The Macro and Asset Pricing Implications of Rising Italian Uncertainty: Evidence from a Novel News-Based Macroeconomic Policy Uncertainty Index*

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Abstract

We develop a new monthly and daily index of economic policy uncertainty for Italy based on articles from the *Sole 24 Ore* (a popular Italian business daily newspaper). VAR investigations document that an unexpected rise in the *Sole 24 Ore* news-based EPU index (`EPU24`) has mild effects on the real economic activity. Cross-sectional asset pricing tests then show that both monthly and daily `EPU24` shocks command a positive risk premium. A standard event study finally indicates the presence of statistically significant positive cumulative abnormal returns (CARs) in the energy sector following different categories of policy-related events. Negative and significant CARs in the financial sector are instead found to be generated by international-related events and political elections.

JEL classification: F36, F44, F62

Keywords: Policy-Related News, Uncertainty, RBC, Stock Returns

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"*Financial markets don't much like uncertainty. Thanks to Italy's politicians, in recent days they have had plenty*"

The Economist, 31 May 2018

1 Introduction

Political uncertainty has been shown to be an important driver of the business cycle. In their seminal paper Baker et al. (2016) show that rising media attention on macroeconomic policy-related topics can be detrimental for both production and employment. The news-based indexes of economic policy uncertainty developed by Baker et al. (2016) (henceforth `BBD-EPU`) have been then used to examine the implications of increasing uncertainty for a variety of macroeconomic and financial aggregates in different countries. A non-exhaustive list of recent empirical works examining the macroeconomic and financial effects of `BBD-EPU` shocks is provided in Table 1 (Panel A). Of course, there have also been several attempts to provide alternative measures of political uncertainty, some of these relying on alternative textual analyses (Panel B) and some other based on the frequency of Google searches for specific policy-related topics (Panel C).

Our paper fits into this growing literature by investigating the implications of rising political uncertainty for macro quantities and asset prices in Italy (a country characterized by a high level of political instability). First, we develop a new monthly and daily index of macroeconomic policy uncertainty for Italy based on policy-related news appeared in the *Sole 24 Ore*, namely `EPU24`. We then study whether changes in the `EPU24` have significant implications for macroeconomic quantities and asset prices.

VAR investigations suggest that `EPU24` shocks generate a short-run drop in production and employment. However, the observed responses are not statistically significant.[1] Standard cross-sectional asset pricing tests then show that both monthly and daily `EPU24` innovations command a positive risk premium. Political uncertainty results thus to be an economically important risk factor (Brogaard and Detzel, 2015). Finally, a standard event study analysis

[1]Using the BBD-EPU index for Spain, Ghirelli et al. (2019) document weak effects of rising political uncertainty on the Spanish real economic activity.

Table 1: List of empirical studies on the macro and financial implications of EPU shocks

Author	Index	Variables	Method	Country (Sample)
Panel A: News-Based Macroeconomic Policy Uncertainty (Baker et al., 2016)				
Brogaard and Detzel (2015)	EPU	Stock index abnormal returns^{+}, EPU risk premium^{+}	TS/CS	USA (1985-2012)
Demir and Ersan (2017)	EPU	Mkt-to-book ratio^{+}, ROA^{+}, Leverage^{-}, Total Assets^{+}, Payout ratio^{+}, working capital-to-net assets^{-} (firm level)	P	BRIC (2006-2015)
Demir et al. (2018)	EPU	Bitcoin$^{\varnothing}$	TS	US (2010-2017)
Ashraf and Shen (2019)	EPU	Bank loans interest rate^{+}	P	AUS, BRA, CAN CHL, CHN, COL, FRA, DE, HKG, ITA, JPN, KOR, MEX, NLD, RUS, SGP, SWE (1998-2012)
Hailemariam et al. (2019)	EPU	Real Oil Price$^{\varnothing}$, Oil price volatility$^{\varnothing}$, Industrial Production$^{\varnothing}$, Real interest rate$^{\varnothing}$	P	G7 countries (1997-2018)
Hsieh et al. (2019)	EPU	FDI, GDP, Inflation, Interest rate, Trade, Labour	TS	AUS, BRA, CAN, CHL,CHN, FRA, DE, KOR, MEX, RUS, SGP, ESP, SWE, UK, USA (1994-2016)
Phan et al. (2018)	EPU	Stock index$^{\varnothing}$	TS	AUS, BRA, CAN, CHN, FRA, DE, IND, IRE, ITA, JPN, KOR, NLD, RUS, ESP, UK, USA (1985-2016)
Zhang et al. (2018)	EPU	Oil price, Dow Jones, Non energy commodity index, T-bill - Eurodollar spread	TS	China, USA (1995-2017)
Nilavongse et al. (2019)	EPU	Industrial Production$^{\varnothing}$, Real exchange rate$^{\varnothing}$, Stock index$^{\varnothing}$	TS	UK, USA (1986-2019)
Alam and Istiak (2019)	EPU	Industrial Production^{-}, CPI^{-}, Interest rate^{-}	TS	USA, Mexico (1997-2017)
Panel B: News-based (Other)				
Sahinoz and Cosar (2018)	EPU	GDP$^{\varnothing}$, Private Consumption$^{\varnothing}$, Investments$^{\varnothing}$	TS	Turkey (1998-2016)
Tobback et al. (2018)	EPU-SVM	10Y Belgium Bond, Spread BEL-DE, CDS 5Y, CCI, Business Survey Indicator, Expected demand in construction index, Forecast index on households purchases, HCPI, Vehicles registration, Bel 20 Stock Index	TS	Belgium (1999-2013)
Ghirelli et al. (2019)	EPU-NEW	GDP^{-}, Consumption^{-}, Investment^{-}	TS	Spain (1997-2019)
Huang and Luk (2020)	EPU	Stock index^{-}, Deposit rate^{-}, Unemployment rate^{+}, GDP^{-}	TS	China (2000-2018)
Panel C: Google Search-Based Uncertainty				
Donadelli (2015)	GSI	Industrial production^{-}, Total consumer credit$^{\varnothing}$, Consumer sentiment Index^{-}, Stock index^{-}, Long.term interest rate^{-}, Unemployment rate^{+}	TS	USA (2004-2013)
Castelnuovo and Tran (2017)	GTU	Inflation$^{\varnothing}$, Unemployment^{+}, Shadow-rate$^{\varnothing}$, Exchange rate$^{\varnothing}$	TS	USA, Australia (2004-2016)
Bilgin et al. (2019)	TEFUI	TRY-USD exchange rate^{+}, Istanbul Borsa 100$^{\varnothing}$, Unenmployment rate$^{\varnothing}$, Turkish Gov. Bond 2Y^{+} (Level and volatility)	TS	Turkey (2004-2018)
Panel D: Factor-based Estimate of Economic Uncertainty (Jurado et al., 2015)				
Bali et al. (2017)	UNC	NYSE$^{\varnothing}$, Amex$^{\varnothing}$, Nasdaq$^{\varnothing}$	CS	USA (1972-2014)

Notes: The table reports a list of empirical works on the macroeconomic and financial effects of macroeconomic policy uncertainty shocks. "Variable":= variables under examination. Methodology → (*i*) TS:= Time Series; (*ii*) P:= Panel; (*iii*) CS:= Cross-Sectional Asset Pricing Tests. $^{+}$:= positive effect; $^{-}$:= negative effect; $^{\varnothing}$:= no effect/effect depends on country or methodology.

indicates the presence of negative and significant cumulative abnormal returns (CARs) in the financial sector following international-related events and political elections. Moreover, statistically significant positive CARs in the energy sector are found to be driven by a variety of policy-related events, in particular sovereign risk-, public finance- and international-related events.

The structure of the paper is the following. Section 2 offers a brief presentation of our `EPU24`. Empirical results from the VAR analysis, cross-sectional tests and event study are documented in Section 3, 4 and 5, respectively. Section 6 concludes.

2 A novel news-based index of macroeconomic policy uncertainty

We construct an index of macroeconomic policy uncertainty using 10000 articles from the *Sole 24 Ore*. Actually, we collect the 100 most popular economic articles in each month from the database of the *Sole 24 Ore*. In the spirit of Baker et al. (2016), we classify an article as "EPU-based" when it contains at least one word from each of the following set:

- **Economic (E)**: "economic*", "economia";
- **Policy (P)**: "tass*", "politic*", "regolament*", "spes*", "deficit", "budget", "bilancio", "crisi", "indebit*","debito", "elezioni", "referendum", "export", "esportazioni";
- **Uncertainty (U)**: "incer*", "instab*", "insicur*", "dubb*", "preoccup*", "pression*", "sfiducia", "tension*", "volatilit*";
- **Institutions (I)**: "BCE", "banc*", "EU", "UE", "unione europea", "FED", "Federal Reserve", "Inghilterra", "USA", "Germania", "governo".

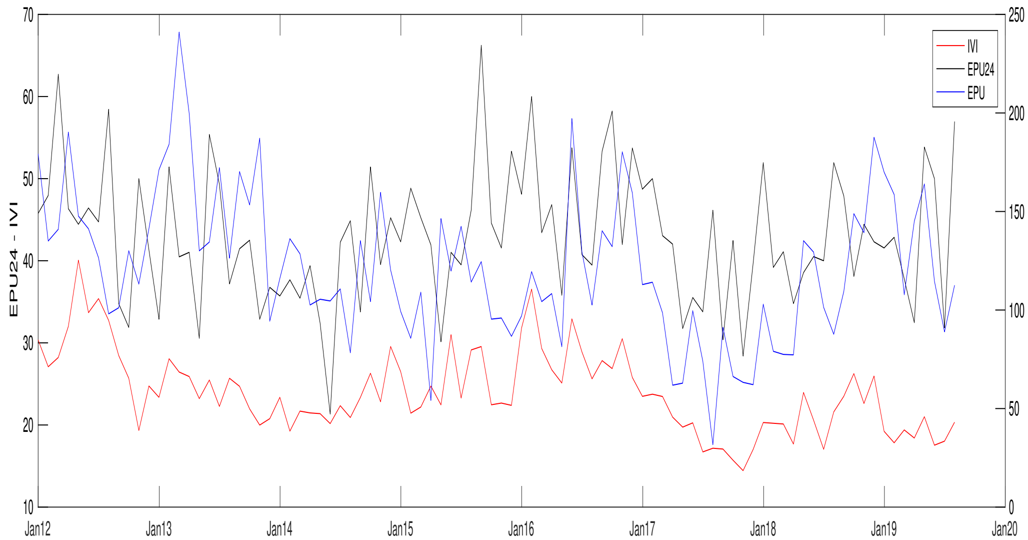
The dynamics of our newly developed monthly `EPU24` along with that one of the `BBD-EPU` and the FTSE MIB Implied Volatility are shown in Fig. 1. Not surprisingly, there is a positive correlation among these uncertainty indexes. However, the correlation between the `EPU24` and the `BBD-EPU` is only around 10%. This because our `EPU24` differs from the `BBD EPU` in several respects. First, Baker et al. (2016) construct the EPU index by relying on articles from two generalist newspaper (i.e., *Corriere della Sera* and *La Stampa*) whereas we build our `EPU24` using exclusively articles from the *Sole24Ore*, which can be classified as a purely business-oriented newspaper. One might expect a higher frequency of "EPU-based" articles in the *Sole24Ore* than in more generalist newspapers like the *Corriere della Sera*, *La Stampa* or *La Repubblica*. Second, Baker et al. (2016) focus only on three term sets (i.e., E, P, and U). Actually, we account for an additional set of terms aimed at identifying the economic policy uncertainty-related actors (i.e., I).[2]

Let us also point out that the `BBD-EPU` for Italy is available only at monthly frequency. In this paper, a daily `EPU24` index is also constructed.[3] Following Baker et al. (2016), the daily

[2]The sets of terms employed by Baker et al. (2016) and those used in this study for the construction of the `EPU24` (both in Italian and English) are reported in the Appendix (Table A.1).

[3]This is used for both our cross-sectional (Section 4) and event study (Section 5) analyses.

Figure 1: EPU24 vs. BBD-EPU and VIX (Italy)



Notes: This figure depicts the evolution of macroeconomic policy uncertainty for Italy. Political uncertainty is captured by the (*i*) BBD-EPU (blue line), (*ii*) EPU24 (black line) and (*iii*) FTSE MIB's Implied Volatility Index (IVI) (red line). Correlation (t-stat): EPU24-EPU 0.122 (1.163), EPU24-IVI 0.419 (4.377). Sample period: January 2012 – August 2019.

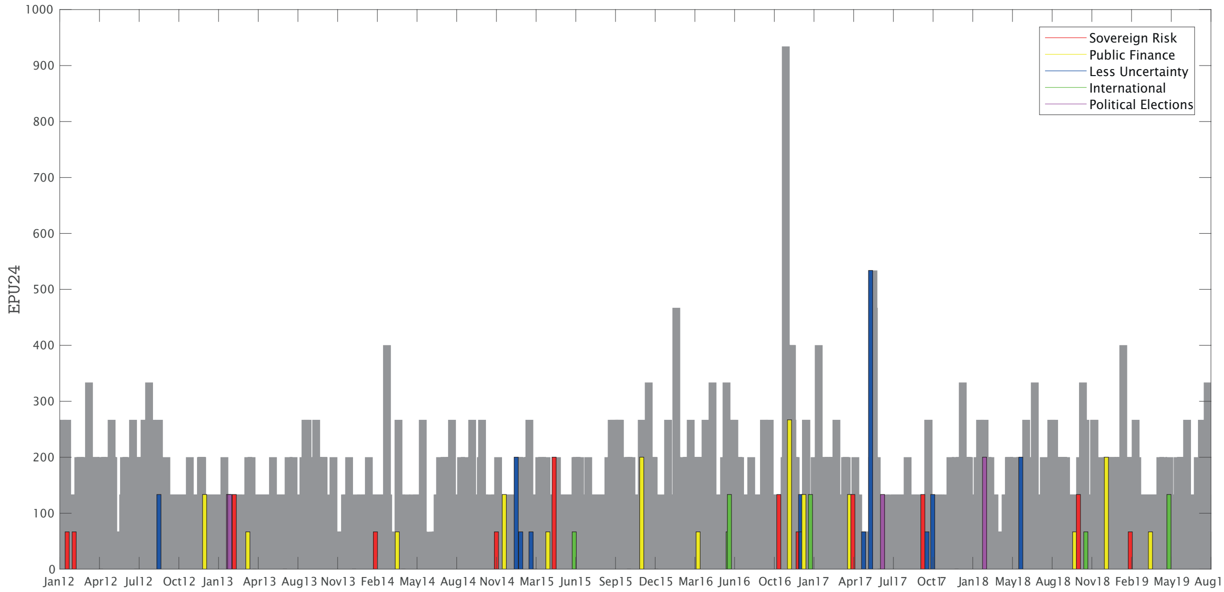
EPU24 index is normalized to mean 100 from 2012 to 2017 and illustrated – along with five different categories of policy-related events – in Fig. 2.

3 VAR evidence: On the economic effects of EPU shocks

Data and methodology. The macroeconomic effects of EPU24 shocks are identified by estimating a VAR model including the EPU24, the market return computed from the FTSE MIB (MR), the risk-free rate proxied by the 1month-EURIBOR (R), the industrial production index (IP) and the employment rate (E), in this order.[4] We compute impulse response functions (IRFs) to EPU24 shocks by relying on (*i*) a standard Cholesky decomposition where EPU24 is ordered first, (*ii*) an ordering-invariant approach a là Pesaran and Shin (1998) and (*iii*) a Cholesky decomposition where EPU24 is ordered last. For the sake of completeness, impulse responses to a BBD-EPU shock are also computed. MR, R, IP, and E have been all retrieved from FRED Economic Data. Data are monthly and run from 2012:M1 to 2019:M8.

[4]The optimal number of lags has been selected according to BIC and AIC criteria.

Figure 2: DAILY EPU24 INDEX



Notes: This figure depicts the dynamics of macroeconomic policy uncertainty, captured by daily EPU24. The series is normalized to mean 100 from 2012 to 2017 as in Baker et al. (2016). Colored bars indicate days in which a policy uncertainty-related event occurred. Daily policy uncertainty-related events are classified in five categories (*i*) Sovereign Risk (red), (*ii*) Public Finance (yellow), (*iii*) Less Uncertainty (blue), (*iv*) International (green) and (*v*) Political Elections (magenta). Full details on events are provided in the Appendix (Table D.1).

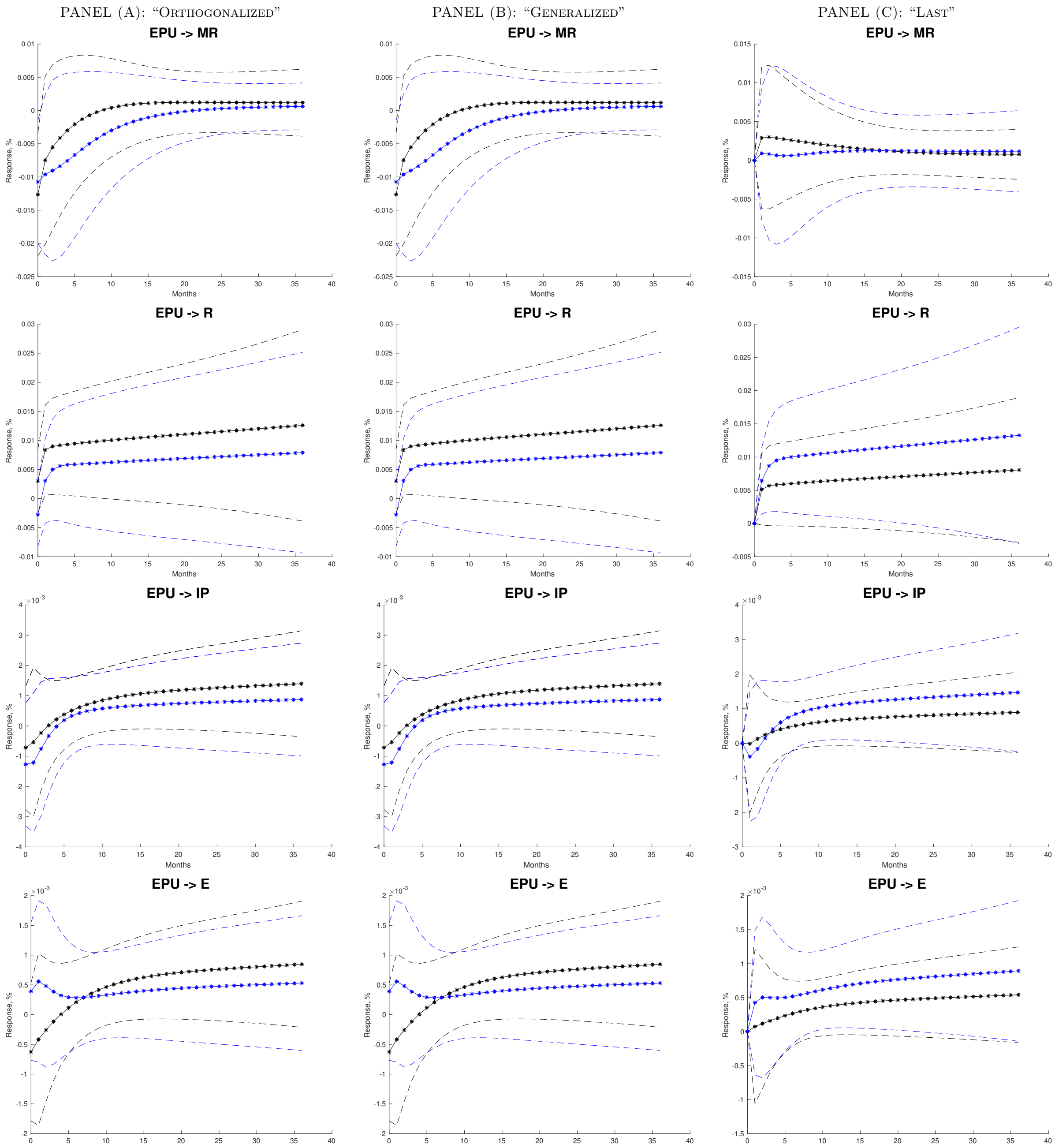
Results. IRFs of macro and financial aggregates to EPU24 (dotted black line) and BBD-EPU (dotted blue line) shocks are reported in Fig. 3. In line with existing evidence, we find that an intensification of news associated to economic policy-related events has a negative impact on both production and employment. The different nature of our EPU24 seems to be responsible for stronger short-term labor market effects. However, the effects of both EPU24 and BBD-EPU shocks are not statistically significant.[5] Generalized impulse responses are virtually indistinguishable (Fig. 3, Panel B).[6] When instead political uncertainty is ordered last, weaker evidence are observed. Actually, the short-run drop in production almost vanishes (Fig. 3, Panel C).

Dynamic impulse responses indicate that the effects of political uncertainty are not constant overtime. For instance, the short-term impact on IP seems to be (on average) positive

[5] In this respect, our findings are in line with recent empirical works showing mild macroeconomic effects of rising political uncertainty is Australia (Castelnuovo and Tran, 2017), Turkey (Bilgin et al., 2019) and Spain (Ghirelli et al., 2019)

[6] Note that using (*i*) the full sample for which the BBD-EPU is available (1997:M1-2019:M8) and (*ii*) the VIX as an alternative measure of macroeconomic policy uncertainty lead to very similar IRFs (see Fig. B.1 in the Appendix).

Figure 3: Impulse Responses to EPU Shocks

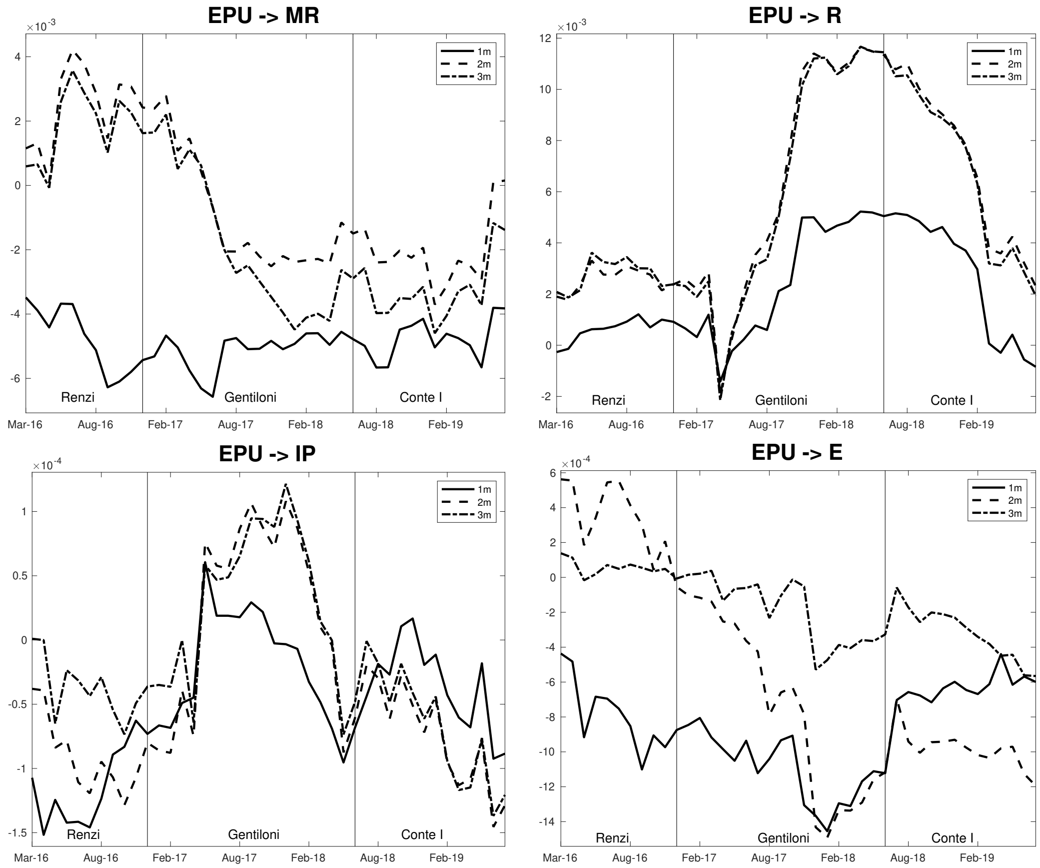


Notes: The figure depicts impulse responses of equity market return, risk-free rate, production and employment to `EPU24` (dotted black line) and `BBD-EPU` (dotted blue line) shocks. Panel A: Cholesky orthogonalized IRFs based on the following order [`EPU24/BBD-EPU`, MR, R, IP, E]. Panel B: generalised IRFs. Panel C: Cholesky orthogonalized IRFs based on the following order [MR, R, IP, E, `EPU24/BBD-EPU`]. Dashed blue and black lines denote 90% confidence intervals. Data run from 2012:M1 to 2019:M8.

(negative) during the Gentiloni (Renzi and Conte I) administration (see Fig. 4).[7] We argue that the observed time-varying component in the responsiveness to `EPU24` shocks can be

[7] Note that our results are not necessarily driven by the relatively short sample employed. We have replicated our time-varying VAR analysis using the `BBD-EPU` index from 1998:M12 to 2019:M8. IRFs still exhibit a strong time-varying component (see Fig. B.2 in the Appendix).

Figure 4: Dynamic Impulse Response Functions to a "EPU24" Shock



Notes: The figure shows the evolution of the responses of MR, R, IP and E [at one-, two-and three-month horizon] to a `EPU24` shock. VAR (with one lag) is estimated using a rolling window of 50 months. Solid, dashed and dot-dashed lines denote responses at one, two and three periods after the shock, respectively. Vertical lines denote the starting/ending date of different Italian administrations. Data run from 2012:M1 to 2019:M8.

responsible for the weak evidence found in the time-invariant VAR analysis (see Fig. 3).

4 Cross-sectional asset pricing tests

Data and methodology. In the spirit of Brogaard and Detzel (2015) and Bali et al. (2017), we test whether `EPU24` shocks are priced in the cross-section of Italian returns.[8] In other words, we test whether asset that are more exposed to political uncertainty provide an extra compensation to investors for bearing the additional embedded risk. To do so, we use the standard Fama-MacBeth two step regression and estimate the exposure to political

[8]For instance, using the 25 Fama-French portfolios Brogaard and Detzel (2015) find that EPU shocks carry a significant risk premium.

risk as follows:

$$R^e_{n,t} = \alpha_n + \beta_{n,MKT} MKT_t + \beta_{n,\Delta IP} \Delta IP_t + \beta_{\Delta EPU24} \Delta EPU24_t + \epsilon_{n,t} \quad (1)$$

where $R^e_{n,t}$ is the excess return of asset n and $\beta_n = [\beta_{MKT,n}, \beta_{\Delta IP,n}, \beta_{\Delta EPU24,n}]$ denotes the vector of the estimated exposures of stock returns to the market, production and `EPU24` innovations.[9] We then use the estimated vector of *betas* as regressors in the second-step regression:

$$\mathbb{E}(R^e_n) = \lambda_{MKT} \hat{\beta}_{MKT,n} + \lambda_{\Delta IP} \hat{\beta}_{\Delta IP,n} + \lambda_{\Delta EPU24} \hat{\beta}_{\Delta EPU24,n} + \epsilon_n \quad (2)$$

where $\mathbb{E}(R^e_n)$ is the average excess return of each asset over time, $\lambda = [\lambda_{MKT}, \lambda_{\Delta IP}, \lambda_{\Delta EPU24}]$ is the vector accounting for the implied factor risk premia encompassing both the vector of the underlying prices of risks and the quantity of risks, and the the betas are taken from the first step.

As a first portfolio in our test, we use all the 40 constituents of the FSTE MIB. In a robustness check, we also employ the 25 developed market portfolios formed on size and Book-to-Market from Fama&French (https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

Results. The main empirical findings from our monthly cross sectional tests are as follows. First, a large fraction of FTSE-MIB stocks and developed portfolios are negatively exposed to `EPU24`. Second, and more importantly, `EPU24` shocks command a positive risk premium (see Panel A in Tables 2 and 3).[10] For the sake of robustness, we have replicated the cross-sectional tests at a daily frequency using our newly-developed daily `EPU24` as risk factor.[11] Findings confirm the presence of a positive political uncertainty risk premium (see Panel B in Tables 2 and 3). Taken together, our cross-sectional tests indicate that political

[9] In this cross-sectional analysis both MKT and IP growth serve as controls.

[10] Controlling for consumer sentiment leads to very similar estimated risk premia (see Tables C.1 and C.2 in the Appendix)

[11] The estimated market risk premia (λ_{MKT}) are consistent with the findings of Bali et al. (2017) and Brogaard and Detzel (2015).

Table 2: Risk Premium of EPU24 shocks - FTSE MIB

Panel A: Monthly	Exposures to risk		
	β_{MKT}	β_{gIP}	$\beta_{\Delta EPU24}$
A2A	0.81534	-0.00205	-0.00898
Amplifon	0.31283	-0.0085	-0.00634
Atlantia	0.74841	0.05379	-0.01071
Azimut Holding	1.18093	0.02016	-0.01105
Banco BPM	2.13602	-0.05202	0.04549
Bper Banca	1.81866	-0.08196	-0.02302
Buzzi Unicem	0.78032	0.03815	0.00343
Cnh Industrial	0.71528	0.00303	0.03718
Diasorin	0.38959	0.00405	0.02175
Enel	0.83135	0.02192	-0.01014
Eni	0.66184	-0.00448	-0.00447
Exor	0.73349	-0.00085	-0.00694
Fiat Chrysler Automotive	0.8106	-0.13323	-0.05415
Generali	1.13626	-0.00644	-0.0075
Hera	0.46768	-0.02818	-0.03172
Italgas	1.46883	-0.03533	-0.02873
Juventus Footbal Club	0.63128	-0.05941	0.03267
Leonardo	1.36391	0.025	-0.00208
Mediobanca	1.72532	-0.04154	-0.02784
Poste Italiane	0.59798	-0.01763	-0.02209
Recordati	0.36085	0.05656	0.01011
Salvatore Ferragamo	0.38979	-0.01016	-0.02765
Saipem	0.06665	-0.25869	-0.3843
Snam	0.42268	0.00939	0.03294
Stmicroeletronics	0.86023	0.0165	0.01512
Tenaris	0.50175	0.01821	-0.03712
Telecom Italia	1.16327	0.0007	-0.0237
Ubi Banca	1.7416	-0.04329	-0.02151
Unicredit	0.89836	0.44406	-0.01979
Unipol	1.07588	-0.09498	-0.03453
Unipolsai	1.2419	0.00076	-0.02773
Risk Premium (λ)	λ_{MKT}	λ_{gIP}	$\lambda_{\Delta EPU24}$
Average cross-sectional estimates	0.40615	-1.17922	7.12283***
t-statistic	(0.69173)	(-0.48446)	(2.60197)

Panel B: Daily	Exposures to risk	
	β_{MKT}	$\beta_{\Delta EPU24}$
A2A	0.04669	0.02687
Amplifon	-2.78604	0.44451
Atlantia	3.2294	0.19474
Azimut Holding	6.42542	-0.30496
Banco BPM	3.29192	-0.3387
Bper Banca	3.86039	-0.14882
Buzzi Unicem	5.76048	0.2897
Cnh Industrial	0.28023	0.13481
Diasorin	-4.02323	1.88386
Enel	1.57855	0.02231
Eni	7.89357	-0.27277
Exor	12.01661	0.62121
Fiat Chrysler Automotive	0.88485	0.22717
Generali	8.01042	-0.2062
Hera	-0.22177	0.03668
Italgas	1.05293	0.00019
Juventus Footbal Club	0.05236	0.02307
Leonardo	2.81599	0.272
Mediobanca	2.55177	0.00429
Poste Italiane	9.0784	0.12401
Recordati	-2.61119	0.94089
Salvatore Ferragamo	13.3082	-1.02124
Saipem	0.45841	0.01438
Snam	2.97231	0.14791
Stmicroeletronics	0.15342	-0.00488
Tenaris	8.67978	-0.23663
Telecom Italia	0.49287	0.05339
Ubi Banca	1.97258	-0.16908
Unicredit	15.28071	-1.03094
Unipol	0.27919	-0.04897
Unipolsai	0.02553	-0.02148
Risk Premium (λ)	λ_{MKT}	$\lambda_{\Delta EPU24}$
Average cross-sectional estimates	2.55791**	26.01017
(*t-statistic*)	(2.48868)	(1.58979)

Notes: This table reports the estimated EPU24 risk premium from Fama-MacBeth cross- sectional regressions. The sample is based on monthly data from January 2012 to August 2019 (Panel A) and on daily data from 01-01-2012 to 30-08-2019 (Panel B). The test assets are the FTSE MIB components. We consider a three-factor model where market excess return (MKT) and the growth rate of IP (gIP) are used as controls (Panel A) and a two-factor model where market excess return (MKT) is used as control (Panel B). The t-statistics in parentheses for the risk premium are adjusted for Shanken correction following Shanken (1992), and for autocorrelation and heteroskedasticity following Newey and West (1987). Significance at 1%, 5%, 10% are denoted respectively by ***, **, *.

Table 3: Risk Premium of EPU24 shocks - 25 developed market portfolios formed on size and Book-to-Market

Panel A: monthly	Exposures to risk		
	β_{MKT}	β_{gIP}	$\beta_{\Delta EPU24}$
port1	0.35739	0.02452	-0.00647
port2	0.3323	0.01344	-0.00361
port3	0.34014	0.00503	-0.00635
port4	0.32171	0.00815	-0.00547
port5	0.31804	0.0093	-0.00452
port6	0.33232	0.01343	-0.00394
port7	0.34374	0.00064	-0.00587
port8	0.33652	0.00094	-0.0154
port9	0.3524	0.00256	-0.00456
port10	0.37254	0.0035	-0.00863
port11	0.35605	0.00885	-0.00067
port12	0.37555	0.00731	-0.00609
port13	0.37094	0.00044	-0.01294
port14	0.36828	0.00436	-0.01202
port15	0.39453	0.00075	-0.01069
port16	0.35515	0.00015	-0.00636
port17	0.36344	0.00613	-0.00372
port18	0.39332	0.00489	-0.0056
port19	0.36761	0.00622	-0.00621
port20	0.45025	-0.0002	-0.01013
port21	0.33482	0.0065	0.00362
port22	0.33391	0.00721	-0.00621
port23	0.35597	0.00872	-0.00477
port24	0.3778	0.00465	-0.00614
port25	0.53934	0.00287	-0.01163
Risk Premium (λ)	λ_{MKT}	λ_{gIP}	$\lambda_{\Delta EPU24}$
Average cross-sectional estimates	2.41185***	-2.86252	18.90024***
(*t-statistic*)	(4.10437)	(-1.11514)	(5.92951)

Panel B: Daily	Exposures to risk	
	β_{MKT}	$\beta_{\Delta EPU24}$
port1	0.69012	-0.00889
port2	0.65814	0.00476
port3	0.67624	-0.00279
port4	0.64768	0.00544
port5	0.57529	0.01607
port6	0.89263	-0.00691
port7	0.87908	0.00334
port8	0.88096	-0.00921
port9	0.85389	0.0044
port10	0.83409	0.00888
port11	0.99241	-0.00575
port12	0.95136	0.00494
port13	0.97928	0.00181
port14	0.95445	0.0023
port15	0.95355	0.00804
port16	0.9876	0.00198
port17	1.00594	0.00581
port18	1.01001	-0.00037
port19	0.92715	0.00023
port20	1.02408	0.00679
port21	0.98748	0.00452
port22	0.98071	0.00221
port23	0.97906	-0.00449
port24	1.02179	-0.00549
port25	1.19688	0.00061
Risk Premium (λ)	λ_{MKT}	$\lambda_{\Delta EPU24}$
Average cross-sectional estimates	0.04289***	0.14782***
(*t-statistic*)	(2.83337)	(8.31758)

Notes: This table reports the estimated EPU24 risk premia from Fama-MacBeth cross- sectional regressions. The sample is based on monthly data from January 2012 to August 2019 (Panel A) and on daily data from 01-01-2012 to 30-08-2019 (Panel B). The test assets are: 25 developed market portfolios formed on size and Book-to-Market (Source: Kenneth R. French Data Library). We consider a three-factor model where market excess return (MKT) and the growth rate of IP (gIP) are used as controls (Panel A) and a two-factor model where only the market excess return (MKT) is used as control (Panel B). The t-statistics in parentheses for the risk premium are adjusted for Shanken correction following Shanken (1992), and for autocorrelation and heteroskedasticity following Newey and West (1987). Significance at 1%, 5%, 10% are denoted respectively by ***, **, *.

uncertainty induces investors to demand an extra compensation to hold stocks.[12] Related theoretical foundations can be found in Pástor and Veronesi (2012, 2013) who argue that political uncertainty (i.e., uncertainty about future government policies) could have a positive

[12] When using FTSE MIB stocks and the Baker et al. (2016) EPU similar results are obtained (see Panel A in Table C.3).

effect on stock prices. However, they point out that political uncertainty could also have a negative impact since it is not fully diversifiable. Non-diversifiable political risk leads to a drop in asset prices in general and tends to raise discount rates. In a general equilibrium setup, Pástor and Veronesi (2013) show that political shocks command a risk premium. In line with empirical findings, their theoretical predictions indicate that uncertainty about the government's future actions affect directly investors' belief. This leads to a political risk premium. Pástor and Veronesi (2013) show that there should also be an additional compensation for investors implied by the fact that uncertainty on current government's actions undermine firms' profitability. Moreover, they show that the size of the political risk premium is state-dependent being larger during bad times and in periods of high political instability.

5 Event study

Data and methodology. We retrieve daily events from our daily `EPU24` index. To gain more insights on the short-run effects of economic policy-related events on stock returns these have been classified in five different categories: (i) sovereign risk-related events; (ii) public finance-related events; (iii) uncertainty-reducing events, (iv) international-related events and (v) political elections.[13] Events and the related category they belong to are listed in the Appendix (Table D.1).

CARs are estimated following the methodology described in MacKinlay (1997). In practice, abnormal returns are defined by the difference between the actual return and the theoretical return of a stock around each event. This allows us to focus on deviations from the equilibrium as estimated by a CAPM model and not exclusively on observed returns. We compute the theoretical return of the 40 Italian constituents of the FTSE MIB index by relying on a one-factor CAPM model estimated from $t-250$ to $t-30$, i.e., $R_{i,t} = \alpha_i + \beta_i(R_{m,t} - R_{f,t}) + \epsilon_{i,t}$, where $R_{i,t}$, $R_{m,t}$ and $R_{f,t}$ are the expected stock's i return, the market return and the risk free rate, respectively.[14] We compute the theoretical price of the stock according to the

[13] Events occurring on stock market closing days are considered on the first stock market opening day.

[14] The CAPM model is computed using observations prior to the event in order to calculate what would be the stock price if the event would not have been occurred. MacKinlay (1997) argues that the event impact

estimated α and β around the CARs estimation window, from $t-20$ to $t+20$ relative to events. CARs are then defined by:

$$CARs_{i,t} = \sum_{t-20}^{t+20} \epsilon_{i,t} = \sum_{t-20}^{t+20} (R_{i,t} - \alpha_i - \beta_i(R_{m,t} - R_{f,t})) \quad (3)$$

Stocks have been aggregated in four different sectors: (*i*) Energy, (*ii*) Financial, (*iii*) Industrials, (*iv*) Other.[15]

Results. CARs around Italian macroeconomic policy-related events are plotted in Fig. 5. Actually, CARs have been computed by relying on (i) all events (Panel A) and (ii) five different categories of events (Panels B-F).[16]

Surprisingly, dynamics in Fig. 5 provide evidence of statistically significant positive CARs in the energy sector following the majority of policy-related events (Panels A-D, red line), except political elections (Panel F, red line). Significant CARs are also found in the industrials sector following political elections (Panel F, violet line). These results might be driven by the rise in the oil price level over the periods 2012-2014 and 2016-2018. Negative and significant CARs are instead observed following international events in the financials and industrials sectors (Panel E, violet and yellow lines). Notably, CARs around public finance events are positive and significant in all sectors, except for the sector "other". Lastly, one can also observe sizable negative and significant CARs following political elections in the financials and "other" sectors (Panel F, yellow and green line).

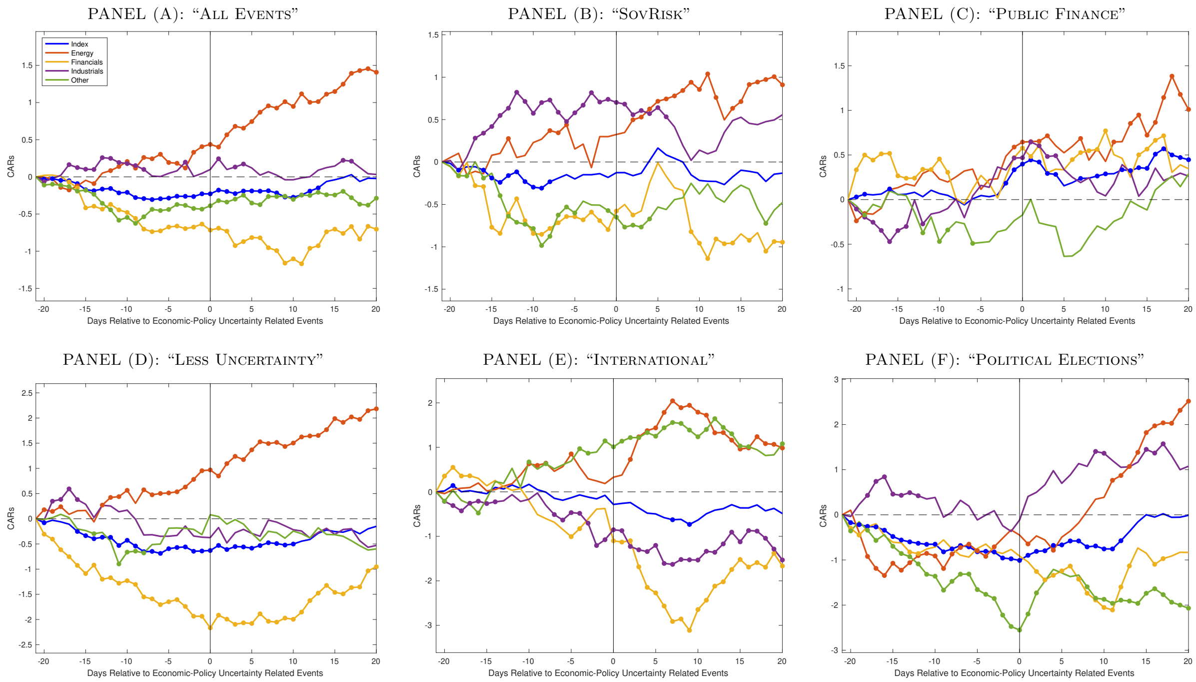
Taken together, dynamics in Fig. 5 suggest that equity valuation in some sectors drops following several categories of macroeconomic policy-related events. Importantly, the frequency at which Italy has switched governments in the last years seems to be also responsible for the CARs dynamics in the financials sector when "all events" are accounted for (Panel A, yellow line).

must only be captured by the abnormal returns and not by the theoretical (normal) return.

[15]Sectors have been classified following the FTSE MIB Supersectors. Note that all sectors for which very few stocks are available have been classified in "Other".

[16]For the sake of robustness, we recomputed the event study using a different CAPM and CARs estimation windows. Results remain largely unchanged and are robust to the timing choice (see Figures D.1 and D.2 in the Appendix).

Figure 5: CARs around macroeconomic policy-related events on 40 FTSE MIB stocks



Notes: The figure depicts the CARs on Italian stocks listed in the FTSE MIB. Stocks have been grouped in four sectoral equally-weighted portfolios: (*i*) "Financials", (*ii*) "Energy", (*iii*) "Industrials" and (*iv*) "Other" sectors. "Index":= CARs on the market (FTSE MIB). Stocks included in each sector are listed in the Appendix (Table D.2). The theoretical price is estimated according to a one factor CAPM model over a window from t-250 to t-30 using the FTSE MIB as a proxy for the market returns. The risk free rate is captured by the EURIBOR1M. CARs are estimated from t-20 to t+20. Dots indicate significance at 1% of cumulative average abnormal returns (CAARs) as indicated by Brown and Warner (1985).

Regression Analysis. In line with recent empirical evidence examining the stock market implications of specific events or exploiting market sentiment effects (Kaplanski and Levy, 2010a,b, 2014; Donadelli et al., 2017), we evaluate the impact of different sets of macroeconomic policy-related events (public finance, political elections, international, less uncertainty, sovereign risk) on sectoral stock returns by implementing the following regression:

$$R_t^s = c + \sum_{i=1}^{2} \beta_{1,i} R_{t-i}^s + \sum_{i=1}^{4} \beta_{2,i} D_{i,t} + \sum_{i=1}^{3} \beta_{3,i} E_{i,t} + \nu_t^s \tag{4}$$

where R_t^s denotes the daily rate of return on sector s at time t, c is the regression intercept, R_{t-i}^s are lagged sectoral returns, D_1, D_2, D_3, and D_4 are dummy variables capturing the Monday, Tuesday, Wednesday, and Thursday effect, respectively, and $E_{i,t}$ $(i = 1, 2, 3)$ stands for the event effect days.

Regression results for each sector and event category are reported in Table 4 (Panels A-F). The estimated 1st day post-event dummy coefficient indicates that macroeconomic policy-related events have (on average) a positive and significant effect on the energy sector (Panel

F). Elections are instead found to have a persistent negative effect, although non-significant, in all sectors (Panel B). This evidence is broadly consistent with CARs depicted in Fig. 5. To capture more directly the general impact of changes in the level of macroeconomic policy uncertainty on daily stock market returns, we use our daily EPU24 and also run the following regression:

$$R_t^s = c + \sum_{i=1}^{2} \beta_{1,i} R_{t-i}^s + \sum_{i=1}^{4} \beta_{2,i} D_{i,t} + \beta_3 \Delta EPU24_t + \nu_t^s \quad (5)$$

Once again, results are in line with what depicted in Fig. 5. In particular, EPU24 shocks have a beneficial effect on the energy sector. Differently, days with higher political uncertainty have a negative (non-significant) impact on returns in the other sectors (Panel G).[17]

[17]To gain more insights on the relationship between events and CARs, we follow Shoag and Veuger (2016) and run the following regression Shoag and Veuger (2016): $CAR_{i,t} = \alpha + \beta \Delta EPU24_{i,t} + \epsilon_{i,t}$ in a panel fashion. Overall, estimates from this additional check confirm the energy (market, financials and other) sector to be positively (negatively) affected, although not significantly, by rising political uncertainty.

Table 4: Macroeconomic policy-related events and sectoral stock returns (Italy)

	A: Public Finance					B: Elections				
	Fin	Energy	Ind	Other	Mkt	Fin	Energy	Ind	Other	Mkt
c	0.052	0.038	0.029	0.108***	0.064	0.066	0.044	0.038	0.115***	0.074*
	(0.067)	(0.038)	(0.042)	(0.033)	(0.044)	(0.067)	(0.038)	(0.042)	(0.033)	(0.043)
R_{t-1}	0.004	-0.035	-0.007	0.007	-0.020	0.004	-0.038*	-0.007	0.004	-0.021
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
R_{t-2}	-0.011	0.006	-0.007	-0.005	-0.012	-0.009	0.008	-0.008	-0.004	-0.010
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
D_1 (Mon.)	0.054	-0.014	0.067	-0.072	0.010	0.057	-0.012	0.070	-0.067	0.014
	(0.126)	(0.072)	(0.080)	(0.062)	(0.082)	(0.127)	(0.072)	(0.080)	(0.062)	(0.082)
D_2 (Tue.)	0.039	-0.007	0.068	-0.055	0.026	0.044	-0.005	0.068	-0.054	0.029
	(0.127)	(0.072)	(0.080)	(0.063)	(0.082)	(0.127)	(0.072)	(0.080)	(0.063)	(0.082)
D_3 (Wed.)	0.074	0.061	0.063	-0.008	0.048	0.072	0.055	0.058	-0.012	0.044
	(0.129)	(0.074)	(0.081)	(0.064)	(0.084)	(0.130)	(0.074)	(0.082)	(0.064)	(0.084)
D_4 (Thu.)	-0.183	-0.132*	-0.056	-0.099	-0.132	-0.182	-0.133*	-0.052	-0.094	-0.129
	(0.137)	(0.078)	(0.087)	(0.068)	(0.089)	(0.138)	(0.079)	(0.087)	(0.068)	(0.089)
E_{t+1} (1st day)	0.214	0.323	-0.058	0.095	0.180	-0.317	-0.063	-0.673	-0.573*	-0.439
	(0.448)	(0.255)	(0.282)	(0.221)	(0.290)	(0.650)	(0.371)	(0.409)	(0.321)	(0.421)
E_{t+2} (2nd day)	-0.075	-0.383	-0.148	-0.226	-0.195	-0.528	0.071	0.136	0.088	-0.113
	(0.448)	(0.255)	(0.282)	(0.221)	(0.290)	(0.665)	(0.379)	(0.419)	(0.329)	(0.431)
E_{t+3} (3rd day)	1.017**	0.541**	0.824***	0.531**	0.806***	-0.020	-0.231	-0.145	-0.413	-0.225
	(0.448)	(0.255)	(0.282)	(0.221)	(0.290)	(0.650)	(0.370)	(0.409)	(0.321)	(0.421)
R^2	0.005	0.008	0.006	0.005	0.007	0.002	0.004	0.003	0.004	0.003
Obs.	1958	1958	1958	1958	1958	1958	1958	1958	1958	1958

	C: International					D: Less Uncertainty				
	Fin	Energy	Ind	Other	Mkt	Fin	Energy	Ind	Other	Mkt
c	0.050	0.042	0.033	0.108***	0.065	0.062	0.041	0.033	0.111***	0.070
	(0.067)	(0.038)	(0.042)	(0.033)	(0.044)	(0.067)	(0.038)	(0.042)	(0.033)	(0.044)
R_{t-1}	0.002	-0.038*	-0.008	0.004	-0.023	0.004	-0.038*	-0.007	0.006	-0.021
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
R_{t-2}	-0.010	0.008	-0.008	-0.004	-0.010	-0.010	0.008	-0.009	-0.004	-0.010
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
D_1 (Mon.)	0.060	-0.014	0.070	-0.068	0.014	0.057	-0.014	0.069	-0.071	0.012
	(0.126)	(0.072)	(0.080)	(0.062)	(0.082)	(0.126)	(0.072)	(0.080)	(0.062)	(0.082)
D_2 (Tue.)	0.046	-0.007	0.071	-0.054	0.029	0.043	-0.004	0.070	-0.053	0.030
	(0.127)	(0.072)	(0.080)	(0.063)	(0.082)	(0.127)	(0.072)	(0.080)	(0.063)	(0.082)
D_3 (Wed.)	0.077	0.058	0.058	-0.008	0.048	0.065	0.054	0.056	-0.014	0.041
	(0.129)	(0.074)	(0.082)	(0.064)	(0.084)	(0.130)	(0.074)	(0.082)	(0.064)	(0.084)
D_4 (Thu.)	-0.191	-0.137*	-0.062	-0.106	-0.139	-0.189	-0.136*	-0.060	-0.102	-0.136
	(0.138)	(0.079)	(0.087)	(0.068)	(0.089)	(0.138)	(0.078)	(0.087)	(0.068)	(0.089)
E_{t+1} (1st day)	0.946	0.362	-0.029	0.263	0.445	0.216	0.365	0.013	0.136	0.185
	(0.599)	(0.342)	(0.378)	(0.297)	(0.388)	(0.509)	(0.290)	(0.320)	(0.251)	(0.329)
E_{t+2} (2nd day)	0.504	-0.129	0.143	-0.028	0.153	0.070	0.116	0.355	0.122	0.200
	(0.600)	(0.343)	(0.379)	(0.297)	(0.389)	(0.510)	(0.290)	(0.321)	(0.252)	(0.330)
E_{t+3} (3rd day)	0.731	0.137	0.339	0.613**	0.524	-0.081	-0.087	-0.023	-0.076	-0.059
	(0.600)	(0.343)	(0.379)	(0.297)	(0.389)	(0.509)	(0.290)	(0.321)	(0.252)	(0.330)
R^2	0.004	0.005	0.002	0.004	0.004	0.002	0.005	0.002	0.002	0.003
Obs.	1958	1958	1958	1958	1958	1958	1958	1958	1958	1958

	E: SovRisk					F: All					G: Daily EPU24				
	Fin	Energy	Ind	Other	Mkt	Fin	Energy	Ind	Other	Mkt	Fin	Energy	Ind	Other	Mkt
c	0.053	0.038	0.031	0.109***	0.065	0.047	0.034	0.031	0.110***	0.062	0.054	0.040	0.030	0.112***	0.066
	(0.067)	(0.038)	(0.042)	(0.033)	(0.044)	(0.068)	(0.039)	(0.043)	(0.034)	(0.044)	(0.068)	(0.039)	(0.043)	(0.033)	(0.044)
R_{t-1}	0.004	-0.035	-0.008	0.007	-0.020	0.003	-0.037	-0.008	0.006	-0.021	0.004	-0.037	-0.008	0.007	-0.020
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
R_{t-2}	-0.011	0.006	-0.007	-0.004	-0.012	-0.010	0.008	-0.008	-0.003	-0.010	-0.008	0.008	-0.009	0.001	-0.010
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
D_1 (Mon.)	0.054	-0.013	0.066	-0.072	0.011	0.058	-0.013	0.067	-0.072	0.012	0.065	-0.012	0.075	-0.072	0.018
	(0.126)	(0.072)	(0.080)	(0.062)	(0.082)	(0.126)	(0.072)	(0.080)	(0.062)	(0.082)	(0.127)	(0.072)	(0.080)	(0.062)	(0.082)
D_2 (Tue.)	0.040	-0.007	0.069	-0.054	0.027	0.045	-0.004	0.071	-0.053	0.030	0.052	-0.002	0.077	-0.053	0.035
	(0.127)	(0.072)	(0.080)	(0.063)	(0.082)	(0.127)	(0.072)	(0.080)	(0.063)	(0.082)	(0.127)	(0.073)	(0.080)	(0.063)	(0.082)
D_3 (Wed.)	0.070	0.059	0.059	-0.010	0.045	0.072	0.059	0.058	-0.011	0.046	0.082	0.059	0.066	0.006	0.056
	(0.129)	(0.074)	(0.081)	(0.064)	(0.084)	(0.129)	(0.074)	(0.082)	(0.064)	(0.084)	(0.130)	(0.074)	(0.082)	(0.064)	(0.085)
D_4(Thu.)	-0.182	-0.131*	-0.056	-0.098	-0.131	-0.188	-0.134*	-0.060	-0.101	-0.136	-0.173	-0.129	-0.043	-0.100	-0.125
	(0.137)	(0.078)	(0.087)	(0.068)	(0.089)	(0.138)	(0.078)	(0.087)	(0.068)	(0.089)	(0.139)	(0.079)	(0.088)	(0.068)	(0.090)
E_{t+1} (1st day)	0.153	0.326	-0.169	0.031	0.123	0.362	0.292**	-0.066	0.058	0.201	-0.056	0.002	-0.004	-0.024	-0.027
	(0.436)	(0.249)	(0.275)	(0.216)	(0.282)	(0.248)	(0.141)	(0.156)	(0.123)	(0.161)	(0.042)	(0.024)	(0.026)	(0.021)	(0.027)
E_{t+2} (2nd day)	-0.057	-0.355	-0.088	-0.172	-0.156	-0.103	-0.166	0.001	-0.081	-0.090					
	(0.436)	(0.248)	(0.275)	(0.216)	(0.282)	(0.249)	(0.141)	(0.157)	(0.123)	(0.161)					
E_{t+3} (3rd day)	0.922**	0.490**	0.761***	0.476**	0.732***	0.250	0.146	0.214	0.082	0.178					
	(0.436)	(0.248)	(0.274)	(0.215)	(0.282)	(0.248)	(0.141)	(0.157)	(0.123)	(0.161)					
R^2	0.004	0.008	0.006	0.004	0.006	0.003	0.007	0.003	0.002	0.004	0.003	0.004	0.001	0.002	0.003
Obs.	1958	1958	1958	1958	1958	1958	1958	1958	1958	1958	1939	1939	1939	1939	1939

Notes: This table reports the results of regressions 4 (Panels A-F) and 5 (Panel G). E_{t+1}, E_{t+2} and E_{t+3} represent post-event dummies. Standard errors are reported in parentheses. *, **, and *** indicate a significance level of 10%, 5% and 1%, respectively.

6 Concluding remarks

In this paper we use articles from a popular business-focused Italian newspaper, i.e., the *Sole 24 Ore*, to build a new monthly and daily measure of economic policy uncertainty for Italy, namely `EPU24`. VAR investigations suggest that `EPU24` shocks are detrimental, although not significantly, for production and employment. Moreover, `EPU24` shocks are priced in the cross-section of returns and command a positive risk premium. A standard event study finally documents the presence of positive and significant CARs in the energy sector following sovereign risk- and international-related events. Political elections and international events are instead found to be responsible for negative and significant CARs in the financial sector. Political uncertainty is thus confirmed to be an important risk factor driving significantly asset prices.

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