Codebook
Energy Transition, Financial Markets and EU Interventionism: Lessons from the Ukraine Crisis

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1 Codebook description

This document provides a description of all the data files contained in the replication package of Bayer, Crippa, and Genovese (2025). We provide description of all the data files contained in the replication package. We begin with the files in the `data` subfolder, which are inputs of the script `code/01_estimation_window.R`. Next, we present files in the `data_out` subfolder, which are outputs of the script `code/01_esitmation_window.R` and serve the event window (script `code/02_event_window.R`).

For each dataset, we describe in full the variables included, presenting variable name, a description of the variable, how the variable is coded, and (for the output files) what the data source is. Users who intend to obtain information on a specific variable contained in a dataset should consult the section of the codebook that pertain to that dataset.

For any query about the data or the codebook, please contact the data curator Lorenzo Crippa at the following email address: crippa.lnz@gmail.com.

2 Input data files

This section describes the data files that are inputs of several scripts, contained in the folder `data`.

2.1 Filename `data/prices.csv.gz`

This file contains daily stock market trading information for the 600 European and non-European, fossil fuel and renewable energy firms under study. Where not indicated otherwise, all columns in this file were retrieved from Refinitiv.

Variable Name	`company`
Description	Company name as reported by Refinitiv
Coding	Character
Variable Name	`ticker`
Description	Ticker symbol for stock market trading as reported by Refinitiv
Coding	Character
Variable Name	`NAICS_name`
Description	North American Industry Classification Code (NAICS), 6 digits name classification
Coding	Character
Variable Name	`country_hq`
Description	Country of firm's headquarters
Coding	Character
Variable Name	`country_ex`
Description	Country of firm's primary stock exchange market
Coding	Character
Variable Name	`ex_name`
Description	Primary stock exchange market
Coding	Character

Variable Name	`date`
Description	Trading day
Coding	Date
Variable Name	`price_close`
Description	Price at closing of trading day, USD
Coding	Numeric
Variable Name	`volume`
Description	Volume of shares traded
Coding	Numeric
Variable Name	`close_avg_dec_2021`
Description	Average `price_close` per firm in December 2021
Coding	Numeric
Source	Own coding based on `price_close`
Variable Name	`l.price_close`
Description	One-day lagged value of `price_close`
Coding	Numeric
Source	Own coding based on `price_close`
Variable Name	`chg`
Description	Daily stock returns. Obtained as: $100 * (\frac{\texttt{price_close} - \texttt{l.price_close}}{\texttt{l.price_close}})$
Coding	Numeric (percentage)
Source	Own coding based on `price_close`
Variable Name	`sample`
Description	Whether the firm is in the `Fossil fuel` or `Renewable energy` sample
Coding	Character
Source	Own coding based on `NAICS_name`

Variable Name	`war`
Description	Date of the beginning of the Russian full-scale invasion of Ukraine
Coding	Date: `2022-02-24`
Source	Own coding

Variable Name	`package_2`
Description	Date of the second EU sanction package against Russia
Coding	Date: `2022-02-25`
Source	Own coding

Variable Name	`package_3`
Description	Date of the third EU sanction package against Russia
Coding	Date: `2022-02-28`
Source	Own coding

Variable Name	`package_4`
Description	Date of the fourth EU sanction package against Russia
Coding	Date: `2022-03-15`
Source	Own coding

Variable Name	`repowereu_1`
Description	Date of the first RepowerEU milestone (plan proposal)
Coding	Date: `2022-03-08`
Source	Own coding

Variable Name	`repowereu_2`
Description	Date of the second RepowerEU milestone (plan presentation)
Coding	Date: `2022-05-18`
Source	Own coding

Variable Name	`repowereu_3`
Description	Date of the third RepowerEU milestone (gas price cap)
Coding	Date: `2022-10-18`
Source	Own coding

Variable Name	`Europe`
Description	Binary for whether the firm is headquartered or primarily traded in a European country
Coding	Binary
Source	Own coding based on `country_hq` and `country_ex`

Variable Name	`EU`
Description	Binary for whether the firm is headquartered or primarily traded in a EU 27 country
Coding	Binary
Source	Own coding based on `country_hq` and `country_ex`

Variable Name	`Europe_based`
Description	Binary for whether the firm is headquartered in a European country
Coding	Binary
Source	Own coding based on `country_hq`

Variable Name	`Europe_traded`
Description	Binary for whether the firm is primarily traded in a European country
Coding	Binary
Source	Own coding based on `country_ex`

2.2 Filename `data/indexes.csv.gz`

This file contains returns to S&P 500 constituent firms and to several aggregated market indexes. All data in this file were retrieved from Refinitiv.

Variable Name	`date`
Description	Trading day
Coding	Date
Variable Name	`.DJI`, `.FTSE`, `.GDAXI`, `.NDX`, `.NYA`, `.SPX`
Description	Daily stock returns to six aggregate market-wide indexes: Dow Jones Industrial Average index, FTSE 100 index, Deutsche Borse Dax Index, Nasdaq 100 Index, New York Stock Exchange Index, and S&P 500 Composite Index
Coding	Numeric (percentage)
Variable Name	`A.N`, `AAL.OQ`, `AAP.N`, ..., `ZTS.N`
Description	Daily stock returns to individual S&P 500 constituents
Coding	Numeric (percentage)

2.3 Filename `data/indexes_stoxx600.csv.gz`

This file contains returns to Stoxx 600 firms. All data in this file were retrieved from Refinitiv.

Variable Name	`date`
Description	Trading day
Coding	Date
Variable Name	`AAL`, `ABDN`, `ABF`, ..., `WTB`
Description	Daily stock returns to individual Stoxx 600 firms
Coding	Numeric (percentage)

2.4 Filename `data/value_SP500.csv.gz`

This file contains daily stock value of aggregated S&P 500 composite index. All data in this file were retrieved from Refinitiv.

Variable Name	`date`
Description	Trading day
Coding	Date
Variable Name	`close`
Description	Value at closing of trading day, USD
Coding	Numeric
Variable Name	`sample`
Description	Uniquely equals `S&P 500`
Coding	Character

2.5 Filename `data/Voeten2025_overlap.csv`

This file contains the names of the 49 companies from our sample of European energy producers that are also present in data by Voeten (2025). We hand-coded the match between the company name versions across our data and those by Voeten (2025).

Variable Name	`Voeten_company`
Description	Company name as reported by Voeten (2025)
Coding	Character
Source	Replication data by Voeten (2025)

Variable Name	`Voeten_renewables`
Description	Indicator for whether the firm is classified as a renewable energy producer by Voeten (2025)
Coding	Binary
Source	Replication data by Voeten (2025)

Variable Name	`company`
Description	Company name as reported by Refinitiv (see `data/prices.csv.gz`)
Coding	Character
Source	Refinitiv

Variable Name	`sample`
Description	Whether the firm is in the `Fossil fuel` or `Renewable energy` sample
Coding	Character
Source	Own coding based on `NAICS_name`

3 Output files for event window

This section describes the data files that are outputs of `code/01_estimation_window.R` and inputs of `code/02_event_window.R`, contained in the folder `data_out`.

3.1 Filename `data_out/analysis.csv.gz`

Clean dataset with variables from `data/prices.csv.gz` and results from the estimation window. For variables from `company` to `Europe` (variable numbers 1 to 24), see section 2.1. All other variables come from the estimation window (script `code/01_estimation_window.R` and follow a consistent naming scheme.

Variables from `exp_chg_lasso_package_2` to `R2_lasso_repowereu_3` (variable numbers 25 to 42) employ the following naming scheme. For each **event*** (where **event*** is any of `package_2`, `package_3`, `package_4`, `repowereu_1`, `repowereu_2`, `repowereu_3` as defined in section 2.1), there are three variables: `exp_chg_lasso_`**event***, `abn_chg_lasso_`**event***, and `R2_lasso_`**event*** (tot: 18 variables).

Variable Name	`exp_chg_lasso_`**event***
Description	Expected stock market returns from a LASSO market model on the day of the **event*** using returns to individual S&P 500 firms as predictors. Estimation window starts 61 trading days and ends one trading day before the **event***.
Coding	Numeric
Source	Own computation in `code/01_estimation_window.R`
Variable Name	`abn_chg_lasso_`**event***
Description	Abnormal stock market returns from a LASSO market model on the day of the **event***. Obtained as: `chg` $-$ `exp_chg_lasso_`**event***
Coding	Numeric
Source	Own computation in `code/01_estimation_window.R`
Variable Name	`R2_lasso_`**event***
Description	R-squared of LASSO market model relative to the day of the **event*** using returns to individual S&P 500 firms as predictors. Estimation window starts 61 trading days and ends one trading day before the **event***.
Coding	Numeric
Source	Own computation in `code/01_estimation_window.R`

The remaining variables (from `exp_chg_ols_package_2` to `abn_chg_ols_repowereu_3`, i.e. from variable number 43 to 54) There are two additional variables for each **event***: `exp_chg_ols_`**event*** and `abn_chg_ols_`**event*** (tot: 12 variables).

Variable Name	`exp_chg_ols_`**event***
Description	Expected stock market returns from an OLS market model on the day of the **event*** using returns to six aggregated market-wide indexes as predictors. Estimation window starts 61 trading days and ends one trading day before the **event***.
Coding	Numeric
Source	Own computation in `code/01_estimation_window.R`
Variable Name	`abn_chg_ols_`**event***
Description	Abnormal stock market returns from an OLS market model on the day of the **event***. Obtained as: `chg` $-$ `exp_chg_ols_`**event***
Coding	Numeric
Source	Own computation in `code/01_estimation_window.R`

3.2 Filename `data_out/analysis_31d.csv.gz`

Clean dataset with variables from `data/prices.csv.gz` and results from a shorter estimation window. For variables from `company` to `Europe` (variable numbers 1 to 24), see section 2.1. All other variables come from the estimation window (script `code/01_estimation_window.R` and follow a consistent naming scheme.

Variables from `exp_chg_lasso_package_2` to `abn_chg_lasso_repowereu_3` (variable numbers 25 to 36) employ the following naming scheme. For each **event*** (where **event*** is any of `package_2`, `package_3`, `package_4`, `repowereu_1`, `repowereu_2`, `repowereu_3` as defined in section 2.1), there are two variables: `exp_chg_lasso_`**event*** and `abn_chg_lasso_`**event*** (tot: 12 variables).

Variable Name	`exp_chg_lasso_`**event***
Description	Expected stock market returns from a LASSO market model on the day of the **event*** using returns to individual S&P 500 firms as predictors. Estimation window starts 31 trading days and ends one trading day before the **event***.
Coding	Numeric
Source	Own computation in `code/01_estimation_window.R`

Variable Name	`abn_chg_lasso_`**event***
Description	Abnormal stock market returns from a LASSO market model on the day of the **event***. Obtained as: `chg − exp_chg_lasso_`**event***
Coding	Numeric
Source	Own computation in `code/01_estimation_window.R`

3.3 Filename `data_out/analysis_181d.csv.gz`

Clean dataset with variables from `data/prices.csv.gz` and results from a longer estimation window. For variables from `company` to `Europe` (variable numbers 1 to 24), see section 2.1. All other variables come from the estimation window (script `code/01_estimation_window.R` and follow a consistent naming scheme.

Variables from `exp_chg_lasso_package_2` to `abn_chg_lasso_repowereu_3` (variable numbers 25 to 36) employ the following naming scheme. For each **event*** (where **event*** is any of `package_2`, `package_3`, `package_4`, `repowereu_1`, `repowereu_2`, `repowereu_3` as defined in section 2.1), there are two variables: `exp_chg_lasso_`**event*** and `abn_chg_lasso_`**event*** (tot: 12 variables).

Variable Name	`exp_chg_lasso_`**event***
Description	Expected stock market returns from a LASSO market model on the day of the **event*** using returns to individual S&P 500 firms as predictors. Estimation window starts 181 trading days and ends one trading day before the **event***.
Coding	Numeric
Source	Own computation in `code/01_estimation_window.R`

Variable Name	`abn_chg_lasso_`**event***
Description	Abnormal stock market returns from a LASSO market model on the day of the **event***. Obtained as: `chg` $-$ `exp_chg_lasso_`**event***
Coding	Numeric
Source	Own computation in `code/01_estimation_window.R`

3.4 Filename `data_out/analysis_stoxx600.csv.gz`

Clean dataset with variables from `data/prices.csv.gz` and results from LASSO market models employing Stoxx 600 constituent firms instead of S&P 500 firms. For variables from `company` to `Europe` (variable numbers 1 to 24), see section 2.1. All other variables come from the estimation window (script `code/01_estimation_window.R` and follow a consistent naming scheme.

Variables from `exp_chg_lasso_package_2` to `abn_chg_lasso_repowereu_3` (variable numbers 25 to 36) employ the following naming scheme. For each **event*** (where **event*** is any of `package_2`, `package_3`, `package_4`, `repowereu_1`, `repowereu_2`, `repowereu_3` as defined in section 2.1), there are two variables: `exp_chg_lasso_`**event*** and `abn_chg_lasso_`**event*** (tot: 12 variables).

Variable Name	`exp_chg_lasso_`**event***
Description	Expected stock market returns from a LASSO market model on the day of the **event*** using returns to individual Stoxx 600 firms as predictors. Estimation window starts 61 trading days and ends one trading day before the **event***.
Coding	Numeric
Source	Own computation in `code/01_estimation_window.R`

Variable Name	`abn_chg_lasso_`**event***
Description	Abnormal stock market returns from a LASSO market model on the day of the **event***. Obtained as: `chg − exp_chg_lasso_`**event***
Coding	Numeric
Source	Own computation in `code/01_estimation_window.R`

Bibliography

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