	*Z*-bar
ΔRSUI ≠ ΔGDP%	1.006*	−1.368*	1.036**	−2.529**	1.263***	−3.358***	1.505***	−3.763***
ΔGDP% ≠ ΔRSUI	1.262*	−0.940*	1.379**	−1.861**	1.562***	−2.928***	1.643***	−3.615***

Note(s): ***, ** and * indicate significant at the 10, 5 and 1% level, respectively
Δ depicts that first differenced of the series is applied

Ponticelli and Voth, 2020; Weinberg and Bakker, 2015). As has been documented in the relevant literature, high food prices have been a significant contributing factor to civil unrest and turmoil in many countries (*inter alia*: Soffiantini, 2020; Veninga and Ihle, 2018; Sternberg, 2012). In turn, widespread social unrest adversely affects the economy since daily economic activity and trade is disrupted. Moreover, as already noted in the previous section, such mass protests and civil turmoil often generate governmental and political instability adversely affecting the function of state institutions. This impairs trade and economic activity exacerbating the adverse economic effects (Veninga and Ihle, 2018). Moreover, economic agents may interpret such unrest as signaling an impeding major political change and accordingly adjust their economic decisions (Matta *et al.*, 2021).

The results of the frequency domain causality framework estimations are displayed in Table 6. In line with Croux and Reusens (2013), we also examined the relationship between the two variables at different frequencies. That is, low ($w = 0.5$), medium ($w = 1.5$) and high ($w = 2.5$) frequencies. Once again, as can clearly be observed, there is clear evidence pointing to a bidirectional relationship at all three frequencies. In order words, the social unrest index (RSUI) of Barrett *et al.* (2020) emerges with predictive power for the GDP growth rate in all three frequencies and vice versa. Moreover, the findings suggest the existence of a causal nexus for both the short and long-run periods. The visual layout of the results is depicted in Figure 2.

Concluding remarks

As has been shown in the extant literature, conflict and civil strife adversely affect the economy. They severely interrupt the normal, daily routine of economic activity. They also generate political uncertainty that can bring reductions in investment expenditure and thus slow down growth. Similarly, it has been shown that recessions and economic slowdowns can trigger social unrest and civil strife because of the economic and social hardship they bring about. Using the recently compiled index on social unrest (RSUI) of Barrett *et al.* (2020), the paper sets out to examine the nexus between economic growth and social unrest in the case of 29 Middle East and Central Asia countries for which the index is freely available. The sample of countries used and the time period were strictly dictated by data availability since the entire RSUI database is not readily available. To probe into the nexus, the paper adopted a panel causality approach employing two panel causality tests. The first was the heterogeneous panel causality model proposed by Dumitrescu and Hurlin (2012), and the second was the frequency domain causality test constructed by Breitung and Candelon (2006) and extended for panel testing by Croux and Reusens (2013). The findings from estimating the two panel causality tests reported herein were quite consistent and robust. In line with expectations, they indicate a strong bidirectional causal nexus between social unrest and economic growth in the case of the 29 Middle East and Central Asia countries over the period 2000–2018. That is, the results of our estimations offer empirical evidence in favor of the contention that civil strife adversely affects economic performance and economic downturns can trigger discontent and unrest. A tentative policy implication of the findings is that they highlight the importance of a stable and thriving economic environment as an important condition for social and concomitantly political stability that is conducive to economic growth and development. Finally, albeit consistent and robust, the results reported herein concern

Table 6. Findings of panel frequency causality model

Null hypothesis	$w = 0.5$	$w = 1.5$	$w = 2.5$	Critical value
LGDP% ≠ LRSUI	0.015*	0.012*	0.013*	0.009
LRSUI ≠ LGDP%	0.007*	0.023*	0.008*	0.005

Note(s): *Shows significant at the 1% level

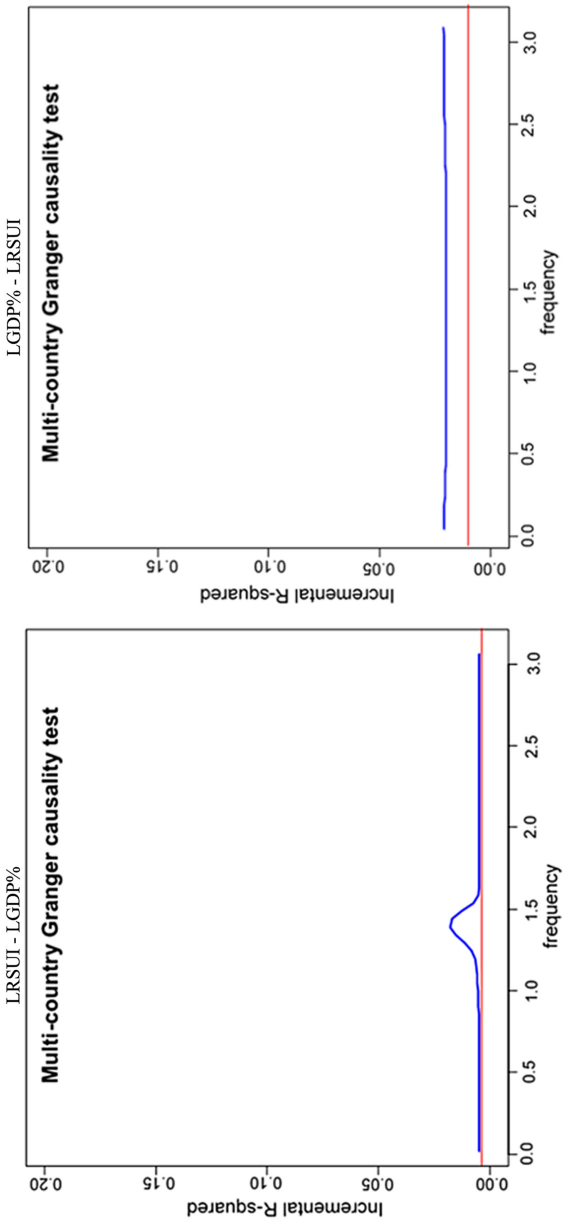

Figure 2.
Graphical representation of panel frequency causality model

the specific sample of countries under scrutiny the choice of which was dictated solely by data availability as previously pointed out. Extending the analysis to other groups of countries will offer better insights into the nexus between civil unrest and economic performance. Evidently, a future step in analyzing this nexus between the two variables involves the use of a multivariate framework of analysis that will allow for better insights both for the complex and intertwined determinants that trigger social unrest and how they jointly impact the growth performance of countries.

Notes

1. April 2019: https://www.imf.org/en/Publications/REO/MECA/Issues/2019/04/17/reo-menap-cca-0419#annex October 2019: https://www.imf.org/en/Publications/REO/MECA/Issues/2019/10/19/reo-menap-cca-1019.
2. Available here: https://www.imf.org ⟩ English ⟩ RSUI-data-1119; accessed on May 4, 2021.
3. The monthly RSUI is available for a total of thirty-two countries but due to missing GDP growth data for Afghanistan, Somalia and Syria our estimations include only 29 Middle East and Central Asia countries.
4. For a more detailed presentation of the procedure see Croux and Reusens (2013).

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