No 496

APRIL 2022

CefES

Center for European Studies

PAPER SERIES

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DIPARTIMENTO DI ECONOMIA, METODI QUANTITATIVI E STRATEGIA DI IMPRESA

UNIVERSITÀ DEGLI STUDI DI MILANO BICOCCA

News and narratives: A cointegration analysis of Russian economic policy uncertainty

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[this version April 2022]

Abstract

Russia has become more integrated and dependent on global developments over the last decades, despite being ruled by an increasingly autocratic regime. How does Russian media cover the associated economic and policy challenges? To answer, we use the *economic policy uncertainty* indexes as proxies for media coverage, together with a limited set of variables reflecting both domestic and international developments. Our main findings come from a VEC model estimated with two cointegrating vectors, encompassing two long-term equilibria. A first cointegrating vector describes the domestic political context, highlighting the key role that media coverage can play in supporting autocratic regimes. While the second cointegrating vector is associated with international developments, portraying swings in global risk appetite, we find that deviations from it can, too, drive popular support for the incumbent president. To see more precisely how Russian media coverage can be used as a policy instrument, we employ several narrative proxies and find that (only in the short run) some of these might be used to exert control and influence, while others to justify policy errors or successes.

JEL codes: C50, D80, F50, P50

Keywords: economic policy uncertainty; media coverage; cointegration analysis

1. INTRODUCTION

The military conflict that began in late February 2022 in Ukraine expose a sharp contrast between media coverage in Russia and the West. While this contrast is particularly visible when looking at how economic and policy challenges are reflected in the "news", these two perspectives cannot remain completely separated and orthogonal to each other in the long run. Over the last few decades, Russia has become more integrated and dependent on global developments.[1] Therefore, when taking a closer look at the Russian economy, at its policy environment and media landscape, one is compelled to consider a domestic perspective together with an international one.

Yet, people pay attention to stories and feel animated by ideas rather than by how media portrays "facts" and describes "realities". According to Prier (2020), controlling the narrative is key for autocratic regimes' survival. By drawing a separation line between media coverage and narratives, we try to answer the following relevant questions. How does Russian media reflect the economic and policy challenges that are relevant in domestic and international contexts? Can media coverage be used as a policy instrument in autocratic regimes? How *narratives* blend with economic and policy "reality", as reflected in Russian media?

We take a relatively long-term perspective in addressing these questions, concentrating on a time span during which Vladimir Putin has served as Russian president (from 2000 to 2008, and from 2012 onwards) and as a prime minister (between 2008 and 2012). We focus our attention on media coverage, which is proxied here using the well-known *economic policy uncertainty* (EPU) index proposed by Baker et al (2016). We set up and estimate a simple Vector Error Correction (VEC) model that reveals the existence of two cointegrating vectors, thus summarising the two inter-related perspectives mentioned above. The first cointegrating vector reveals domestic political patterns, within which popular support for the incumbent president can rise along a time trend as long as domestic policy uncertainty does not increase. The second cointegration vector instead reveals an equilibrium associated with swings in global risk appetite, for which negative deviations are equivalent with lower global uncertainty that can, too, increase popular support for the incumbent.

Our findings underscore the key role media coverage can play in supporting autocratic regimes, i.e. by controlling the economic policy uncertainty reflected in the media news. This strategy can work for example by diverting public attention to irrelevant topics during challenging times, but in the long-run it cannot ignore government's increasing role in domestic economic policy (as in Baker et al., 2014), nor global economic developments. If this strategy of controlling media coverage proves too slow in influencing the current political context, it can be blended with narratives in the short-term. Based on Granger causality tests, we show that some of the regime's preferred narratives, which here we proxy based on the relative frequency of specific keywords in Kremlin official press releases, have significant

[1] From an institutional and political perspective, Russia is part of the G20, an intergovernmental forum set up in response to a series of economic and financial crises in the late 1990s. From an economic perspective, Russia is among the biggest global trade partners, with a 2.1% share in global exports (as of 2019), a large part of which (i.e. 45% as of 2019) being crude and refined petroleum products; source World Bank, https://wits.worldbank.org/CountryProfile/en/Country/RUS/Year/LTST/Summary.

interactions with deviations from the cointegrating vectors that define the trend media coverage of "facts" and "realities". We show that only as short-term strategies, some of these narratives might be used to exert control and influence, while others might be used to justify policy errors or successes.

2. ANALYTICAL FRAMEWORK

2.1. Cointegration analysis

To set a basis for our empirical analysis, we assume that the two domestic and international perspectives converge in the long run in terms of media coverage of the Russian economic reality. Obviously, in the short run, Russian media news and narratives might highlight only selected aspects of the economic "reality", along with the government approach in dealing with challenges; this strategy however seems hardly sustainable in the long run. As an example, Cottiero et al (2015) find that Kremlin media dominance over its political opponents becomes increasingly disputed – especially given the protracted sanctions imposed from the annexation of Crimea in 2014. Gunitsky (2015) instead finds that increased access to information might not necessarily overthrown repressive governments, who seem to embrace social media as a tool of autocratic stability.

Media coverage of current economic and policy challenges is central to our understanding of the interaction between narratives and economic reality. Baker et al (2016) built *economic policy uncertainty* indexes based on the relative frequency (observed in media coverage) of some selected keywords that reflect economic policy uncertainty. We employ two versions of this index (the online Appendix provides more details): (i) a Russian EPU that is based on media coverage by *Kommersant* – a daily newspaper focused on economics and politics; and (ii) a global EPU that is built by averaging across 21 countries, among which U.S., U.K., China, and some major European countries.

To incorporate the two perspectives mentioned above into a single analytical framework, we aim to estimate a simple multivariate model intended to capture the dynamics of Russian EPU, which we take to be the place where the two above-mentioned perspectives overlap. However, since uncertainty is hardly exogenous, we need a larger set of variables. To reflect the domestic perspective, we include the approval *rating* of the incumbent president Vladimir Putin;[2] despite the inherent drawbacks related to data availability, we draw on Levanda Centre[3], which compiles such data based on regular public opinion pools. For the international perspective instead, we consider the global EPU index, which is the counterpart of the Russian EPU, together with Brent oil prices (expressed in RUB rather than in USD).[4] Ignoring the time subscripts, in the benchmark specification our endogenous vector is:

[2] Despite a long tenure and rather autocratic leadership, Vladimir Putin's high approval rating and positive perception among ordinary citizens build on an effective communication strategy (see Chapman, 2021), highlighting the essential role that media coverage plays in this process.

[3] According to a disclaimer published on its website, "Levada Centre has been included in the registry of non-commercial organizations acting as foreign agents".

[4] Replacing Brent oil prices with natural gas prices yields similar results and implications.

$$Y = [\underbrace{Rating, EPU^{Russia}}_{\text{Domestic perspective}}, \overbrace{EPU^{global}, Oil}^{\text{International perspective}}] \quad (1)$$

We estimate a simple VEC model that includes monthly time-series for the 4 variables mentioned in (1) above. The sample runs from Dec. 2001 until Dec. 2021. All variables are included in log terms and in their levels. All series are integrated at most of order one; more detailed results are provided in the online Appendix. Two lags are sufficient to remove residual autocorrelation. The Johansen approach suggests the existence of at most 2 cointegrating relations, including a deterministic trend.[5] The two cointegrating vectors that reflect our two inter-related perspectives are identified as in Table 1. To come as close as possible to our analytical framework, we impose 2 over-identifying restrictions, which are validated by a Likelihood Ratio test. All our results below survive in a just-identified VEC specification (estimated without imposing the two over-identifying restrictions), but the model interpretation would not be as straightforward and neat as illustrated in (1) above; the online Appendix provides more details on this.

Normalization of the two cointegrating vectors in Table 1 is done with respect to $Rating$ and EPU^{global} respectively. The adjustment speed coefficients suggest a very long half-life of about 38 (=log(2)/0.018) months for $Rating$ in the first cointegrating vector, and a shorter 4.4 (=ln(2)/0.156) months for global EPU in the second cointegration vector.

Table 1: Estimated VEC model under the benchmark specification

Variable	$\boldsymbol{Rating}$	$\boldsymbol{EPU^{Russia}}$	$\boldsymbol{EPU^{global}}$	$\boldsymbol{Oil}$	**constant**	**Trend**
Cointegrating vector 1, *domestic perspective*	1	6.20 (8.03)	0	0	-25.32	-0.04 (-6.89)
Adjusting speed	-0.018 (-2.31)	-0.095 (-4.11)	-0.036 (-4.30)	-0.003 (-0.76)		
Cointegrating vector 2, *international perspective*	0	-1.00 (-7.16)	1	0.29 (2.04)	-2.22	0
Adjusting speed	-0.105 (-2.48)	0.079 (0.63)	-0.156 (-3.42)	-0.022 (-0.87)		

Note: Table presents the VEC estimated coefficients along with the t-statistics in parentheses, below the coefficients. Estimation sample is Dec. 2001 - Dec. 2021. The chi-square of the LR-test for the over-identifying restrictions is 0.42, corresponding to a p-value of 0.80. More details on the Johansen cointegration tests are in the online Appendix.

[5] We follow Watson (1994) and prefer not to detrend the data as we want to expose the unrestricted long run dynamics within our series. According to Watson (1994), on page 53, "deterministic trends are the dominant source of information about the cointegrating vector and detrending the data throws this information away." See also Hendry and Juselius (2001).

We next discuss what we believe are the three main findings from our model. A first result in Table 1 draws on the estimated coefficients of the cointegrating vector 1, encompassing the domestic perspective. Notice the presence of the time trend, which implies a steady growth in domestic policy uncertainty, along with an increase in the approval rating. The main implication of this first result is that popular support for the incumbent president would simply increase over time (albeit very slowly) if domestic policy uncertainty does not increase. Indeed, since EPU indexes are based on *relative* frequency counts, in theory domestic uncertainty can be kept low simply by *diluting* or *contaminating* local mass media with unrelated/irrelevant topics to divert public attention.[6] While this strategy looks appealing for an autocratic regime, the upward trend seen in Russian EPU over the last decades suggests this has not always been easy, nor feasible in the long run. According to Baker et al (2014), the long run increase observed in U.S. EPU can be justified by the increasing government's role in the economy (through taxes, spending, regulations); it is likely that in autocratic regimes this role of the government would be higher, along with popular support. Accordingly, a government controlling larger parts of the economy becomes more difficult to ignore, requiring thus a greater media control.[7]

Table 1 also exposes our second main result: Russian media coverage, i.e. EPU^{Russia}, does not move in line with international (economic) developments, as reflected by global uncertainty and oil prices (see cointegrating vector 2);[8] however, it does adjust to deviations from the first cointegrating equilibrium. This last finding reveals a disconnected local media from international realities, in line with our discussion from the introduction; it is also reinforcing our first result above, being consistent with a tightly controlled Russian media (see also the discussion in Appendix on alternative model specifications).

As a third result, notice that domestic support for the incumbent also adjusts to the second cointegrating vector, although it does not belong to it. Given the current normalization of the cointegrating vectors, any excess global risk-taking would be equivalent with negative deviations from the second equilibrium, to which $Rating$ will adjust *upwards*. In other words, when the rest of the world is in an upswing and global risk aversion is low, an autocratic regime can more easily bolster its economic performances in the media to make it look

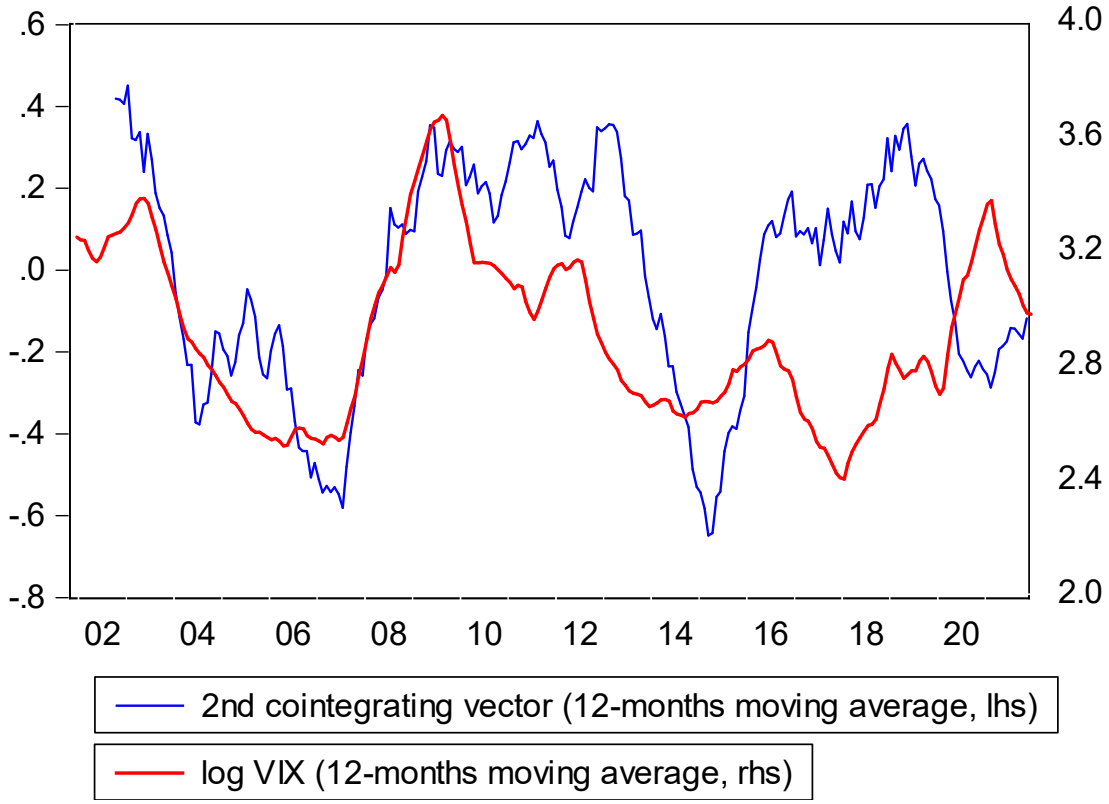
[6] From a qualitative (rather than quantitative) perspective, this mechanism is related to the so-called *framing bias* where perceptions and opinions change after readers are exposed to a particular media narrative or "frame". For an application to Russia media, see Field et al., (2018).

[7] Cottiero et al., (2015) suggest that in the long-term it might not be sustainable to run an increasingly hysterical propaganda just to control domestic politics. For a recent review on the political effects of the internet and social media, see Zhurasvskaya et al (2020).

[8] It might seem puzzling that global EPU adjusts, while Russian EPU does not, but the explanation resides in the fact that this second cointegration primarily captures swings in global risk appetite, for which EPU^{global} and USDRUB exchange rate are good proxies. To see this clearer, we estimate an alternative VEC from which we remove global EPU, but include separately oil prices (in USD), and the USDRUB exchange rate. Collier and Goderis (2012) show empirically that commodity prices play an important long-term role in countries with poor governance systems. This alternative specification instead collapses to a VEC with one cointegrating vector that is very similar to the first cointegration vector in Table 1. The online Appendix provides more a detailed discussion on this alternative specification.

relatively better and consolidate its political power.[9] This is consistent with our previous findings regarding the use of Russian media coverage for domestic political purposes. To make this clearer, in figure 1 we plot the deviations from the second cointegrating vector along with the CBOE Volatility Index or VIX – a standard proxy for global risk appetite (see also the online Appendix).

Figure 1. Swings in global risk appetite overlap with the second cointegrating relation



Note: 12-months averages are used to smooth the dynamics of the time-series and make the correlation clearer.

From a historical perspective, Acemoglu et al (2008) show that political and economic development paths are interwoven. The statistical significance of the two adjustment speeds for $Rating$ suggest that the first cointegrating equilibrium describing the domestic context is not the only long-term attractor; internal political support also depends on the relative performance of the Russian economy in a global context and how this is reflected in the media. However, our results show that there is some space for international (coordination of) policies to affect deviations from the second cointegration, revealing efficiency limits for Kremlin when trying to stir domestic political support through media handling in the long run.

[9] Interesting extensions for our modelling approach could consider the role of public spending, oil revenues or corruption, as in Arezki and Brückner (2011).

2.2. Narratives and Granger causality tests

Despite the role played by Russian media coverage in the estimated VEC, the EPU^{Russia} might not function as a proper policy instrument. The role of media control is to influence citizens to marshal for political objectives that might not be in their best interest (Gehlbach and Sonin, 2014). Therefore, the next step in our analysis will employ narrative proxies and seek to understand what role they can play as policy instruments.

Unfortunately, narratives are hard to identify and quantify. To build our proxies, we draw on all press releases available in English on the official website of the President of the Russian Federation; the full dataset is compiled by Comai (2021) and spans from Dec. 1999 until Dec. 2020. Based on this large corpus, a narrative proxy can then be built in much the same way as the EPU indexes, i.e. by using the relative frequency count of specific keywords. We use several relevant keywords[10] that encompass simple ideas and stories we believe are relevant for the Russian political context, such as: "Soviet", "NATO", "Ukrain?", "Europ?", "United States", "Americ?", "Chin?", "Military", "Econom?"; the online Appendix provides more details on these narrative proxies, as well as an alternative but more limited dataset.

To expose the interaction between narratives and deviations from the long-term equilibria estimated by our VEC, we rely on simple Granger causality tests. All narrative proxies are stationary processes, and therefore their interaction with the cointegrating vectors can only be short-term. We estimate tri-variate vector autoregressive models (VAR) and use between 6 and 9 lags, not only to eliminate residual autocorrelation but also to allow a sufficient time for narratives to grow and interact with the VEC implicit equilibrium conditions. Table 2 summarises the main results for a sample period that starts with the second presidential mandate of Vladimir Putin in Apr. 2012 and runs until Dec. 2020.

According to Table 2, there are significant (Granger causality) relations between most of the narrative proxies built upon our keywords and the deviations from equilibrium estimated by our VEC; in other words, narratives can both feed on and influence the intersection point of the two perspectives mentioned in model specification (1). We see two main interpretations for narratives as short-term policy instruments: (i) some can be used in an active manner, most likely to "contaminate" and "dilute" media coverage (i.e. reduce the relative frequency of EPU-related keywords) and thus influence especially the equilibrium determined by the first cointegrating vector;[11] and (ii) other narratives instead have a rather passive role, as for example in motivating domestic policy failures or successes that lead to deviations from the implied VEC equilibria.

[10] While acknowledging that our narrative proxies might be imperfect, we are facing substantial data availability gaps when searching for variables that can portray (on a monthly basis) the time-series dynamics of Russian narratives since the early 2000s. Most of the available press releases in this dataset are associated with public events (including conferences, phone calls with heads of state, etc.), that are used by the regime as an opportunity to convey a specific public message.

[11] Given the very slow adjustment of the $Rating$ variable to the first cointegration vector, employing narratives might help, but only in the short run. This is consistent with our main results from the previous section.

Table 2. Granger causality tests

Causality direction	**> Cointeq1**	**> Cointeq2**	**Causality direction**	**< Cointeq1**	**< Cointeq2**
***Narrative* >**			***Narrative* <**		
"Soviet"			"Soviet"	17.47*** (d.f. 6)	
"NATO"			"NATO"	18.71*** (d.f. 6)	14.30** (d.f. 6)
"Ukrain?"	15.38** (d.f. 6)	16.06** (d.f. 6)	"Ukrain?"		
"Europ?"			"Europ?"		
"United States"			"United States"	15.78* (d.f. 9)	
"Americ?"			"Americ?"		
"Chin?"	21.63*** (d.f. 9)	26.56*** (d.f. 9)	"Chin?"		
"Military"		14.94* (d.f. 9)	"Military"		15.12* (d.f. 9)
"Econom?"	13.80** (d.f. 6)	13.69** (d.f. 6)	"Econom?"	12.74** (d.f. 6)	11.49* (d.f. 6)

Note: Estimation sample is Apr 2012 – Dec. 2020, which is the upper limit of the dataset by Comai (2021). The table displays the chi-square statistics, along with the statistical significance and degrees of freedom (hence d.f. as displayed in parentheses below the chi-square statistics) associated with the Granger causality tests performed on tri-variate VARs. Keywords are given on the first and fourth columns of the table; a "?" replaces one or more characters. Causality directions are indicated by < or > and are displayed in the column headings of the table. An *, ** and *** denote statistical significance at 10%, 5% and 1% respectively. Deviations from the equilibrium conditions represented by two cointegrating vectors in Table 1 are instead labelled here as *cointeq1* and *cointeq2* respectively.

3. CONCLUSIONS

We specify and estimate a simple VEC to model the long-term dynamics of Russian media coverage, which is supposed to provide an unbiased perspective on current economic and policy challenges. To this end, we use the EPU indexes developed by Baker et al (2016) together with a limited set of other variables reflecting domestic and international dimensions. Our model exposes two inter-related perspectives that summarize both domestic and international determinants of Russian economic policy uncertainty in the long run. From a domestic perspective, Russian EPU moves in opposite directions with popular support for the incumbent president, who nevertheless benefits from the inclusion of a time trend in the cointegration relation describing the domestic political context; from an international perspective, it helps define a long run relationship together with oil prices and global policy

uncertainty – encompassing a long-term equilibrium that is associated with global swings in risk appetite.

We use simple Granger-causality tests to show that deviations from the implied VEC equilibria can both feed on and influence the use of some Kremlin's preferred narratives. Our findings underscore the key role domestic media coverage can play in supporting autocratic regimes, but also uncover weaknesses in the use of narratives as a long-term strategy. A government that can influence larger parts of the economy (through spending, taxes, regulations), particularly in autocratic regimes, is more difficult to ignore, requiring thus a stricter media control to stir domestic politics. The interactions we uncover through our estimated VEC model suggest that popular support for the Russian incumbent president does not, in the long run, depend entirely on domestic media coverage, nor on the extent and type of the narratives used. It also depends on the relative performance of the Russian economy in a global context, suggesting that an improvement in international economic outlook from which Russia does not benefit would reduce room for domestic media to bolster the policy achievements of the regime.

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DECLARATIONS

Declarations of interest: none

ONLINE APPENDIX

This Appendix provides a more detailed data description and additional results.

Table A1. Data description

Variable	Description and source
$Rating$	Valdimir Putin's approval rating, based on opinion polls conducted monthly by the Levanda Centre; transformation: we use both percentage shares of 'agree' and 'disagree' to compute the following: $Rating$ = log('agree') - log('disagree'). Source: https://www.levada.ru/en/ratings; the few missing data points were interpolated.
EPU^{Russia} and EPU^{global}	*Economic Policy Uncertainty* indexes for Russia and a global average, monthly data; transformation: logs. EPU^{global} is a GDP-weighted average for: Australia, Brazil, Canada, Chile, China, Colombia, France, Germany, Greece, India, Ireland, Italy, Japan, Mexico, Netherlands, Russia, South Korea, Spain, Sweden, United Kingdom, and United States. Source http://www.policyuncertainty.com.
Oil	Brent oil prices expressed in RUB; monthly data for average Brent oil prices in USD and USDRUB exchange rate; transformation: logs. Source: St. Louis Fed, Economic Database.
$Nat.gas$	Natural gas prices, expressed in RUB; monthly data for average Natural gas prices in USD and USDRUB exchange rate; transformation: logs. Source: St. Louis Fed, Economic Database. A VEC including natural gas instead of oil has similar results as the benchmark VEC specification.
$Narrative$	Relative frequency counts for various keywords as compiled based on official press releases (in English) posted on the official website of the president of the Russian Federation; monthly time-series are seasonally adjusted due to the likely presence of regular official events. The keyword list includes the following terms: "Soviet", "NATO"[12], "Ukrain", "Europ", "United States", "Americ", "Chin", "Militar", "Econom". Transformation: *ln(100+100*relative_frequency)*. Source: project webpage https://www.discuss-data.net/dataset/5eb1481e-ae89-45bf-9c88-03574910730a

Note: Sample runs from Dec. 2001 – Dec 2021 on a monthly frequency.

[12] In the case of "NATO", we had to remove the occurrences of words such as "senator", "Anatoly" and similar ones that contained the same combination of characters.

Table A2. Unit root and stationarity tests

Variable	$Rating$	EPU^{Russia}	EPU^{global}	Oil	$Nat.gas$
Phillips-Peron tests					
Intercept	-2.43	-7.74*	-2.02	-2.20	-0.83
Intercept & trend	-2.58	-12.51*	-4.76*	-3.35	-2.08
KPSS tests					
Intercept	0.23	1.82*	1.45*	1.77*	1.35*
Intercept & trend	0.11	0.07	0.14	0.33*	0.21*

Note: For the Phillips-Peron unit root tests, the adjusted t-statistics is reported in the table; an * denotes rejection at 5% of the null hypothesis that the respective time-series has a unit root. For the KPSS tests, the LM-statistics is reported in the table; an * denotes rejection at 5% of the null that the respective time-series is stationary.

Figure A1. Endogenous variables in the benchmark VEC specification

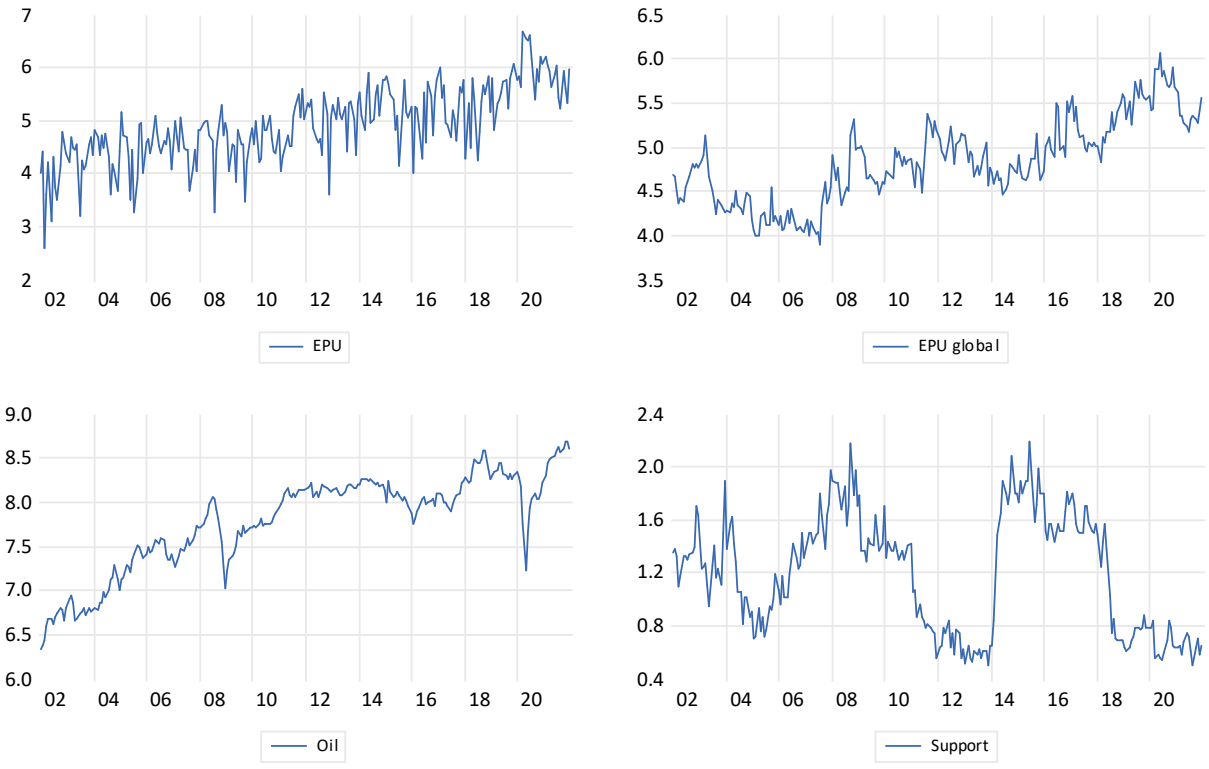
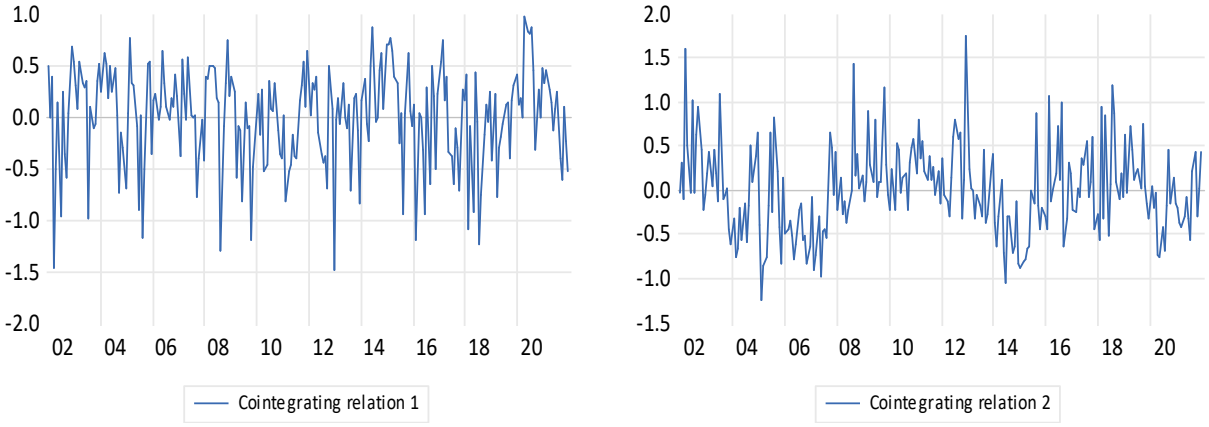


Table A3. Johansen tests for cointegration under the benchmark specification

Hypothesis: # of cointegrating relations	**Trace statistics**	**5% critical values**	**Prob.**
≤ 0	95.19	63.87	0.00
≤ 1	43.78	42.91	0.04
≤ 2	20.03	25.87	0.22
≤ 3	5.31	12.51	0.55
Hypothesis: # of cointegrating relations	**Max Eigenvalue statistics**	**5% critical values**	**Prob.**
≤ 0	51.40	32.11	0.00
≤ 1	23.75	25.82	0.09
≤ 2	14.72	19.38	0.20
≤ 3	5.31	12.51	0.55

Figure A2. Cointegrating relations under the benchmark specification



Alternative model specifications

In Table A4 below we re-estimate the benchmark VEC but without imposing the two over-identifying restrictions as in the main text. The results below are similar to those reported in the main text, although the interpretation is not that straightforward. However, now EPU^{Russia} tends to diverge from the equilibrium defined by the second cointegrating vector, further confirming the fact the media coverage (as portrayed by the Russian EPU) is tightly controlled by the regime. All the three main findings discussed in section 2.1. survive in this just-identified VEC specification.

Table A4: A just-identified VEC specification

Variable	$Rating$	EPU^{Russia}	EPU^{global}	Oil	**constant**	**Trend**
Cointegrating vector 1, *domestic perspective*	1	13.54 (6.89)	-5.29 (-6.71)	0	-32.04	-0.06 (-4.07)
Adjusting speed	-0.021 (-2.47)	-0.088 (-3.44)	-0.039 (-4.20)	-0.005 (-0.95)		
Cointegrating vector 2, *international perspective*	0	-1.28 (-5.67)	1	0.14 (1.51)	-0.11	0.00 (1.50)
Adjusting speed	-0.225 (-2.64)	-0.405 (1.62)	-0.366 (-3.98)	-0.048 (-0.95)		

Note: Table presents the VEC estimated coefficients along with the t-statistics in parentheses, below the coefficients. Estimation sample is Dec. 2001 - Dec. 2021. The additional restriction that trend coefficients in the two cointegrating vectors are jointly zero has a chi-square of 13.79 and is therefore rejected.

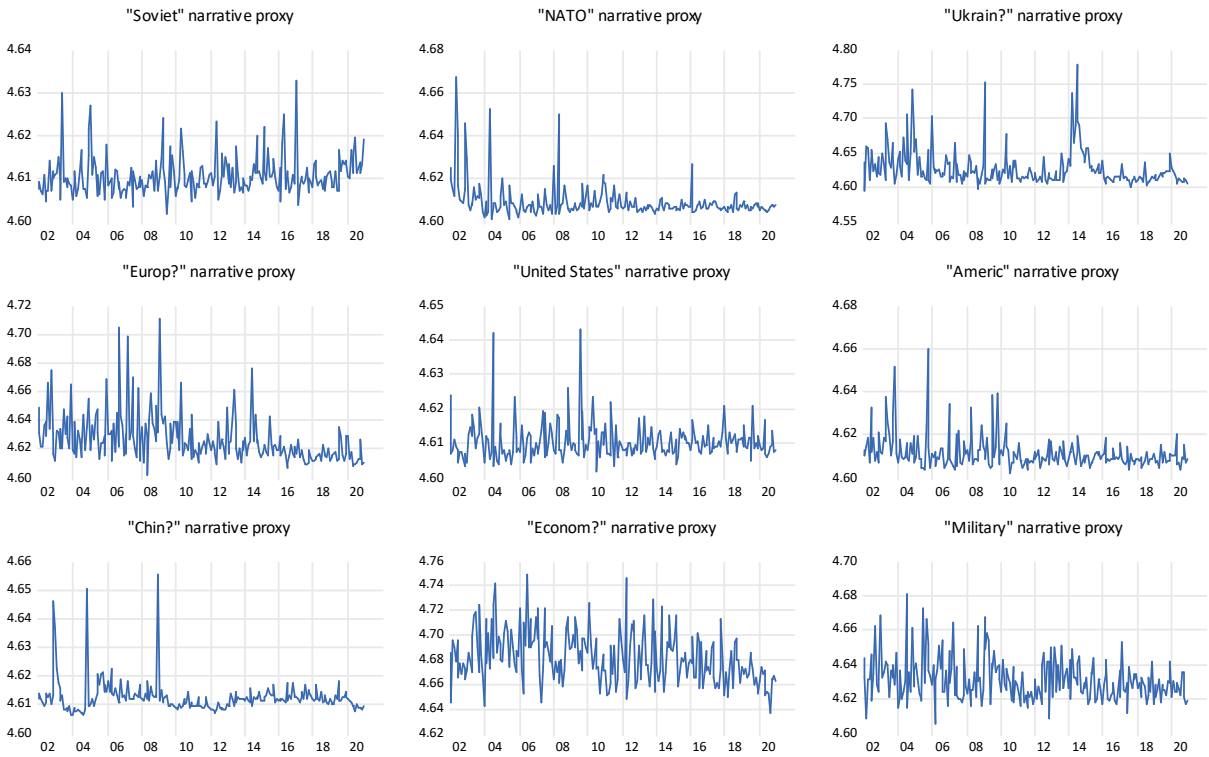
Table A4 above confirms that Russian EPU does not, while global EPU does adjust to the second cointegration relation defined together with oil prices (expressed in RUB). This finding seems puzzling, as we first mention in the main text. To understand more, notice that the USDRUB exchange rate, being the price of a commodity currency, is correlated with global uncertainty and swings in risk appetite; unreported OLS estimation in first differences confirm the statistical relevance of the relationship between these two variables. We therefore estimate an alternative specification by including separately the (log) Brent oil prices (this time expressed in USD) and the (log) exchange rate USDRUB together with $Rating$, but removing global EPU. Johansen tests suggest only one cointegration, which after repeated restrictions (validated by LM tests) we estimate to be very similar to the first cointegrating vector from Table 1 in the main text. Therefore, the second cointegrating relation in our benchmark VEC must be primarily driven by the relationship between global uncertainty and (log) USDRUB, with Brent oil prices and EPU playing more secondary roles in it. We confirm this major insight in Figure 1 in the main text, where swings in global risk appetite are proxied by the VIX index.

The $Narrative$ proxies

The choice for our $Narrative$ proxies used in the main empirical analysis can be justified on multiple grounds and from different perspectives. From a historical perspective, the "Soviet" Union is being considered as a high reference moment for the Russian people and for Vladimir Putin as well. From a political and military perspective, Russia has seen "NATO" as its main opponent over the last decades; accordingly, NATO's expansion in Eastern Europe has been considered a threat and even a justification for military conflict in neighbouring countries (e.g. Georgia, Ukraine). Generic terms such as "Europe" (including European), "Ukraine" (including Ukrainian), "China" (including Chinese), "United States", and "America" (including American) are used to summarise the main directions of Russian international affairs policy. Lastly, "economy" (including economic) and "military" represent important policy objectives that fall mainly under the authority of the president.

In the main analysis, we draw on the dataset built by Comai (2021), who summarises all the official Kremlin press releases, which are made available in the English language. We transform the data as in Table A1. All these narrative proxies are stationary processes or I(0) according to standard unit root tests. Figure A4 below gives a visual perspective on these proxies.

Figure A4. Narrative proxies



As an additional robustness check of the main results, we perform Granger causality tests on the full sample Dec. 2001 – Dec. 2020. Results are qualitatively similar with the ones reported in the main text for a more recent sample.

As an alternative source for building our $Narrative$ proxies, we draw on the dataset collected under the GDELT project, which is supported by Google Jigsaw, and was developed to monitor broadcast, print, and web news around the globe. The project can be found at https://www.gdeltproject.org. We download the volume intensity of each of our keywords, by searching in the archives of Television News but limited to TV stations of *Russia Today*; this alternative sample only runs from Jun. 2017 to Dec. 2021, leaving us fewer degrees of freedom for our estimated VARs. We repeat the Granger causality tests with this new dataset and report the results below in Table A4.

Table A4. Granger causality tests (alternative dataset)

Causality direction	**> Cointeq1**	**> Cointeq2**	**Causality direction**	**< Cointeq1**	**< Cointeq2**
***Narrative* >**			***Narrative* <**		
"Soviet"			"Soviet"	8.40** (df 3)	12.05*** (df 3)
"NATO"			"NATO"		
"Ukrain?"			"Ukrain?"		
"Europ?"	9.36** (df 3)	8.55** (df 3)	"Europ?"		
"United States"		7.21* (d.f. 3)	"United States"		
"Americ?"			"Americ?"		
"Chin?"			"Chin?"		
"Military"	7.26* (d.f. 3)	8.10** (d.f. 3)	"Military"		
"Econom?"			"Econom?"		

Note: Estimation sample is Jun 2017 – Dec. 2021; narrative proxies are based on the alternative dataset. The table displays the chi-square tests, along with the statistical significance and degrees of freedom (hence d.f. as displayed in parentheses below the tests statistics) associated with the Granger causality tests performed. Keywords are given on the first column; a "?" replaces one or more characters. Causality directions are indicated by < or > and are displayed in the column headings of the above table. An *, ** and *** denote statistical significance at 10%, 5% and 1% respectively. Deviations from the equilibrium conditions represented by two cointegrating vectors in Table 1 are labelled here as *cointeq1* and *cointeq2* respectively.