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Abstract

We analyze the impact of the pro-Russian conflict on stock returns in Russia and the Ukraine during the period November 21, 2013 to September 29, 2014. We utilize a newly created indicator for the degree of (de-)escalation based on an Internet search for conflict-related news. We find that intensification of the conflict reduces Russian and Ukrainian stock returns. The (de-)escalation of the pro-Russian conflict in the Ukraine accounts for a total variation of 6.5 (8.7) percentage points in the Russian (Ukrainian) stock market.

Keywords: Conflict-Related News, Pro-Russian Conflict, Russia, Sanctions, Stock Returns, Ukraine.

JEL: F30, G12, G14, G15.

1. Introduction

On November 21, 2013, the then Ukrainian president Viktor Yanukovych suspended preparations for an Association Agreement and the Deep and Comprehensive Free Trade Agreement with the European Union. The announcement initiated protests among those favoring stronger ties with the European Union, which, in February 2014 resulted in a change of the Ukrainian government. However, residents of southern and eastern Ukraine demonstrated against this new pro-European administration and eventually began to actually fight for closer ties with the Russian Federation. This pro-Russian conflict in the Ukraine continued to escalate with the Russian Federation's annexation of the Crimea and the consequent sanctions imposed on Russia by the European Union and the United States. As of this writing (January 2015), there is a fragile ceasefire agreement between the Ukrainian government and the pro-Russian powers but the conflict is in no way resolved.

Military conflicts have economic implications not only for governments (Barro 1981), households (Ghobarah et al. 2003), and firms (Guidolin and La Ferrara 2007), but also for investors around the world (Collier and Gunning 1995; Rigobon and Sack 2005; Schneider and Troeger 2006; Guidolin and La Ferrara 2010). The mechanism is quite simple: the risk of war increases the risk of assets related to the parties involved in the conflict. Indeed, Rigobon and Sack (2005) find evidence that an increased risk of war results in investors tending to avoid assets related to the antagonists.

In this paper, we analyze the impact of the pro-Russian conflict on stock returns in Russia and the Ukraine. Our sample period starts with the beginning of the Euromaidan protests on November 21, 2013 and ends on September 29, 2014, thereby including events such as the Crimea annexation, several stages of EU sanctions, and the shooting down of the MH17 airplane on July 17, 2014. We utilize a newly created indicator for the degree of (de-)escalation based on an Internet search for conflict-related news.

To the best of our knowledge, this is the first paper to empirically assess the impact of conflict-related news on stock market returns during the pro-Russian unrest in the Ukraine. To date, Russian financial markets have been studied only in the context of the wars in Chechnya (Hayo and Kutan 2005) and Georgia (Peresetsky 2011). This paper also investigates the possibility that the conflict will inflict medium-term damage to the Russian and Ukrainian economies as stock prices can be used to predict future economic

development (Fama 1990; Estrella and Mishkin 1998; Beaudry and Portier 2006; Foresti 2007).

The remainder of this paper is organized as follows. Section 2 introduces the dataset and the empirical methodology. Section 3 presents the empirical results. Section 4 concludes.

2. Data and Empirical Methodology

We use daily financial data for the period November 21, 2013 to September 29, 2014 and employ as dependent variables the growth rates of the Russian MICEX index and the Ukrainian PFTS index (defined as $r_t = 100\, ln\, p_t - 100\, ln\, p_{t-1}$).

The key challenge in analyzing the impact of conflict-related news on stock returns is finding a suitable indicator for such news. It is well-known that changes in expectations about certain events, such as future (de-)escalation of a conflict or the imposition of sanctions, can lead to a change in investor behavior before the escalation actually occurs or the sanction is implemented. That is, investors—in advance of the expected event—rearrange their portfolios based on their own assessments of (i) the severity of the conflict and (ii) the likelihood of sanctions. In contrast, actual events, for instance, the formal annexation of the Crimea by the Russian Federation or the announcement of sanctions by the European Union and the United States after lengthy negotiations, may come as no surprise to investors and, therefore, should not lead to a change in asset prices.

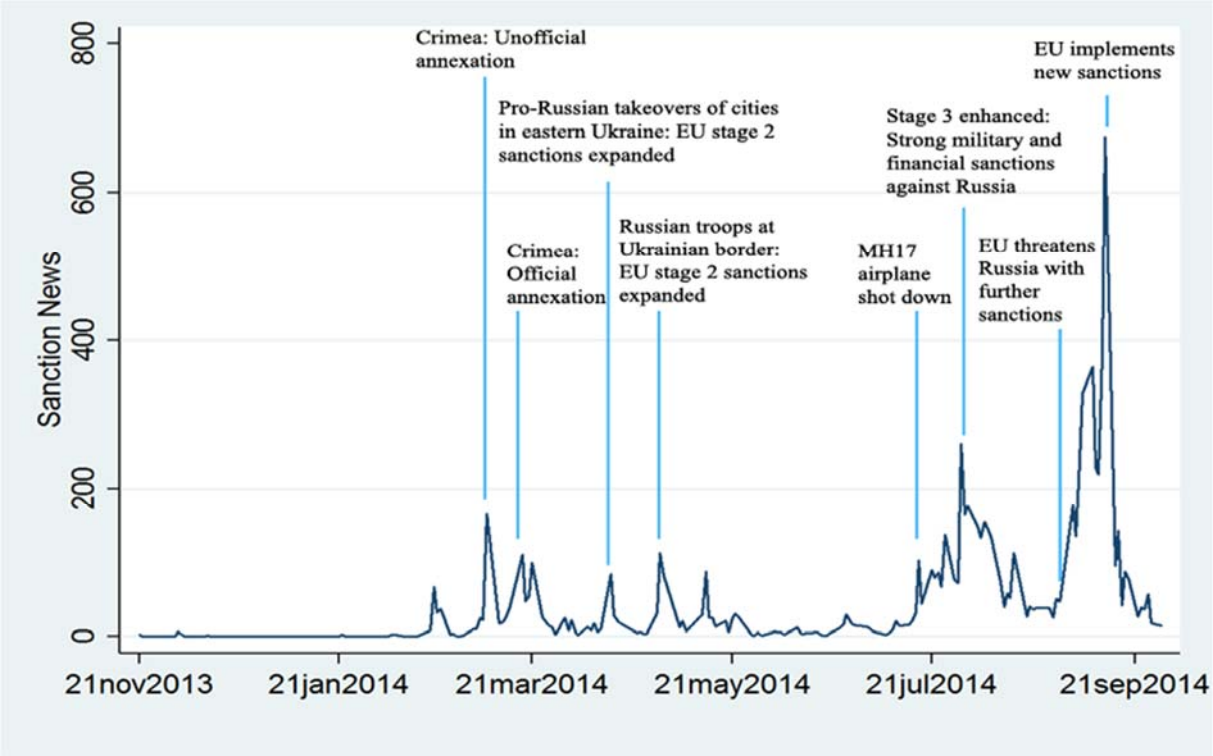
We take this into account when analyzing the impact of conflict-related news on Russian and Ukrainian stock returns and create an indicator that measures the level of escalation of the pro-Russian unrest. We use the Nexis search database and count all entries on each day for a joint occurrence of the keywords “EU sanctions,” “Russia,” and “Ukraine.” The frequency of occurrence can be used as a proxy for the likelihood of EU sanctions on Russia or, put differently, as an indirect measure of the conflict’s escalation level from an investor perspective.[1]

Figure 1 shows the frequency of EU sanction news (y-axis) during some important events of the pro-Russian conflict in the Ukraine. The first peak in frequency is on March 7, 2014, one day after the Crimean parliament voted on a highly contentious referendum

[1] We focus on EU sanctions since EU member states account for about 50 percent of Russian exports and imports. In addition, EU investments make up as much as 75 percent of all foreign direct investment stocks in Russia. *Source*: European Commission.

to join the Russian Federation and Russian troops occupied strategic facilities in the Crimea. The other peaks coincide with the adoption dates of various sanctions and the MH 17 shooting. The figure makes it very clear that the various sanctions could not have been a surprise to financial markets as the frequency of reporting on sanctions increased steadily before each of these peaks.

Figure 1: Frequency of EU Sanction News



Notes: Figure shows the frequency of EU sanction news (y-axis) during some important events of the pro-Russian conflict in the Ukraine.
Source: CSIS (2014) and Nexis search database.

To facilitate interpretation of the econometric analysis below we apply a log plus one transformation to the indicator variable measuring the frequency of sanctions. To proxy a true news component from an investor perspective we include the first difference of this transformed indicator as an explanatory variable in our econometric model ($\Delta escalation$ in Equation (1) below).

Other explanatory variables are lagged Russian, Ukrainian, and US (S&P 500) stock market returns, which will test for weak efficiency in Russian and Ukrainian stock markets and for spillover effects from US stock markets. The impact of energy-related news on stock returns (Hayo and Kutan 2005) is captured by the first lag of the Brent spot oil price growth rate. We also take into account the impact of monetary policy on

stock returns by using as additional regressors changes in the central bank target rates. Finally, we control for day-of-the-week effects by using four dummy variables with Monday as the reference.

Russian and Ukrainian stock returns are characterized by excess kurtosis (MICEX returns: 15.4; PFTS returns: 12.4), indicating ARCH effects (Engle 1982). Consequently, we employ an EGARCH(1,1) model (Nelson 1991) for both dependent variables, which corrects for the kurtosis, skewness, and time-varying volatility of the asset price and allows for the asymmetric effects of positive and negative innovations in the conditional variance. The general specification is as follows:

$$(1)\ r_t^{RUS} or\ r_t^{UKR} = \alpha + \beta_1 tue_t + \beta_2 wed_t + \beta_3 thu_t + \beta_4 fri_t + \gamma_1 r_{t-1}^{RUS} + \gamma_2 r_{t-1}^{UKR} + \gamma_3 r_{t-1}^{US} + \gamma_4 r_{t-1}^{OIL} + \delta_1 \Delta i_t^{RUS} + \delta_2 \Delta i_t^{UKR} + \zeta \Delta escalation_t + \varepsilon_t$$

We assume that $\varepsilon_t = \sqrt{h_t} v_t$, where v_t is an i.i.d. sequence with zero mean and unit variance. Therefore, the conditional variance h_t can be expressed as a function of the lagged standardized innovations $\varepsilon_{t-1}/h_{t-1}$ and the lagged conditional variance h_{t-1}:

$$(2)\ ln(h_t) = \vartheta + \theta_1 |\varepsilon_{t-1}/h_{t-1}| + \theta_2 \varepsilon_{t-1}/h_{t-1} + \theta_3 ln(h_{t-1})$$

Equations (1) and (2) are simultaneously estimated by maximum likelihood.

3. Empirical Results

Table 1 sets out the results of a simultaneous estimation of Equations (1) and (2) for Russian stock market returns (left panel) and Ukrainian stock market returns (right panel).

Starting with the financial control variables we first observe that the weak efficiency condition is violated as past Russian (Ukrainian) returns are useful in predicting today's MICEX (PFTS) returns. Second, we find some evidence of international spillover effects as a 1 percentage point (pp) increase in lagged S&P 500 returns leads to a 36 basis points (bps) increase in Russian returns. Higher lagged Russian returns have a positive impact on the Ukrainian stock returns as well (3 bps after a 1 pp increase). In contrast, a 1 pp increase in lagged Ukrainian returns and in lagged US returns reduces the MICEX growth rate by 6 bps and the PFTS growth rate by 7 bps, respectively. Finally, daily oil

price fluctuations affect both stock markets similarly as 1 pp increase decreases the MICEX returns by 17 bps and the PFTS returns by 16 bps.

Table 1: Explaining Stock Returns in Russia and the Ukraine

	Russia: MICEX Returns			Ukraine: PFTS Returns.		
	Coef.	Std. Err.	p-value	Coef.	Std. Err.	p-value
α	0.101	(0.202)	[0.62]	–0.266	(0.008)	[0.00]
$\beta_1: tue_t$	–0.085	(0.284)	[0.77]	0.538	(0.224)	[0.02]
$\beta_2: wed_t$	0.033	(0.240)	[0.89]	0.224	(0.020)	[0.00]
$\beta_3: thu_t$	–0.305	(0.200)	[0.13]	0.377	(0.192)	[0.05]
$\beta_4: fri_t$	0.077	(0.239)	[0.75]	0.477	(0.016)	[0.00]
$\gamma_1: r_{t-1}^{RUS}$	–0.083	(0.033)	[0.01]	0.029	(0.017)	[0.09]
$\gamma_2: r_{t-1}^{UKR}$	–0.055	(0.008)	[0.00]	0.145	(0.006)	[0.00]
$\gamma_3: r_{t-1}^{US}$	0.359	(0.021)	[0.00]	–0.067	(0.009)	[0.00]
$\gamma_4: r_{t-1}^{OIL}$	–0.172	(0.028)	[0.00]	–0.161	(0.010)	[0.00]
$\delta_1: \Delta i_t^{RUS}$	–5.853	(0.963)	[0.00]	–4.202	(1.620)	[0.01]
$\delta_2: \Delta i_t^{UKR}$	–0.920	(0.136)	[0.00]	–0.104	(0.314)	[0.74]
$\zeta: \Delta escalation_t$	–0.058	(0.013)	[0.00]	–0.077	(0.013)	[0.00]
ϑ	0.031	(0.035)	[0.38]	0.157	(0.155)	[0.31]
$\theta_1: \lvert\varepsilon_{t-1}/h_{t-1}\rvert$	0.287	(0.141)	[0.04]	0.534	(0.237)	[0.03]
$\theta_2: \varepsilon_{t-1}/h_{t-1}$	–0.196	(0.073)	[0.01]	0.183	(0.196)	[0.35]
$\theta_3: ln(h_{t-1})$	0.880	(0.096)	[0.00]	0.843	(0.163)	[0.00]
Observations	195			195		
Pseudo R^2	0.17			0.14		
ARCH 1-2 test	F(2,175) = 0.90 [0.41]			F(2,175) = 0.68 [0.51]		
AR 1-5 test	$Chi^2(5)$ = 5.20 [0.39]			$Chi^2(5)$ = 4.60 [0.47]		

Notes: Results of simultaneous estimation of Equations (1) and (2) using maximum likelihood. Standard errors are heteroskedasticity consistent (Bollerslev and Wooldridge 1992).

Both the Central Bank of Russia and the National Bank of Ukraine increased their target rate several times during the sample period in an effort to stabilize their currencies. Russian interest rate hikes drastically reduce stock returns in both economies as a 1 pp increase in the target rate leads to a 5.8 pp decrease in the Russian stock market returns and a 4.2 pp drop in Ukrainian returns. Interest rate changes by the National Bank of Ukraine do have an impact on Russian returns (–92 bps after a 1 pp increase) but not on the domestic stock market.

Escalation of the conflict is bad news for both stock markets as Russian returns go down by 6 bps and Ukrainian returns decrease by 8 bps; the impact is statistically equal in both economies (t = 1.08 [0.28]). To provide an approximation of the overall impact of positive and negative conflict-related news on stock market variation in both economies

we multiply the cumulative absolute changes of the escalation indicator by the coefficients in Table 1. The (de-)escalation of the pro-Russian conflict in the Ukraine accounts for a total variation of 6.52 pp in the Russian stock market and 8.73 pp in the Ukrainian stock market.

Finally, we observe a significant leverage effect in the Russian stock market as negative innovations lead to higher volatility than do positive ones, whereas θ_2 is found to be insignificant for the PFTS returns.

4. Conclusions

In this paper, we analyze the impact of the pro-Russian conflict on stock returns in Russia and the Ukraine during the period November 21, 2013 to September 29, 2014. We utilize a newly created indicator for the degree of (de-)escalation based on an Internet search for conflict-related news. We find that intensification of the conflict reduces Russian and Ukrainian stock returns. The (de-)escalation of the pro-Russian conflict in the Ukraine accounts for a total variation of 6.5 (8.7) percentage points in the Russian (Ukrainian) stock market.

References

Barro, R. J. (1981), Output effects of government purchases, *Journal of Political Economy* 89(6), 1086–1121.

Beaudry, P. and Portier, F. (2006), Stock prices, news, and economic fluctuations, *American Economic Review* 96(4), 1293–1307.

Bollerslev, T. and Wooldridge, J. M. (1992), Quasi-maximum likelihood estimation and inference in dynamic models with time-varying covariances, *Econometric Reviews* 11(2), 143–172.

Collier, P. and Gunning, J. W. (1995), War, peace and private portfolios, *World Development* 23(2), 233–241.

CSIS (2014), *The Ukraine Crisis Timeline*, http://csis.org/ukraine/index.htm (accessed on December 8, 2014).

Engle, R. (1982), Autoregressive conditional heteroscedasticity with estimates of the variance of United Kingdom inflation, *Econometrica* 50(4), 987–1008.

Estrella, A. and Mishkin. F. S. (1998), Predicting U.S. recessions: Financial variables as leading indicators, *Review of Economics and Statistics* 80(1), 45–61.

Fama, E. (1990), Stock returns, expected returns, and real activity, *Journal of Finance* 45(4), 1089–1108.

Foresti, P. (2007), Testing for Granger causality between stock prices and economic growth, *MPRA Working Paper* No. 2962.

Ghobarah, H. A., Huth, P., and Russett, B. (2003), Civil wars kill and maim people—Long after the shooting stops, *American Political Science Review* 97(2), 189–202.

Guidolin, M. and Ferrara, E. L. (2007), Diamonds are forever, wars are not: Is conflict bad for private firms? *American Economic Review* 97(5), 1978–1993.

Guidolin, M. and Ferrara, E. L. (2010), The economic effects of violent conflict: Evidence from asset market reactions, *Journal of Peace Research* 47(6), 671–684.

Hayo, B. and Kutan. A. M. (2005), The impact of news, oil prices, and global market developments on Russian financial markets, *Economic of Transition* 13(2), 373–393.

Nelson, D. B. (1991), Conditional heteroscedasticity in asset returns: A new approach, *Econometrica* 59(2), 347–370,

Peresetsky, A. A. (2011), What determines the behavior of the Russian stock market? *MPRA Working Paper* No. 41508.

Rigobon, R. and Sack, B. (2005), The effects of war risk on US financial markets, *Journal of Banking and Finance* 29(7), 1769–1789.

Schneider, G. and Troeger, V. E. (2006), War and the world economy: Stock market reactions to international conflicts, *Journal of Conflict Resolution* 50(5), 623–645.