Short economic and financial analyses

Uncertainty indicators for the Slovenian economy

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February 2026

BANKA SLOVENIJE
EVROSISTEM

Collection: Short economic and financial analyses

Title: Uncertainty indicators for the Slovenian economy

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Issue: February 2026

Place of publication: Ljubljana

Issued by:
Banka Slovenije
Slovenska 35, 1505 Ljubljana, Slovenija
www.bsi.si

Electronic edition:
https://www.bsi.si/en/publications/research/short-economic-and-financial-analyses

Kataložni zapis o publikaciji (CIP) pripravili v Narodni in univerzitetni knjižnici v Ljubljani
COBISS.SI-ID **268291587**
ISBN 978-961-7230-39-0 (PDF)

Table of contents

Abstract

This paper constructs and compares three distinct measures of economic uncertainty for Slovenia: a Jurado-style macroeconomic uncertainty index, a news-based index derived from the frequency of uncertainty-related keywords on major domestic news portals, and a survey-based index capturing dispersion in qualitative expectations from the European Commission's Business and Consumer Survey. All three are negatively correlated with business cycle dynamics and exhibit pronounced peaks during the global financial crisis and the COVID-19 pandemic. Correlation and lead–lag analysis show that the news and survey indices tend to react earlier to sources of uncertainty, while the macroeconomic index captures slower-moving, broad-based volatility only when it is materially affecting the behaviour of economic agents. The results highlight that each index reflects different aspects and timing of uncertainty and that their combined monitoring provides a more comprehensive assessment than any single indicator. This should be considered in both applied research and real-time economic policy analysis.

1 Introduction

Economic uncertainty has emerged as a defining feature of current economic landscapes, profoundly influencing decision-making processes across households, businesses and policy institutions. Over the past decade, uncertainty has increased markedly, driven by a series of economic, political and global developments. Shifting growth prospects, changing economic policies, inflationary pressures, geopolitical tensions, and large-scale disruptions such as pandemics and climate-related events have all contributed to a more unpredictable global environment (Cascaldi-Garcia et al., 2023).

Persistent uncertainty has become a defining feature of the economic environment in developed economies, with important implications for the behaviour of households, firms and financial markets. Both theoretical and empirical evidence show that heightened uncertainty significantly alters consumption and investment decisions and weakens the transmission and effectiveness of economic policy. However, traditional economic models and policy frameworks struggle to fully capture these behavioural responses, particularly in the face of a rapid succession of shocks, from the 2008 financial crisis, through the COVID-19 pandemic, to recent geopolitical tensions and climate-related economic disruptions (Cicarelli et al., 2025). As a result, policymakers increasingly face greater difficulty in designing and implementing effective policies in an increasingly complex and uncertain environment.

The theoretical literature has identified several key transmission mechanisms through which uncertainty affects economic activity. The real options channel, pioneered by Bernanke (1983) and formalized by McDonald and Siegel (1986) and Dixit and Pindyck (1994), suggests that heightened uncertainty increases the option value of waiting, leading firms to delay irreversible investments until uncertainty resolves. The financial frictions channel, developed by Christiano et al. (2014), demonstrates how uncertainty

can amplify economic downturns through credit market disruptions and risk premiums, as financial intermediaries become more risk-averse and tighten lending standards. Additionally, the precautionary savings channel shows how uncertainty leads households to increase savings and reduce consumption as a precaution against future income volatility. This theoretical reasoning has found substantial empirical support. Bloom (2009), for example, demonstrates that uncertainty shocks cause significant drops in output and employment, with effects persisting for several quarters, while subsequent studies have confirmed that uncertainty has contractionary effects across various measures and countries (see e.g. Jurado et al., 2015; Baker et al., 2016).

Despite the widely recognized importance of uncertainty in economic analysis, its measurement presents a substantial methodological challenge. Uncertainty, by its very nature, is not directly observable, requiring researchers to develop sophisticated approaches to quantify and track its evolution. The academic literature has produced a rich array of methodologies for measuring economic uncertainty, broadly categorized into four main approaches: text-based measures that analyse linguistic patterns in media and policy communications, survey-based indices that rely on survey data, econometric measures that identify uncertainty through statistical modelling of economic volatility, and market-based indicators that extract uncertainty signals from financial instruments and asset prices (Cascaldi-Garcia et al., 2023).

Slovenia's position as a small, open European economy suggests that international uncertainty indices should serve as reasonable proxies for domestic uncertainty dynamics. Indeed, empirical evidence supports this intuition: Banka Slovenije (2025) show that increases in various European-based uncertainty measures adversely affect the investment activity of Slovenian firms, indicating transmission of international uncertainty to the domestic economy. Nevertheless, international uncertainty proxies may not fully capture the timing, intensity or country-specific sources of uncertainty as perceived by Slovenian firms and households. Domestic uncertainty can arise from country-specific factors such as local policy developments, institutional changes or sectoral developments that may not reflect a broader international development. Moreover, the relative importance of different uncertainty sources may vary between Slovenia and the reference countries used in international indices. Currently, Slovenia-specific uncertainty indicators are unavailable, revealing a notable gap in the existing framework for analysing and monitoring domestic uncertainty dynamics

This paper addresses the absence of dedicated uncertainty measures for Slovenia by constructing three uncertainty indices using well-established methodological approaches adapted to the Slovenian context. I apply the text-based methodology of Baker et al. (2016) to analyse uncertainty-related language in Slovenian media, implement a survey-based approach following Bachmann et al. (2013) to capture uncertainty perceptions among economic agents, and construct an econometric index using the statistical approach of Jurado et al. (2015) applied to key Slovenian economic variables. The absence of a market-based measure reflects the limited depth and liquidity of Slovenia’s financial markets, which constrains their information content regarding economy-wide uncertainty.

The primary contribution of this paper is to provide the first systematic set of uncertainty measures for the Slovenian economy, enabling researchers and policymakers to track uncertainty dynamics over time and across different measurement approaches. Rather than analysing the economic effects of uncertainty shocks, this paper focuses on deriving proper measured of uncertainty and documenting how it has evolved in Slovenia as captured by these different methodological approaches. The constructed indices

reveal the dynamics of uncertainty in Slovenia, identify periods of heightened uncertainty and demonstrate how different measurement techniques can provide complementary perspectives on uncertainty dynamics. These measures establish a foundation for future research examining the transmission mechanisms and economic effects of uncertainty in the Slovenian context, while also facilitating comparisons with uncertainty patterns observed in other economies.

2 Methodology and construction of uncertainty indices

This section outlines the methods applied to develop three different uncertainty indicators for the Slovenian economy: a macro uncertainty index following methods by Jurado et al. (2015), a news-based uncertainty index like Economic Policy Uncertainty by Baker et al. (2016) and a survey-based dispersion index following methodology proposed by Bachmann et al. (2013).

2.1 Jurado-style macro uncertainty index

In this subsection, I briefly describe the construction of a Jurado-style macroeconomic uncertainty index for Slovenia. Our aim is to follow the econometric logic of Jurado et al. (2015), while adapting the index to economic variables specific to the Slovenian economy.

Jurado et al.'s index operationalizes uncertainty as the conditional volatility of the unforecastable component of a large set of time series. In practice, they estimate a large-scale factor model where a large number (in our case 74 variables) of macroeconomic and financial variables are decomposed into common and idiosyncratic components. For each series and horizon, forecast errors are computed based on these common factors. The variance of the forecast error, conditional on the information available at that horizon, represents the degree of unpredictability. Averaging across series yields a broad measure of latent macroeconomic uncertainty. Specifically:

$$U_{j,t}(h) = \sqrt{\mathbb{E}\left[\left(y_{j,t+h} - \mathbb{E}\left[y_{j,t+h}|\mathrm{I}_t\right]\right)^2|\mathrm{I}_t\right]} \quad (1)$$

where the expectation $E(.|I_t)$ is taken with respect to information I_t available to economic agents at time t. If the expectation today of the squared error in forecasting y_{jt+h} rises, uncertainty in the variable increases. A measure of macroeconomic uncertainty is constructed by aggregating individual uncertainty using aggregation weights[1] w_j:

$$U_t(h) = \sum_j w_j U_{j,t}(h) \quad (2)$$

The key intuition is that if a variable becomes harder to forecast even when using all available information, uncertainty has increased.

[1] In our case, we simply take an average of all series, thus w_j is simply equal to $1/N$, where N is the number of variables.

The dataset that I collected closely mirrors the selection from the original paper by Jurado et al. (2015), while accounting for the limited availability of series for Slovenia. In total I collected 74 variables spanning the period from July 2004 to December 2024. The dataset spans a wide set of macro series covering production, surveys, the labour market, housing, trade, monetary aggregates and prices. A full list of the variables with descriptions is given in the appendix.

2.2 News-based uncertainty index

The second indicator of uncertainty is based on textual analysis of economic news coverage, following the approach proposed by Baker et al. (2016). The methodology is adapted to the Slovenian context by focusing on two major national news portals: 24ur.com and rtv.si. Both portals were selected due to their wide readership and consistent coverage of economic topics over an extended period. Using automated web-scraping tools, all articles published in the business (*gospodarstvo*) sections of these websites were collected over the sample period 2003–2024.

Each article was then processed to identify whether it contained the word "*negotov*", a Slovenian term associated with uncertainty. For every quarter, the total number of business-related articles A_t and the number of those mentioning uncertainty U_t were recorded. From this, a raw uncertainty frequency was computed as the share of uncertainty-related articles in total business coverage:

$$S_t = \frac{U_t}{A_t}$$

This measure reflects the intensity of uncertainty in the media narrative during a given quarter.

2.3 Survey based dispersion index

The survey-based uncertainty index is constructed using firm-level expectation data from the European Commission's Business and Consumer Survey, covering multiple sectors of the Slovenian economy, and follows methodology proposed by Girardi and Reuter (2016). The dataset comprises shares of firms reporting various qualitative outlook categories for production, demand and business conditions across industry, services, retail trade and construction sectors. The data is available monthly and classified by NACE industry codes.

To capture uncertainty, the method exploits the relationship between expectation dispersion and uncertainty, based on the idea that greater disagreement among firms signals higher uncertainty about future economic conditions. The calculation is performed separately for several survey questions across sectors, using the following formula for each question j at month t:

$$U_{j,t} = \sqrt{p_{j,t}^{+} + p_{j,t}^{-} - \left(p_{j,t}^{+} - p_{j,t}^{-}\right)^2}$$

where $p_{j,t}^{+}$ and $p_{j,t}^{-}$ represent the shares of firms with positive and negative outlooks respectively for question j in month t. This formula, derived from the variance of a categorical distribution, measures the degree of dispersion in firm responses, capturing uncertainty in expectations.

This calculation is performed for 12 specific survey questions distributed across four sectors (see Appendix for specific questions). Each resulting monthly dispersion series

is then standardized by subtracting its sample mean and dividing by its standard deviation to ensure comparability. Finally, a composite uncertainty index is constructed by averaging the standardized dispersion measures across all questions and sectors monthly. The monthly composite index is subsequently aggregated to a quarterly frequency by taking the average within each quarter, aligning it with other macroeconomic data frequencies used in this study.

While survey dispersion provides a timely and direct read on agents' stated expectations, it should be interpreted as a proxy rather than a precise measure of uncertainty. Variation in dispersion may arise not only from changes in genuine uncertainty, but also from structural heterogeneity in respondents' characteristics or from differences in the information sets they use when forming expectations. These additional sources of disagreement can weaken the link between dispersion and true uncertainty, and their relative importance may vary over time and across sectors (Girardi and Reuter, 2016).

3 Results

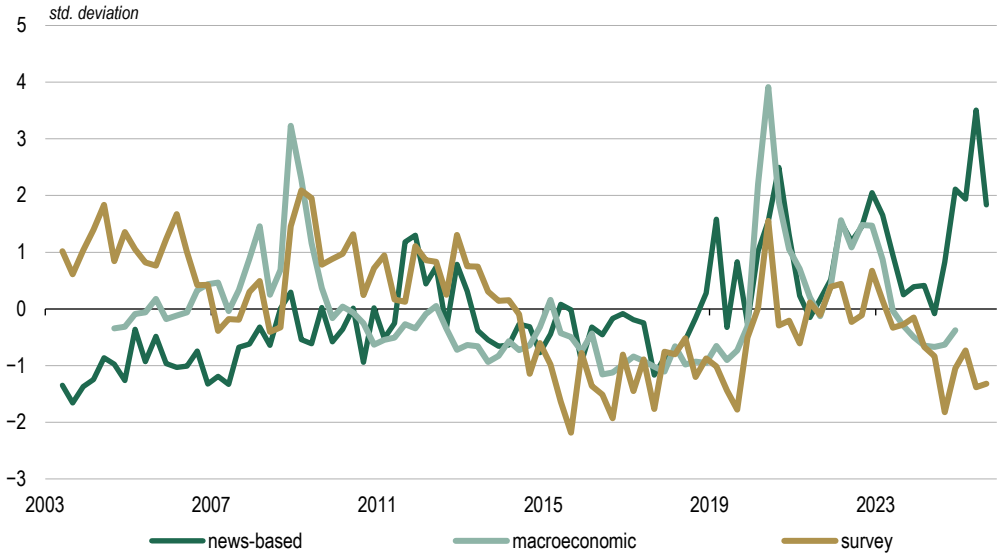
This section compares the three Slovenian uncertainty indicators in terms of their developments through time, statistical properties, correlations and timing relationships. I also examine their behaviour around major economic episodes.

3.1 Evolution of uncertainty indicators in Slovenia

Figure 1 plots the three uncertainty indices from Q2 2003 to Q3 2025, standardized for comparability. All the indicators display pronounced peaks during major global shocks, notably the global financial crisis (2008–2009) and the COVID-19 pandemic (2020). Examining the indices around key events highlights differences in their responsiveness, persistence and the types of shocks they capture. The macroeconomic index responds primarily to large, broad-based disruptions, reflecting its model-based construction, while the survey dispersion index reacts to a wider range of events and exhibits greater persistence. The news-based index is the most volatile, displaying high-frequency spikes driven by shifts in media coverage and narrative intensity.

During the global financial crisis, all three indices increased, peaking in late 2008 at the height of global market stress. The rise was particularly pronounced for the macroeconomic and survey-based indices, whereas the news-based index increased more moderately. By contrast, the news-based index rose much more sharply during the European sovereign debt crisis in 2012–2013, an episode that was objectively more relevant for Slovenia. Comparing the news-based and macroeconomic indices reveal contrasting dynamics: the macroeconomic index surged at the end of 2008 but showed a much smaller increase during the sovereign debt crisis. In contrast, the survey-based index rose sharply during the global financial crisis and remained persistently elevated throughout the subsequent period, staying high until 2014.

Figure 1: Uncertainty indicators



Sources: 24ur.com, rtv.si, Eurostat, ECB and European Comission.

Note: All indices are standardized to ease comparisons.

While the indices displayed markedly different dynamics during the 2008–2014 period, these differences largely disappeared thereafter. From 2015 to 2019, uncertainty across all three indicators declined substantially and remained at low levels, consistent with a period of economic expansion and relative political stability. The only notable deviation occurred in 2019, when the news-based index recorded a temporary spike that was not mirrored by the macroeconomic or survey-based indicators. This episode likely reflects a short-lived increase in media coverage of United States–China trade tensions and slowing euro area growth, which did not materially affect domestic expectations or realized macroeconomic volatility.

The outbreak of the COVID-19 pandemic in early 2020 triggered a significant increase in all three indices. The macroeconomic and survey-based indicators peaked in the second quarter of 2020, coinciding with the collapse in economic activity during the first lockdown, while the news-based index reached its maximum in the third quarter, as media attention intensified during the second wave of infections. Although uncertainty declined relatively quickly after mid-2020, none of the indices returned to pre-pandemic levels, indicating a prolonged period of elevated uncertainty associated with supply disruptions, labour market adjustments and shifting health policies.

The Russian invasion of Ukraine in early 2022 generated another surge in uncertainty, particularly in the macroeconomic and news-based indices. The latter reflected immediate concerns related to energy security and geopolitical instability, while the macroeconomic index captured the sustained effects of the energy price shock on inflation and output volatility. The survey-based index also increased, though to a lesser extent, suggesting that firms' qualitative expectations were less responsive than aggregate macroeconomic variables and media sentiment during this episode.

The most recent spike occurred in late 2024, following the election of a new Trump administration in the United States and the announcement of tariff measures affecting global trade. The news-based index surged to its highest recorded level, reflecting intensive media coverage of potential trade disruptions and geopolitical tensions. In contrast, the survey-based index showed little immediate response, and the macroeconomic index continued its gradual decline towards pre-pandemic levels. This diver-

gence underscores the tendency of the news-based indicator to react strongly to narrative-driven global events, even when domestic macroeconomic volatility and firm-level expectations remain relatively stable.

3.2 Time series properties of uncertainty measures

The summary statistics in Table 1 reveal notable differences in the distributional properties and persistence of the three uncertainty indicators. The news-based and macroeconomic indices exhibit pronounced right skewness, indicating that periods of elevated uncertainty are more frequent or more extreme than periods of unusually low uncertainty. This asymmetry is particularly strong for the macroeconomic index, which also displays substantial excess kurtosis, suggesting the presence of fat tails and infrequent but very large uncertainty spikes. Consistent with this, both indices exceed the two-standard-deviation threshold four times over the sample period. By contrast, the survey-based index is more symmetrically distributed and less prone to extreme realizations, as reflected in its near-zero skewness, negative kurtosis and only single exceedance of the two-standard-deviation threshold. Despite these differences in higher moments, all three indices display a high degree of persistence, with AR(1) coefficients close to 0.8, indicating that shocks to uncertainty tend to dissipate only gradually across indicators.

Table 1: **Summary statistics**

Indicator	min	max	skewness	kurtosis	exceed 2sd	AR(1)
News-based	-1.65	3.48	0.965	0.645	4 times	0.764
Survey	--2.17	2.07	-0.09	-0.82	1 time	0.789
Macroeconomic	-1.18	4.01	1.65	3.08	4 times	0.782

Table 2 reports contemporaneous correlations between the three uncertainty indicators and selected macroeconomic variables. The macroeconomic index is moderately correlated with both the news-based ($\rho = 0.38$) and survey-based ($\rho = 0.47$) indices, indicating a degree of overlap in the uncertainty components captured by these indicators. In contrast, the news-based and survey-based indices are weakly negatively correlated ($\rho = -0.23$), pointing to differences in their short-run dynamics and sensitivity to specific types of shocks.

Correlations with real GDP growth are very similar across all three indices and uniformly negative, suggesting that higher uncertainty, regardless of how it is measured, is associated with weaker economic activity. This finding supports the interpretation that the indices capture a common uncertainty component linked to the business cycle, rather than indicating meaningful differences in their relationship with output. Similarly, all three indicators exhibit modest positive correlations with HICP inflation, with no substantial differences across indices, consistent with periods of heightened uncertainty coinciding with elevated inflation.

Table 2: **Correlations**

Indicator	News-based	Survey-based	Macroeconomic	GDP (y-o-y)	HICP (y-o-y)
News-based	1			-0.31	0.14
Survey-based	-0.226	1		-0.29	0.25
Macroeconomic	0.376	0.467	1	-0.32	0.26

The lead–lag correlations in Table 3 show that both the news-based and survey-based indices exhibit their strongest positive correlation with the macroeconomic uncertainty index contemporaneously ($\rho = 0.376$ and $\rho = 0.467$). Correlations remain positive when the survey index leads by one to four quarters, suggesting that rising disagreement among firms can precede broader macroeconomic uncertainty. The news-based index also shows positive correlations at leads of one and two quarters, albeit with smaller magnitudes than contemporaneous. The negative short-horizon correlations between the news and survey indices persist across multiple lags, suggesting that the two respond to different types of shocks and sources of uncertainty.

Table 3: **Lead–lag correlations among indices**

lag	news/macro	survey/macro	survey/news
-4	0.008	0.030	-0.307
-3	0.065	0.065	-0.285
-2	0.162	0.129	-0.245
-1	0.274	0.322	-0.216
0	0.376	0.467	-0.226
1	0.331	0.41	-0.203
2	0.244	0.306	-0.196
3	0.120	0.321	-0.129
4	0.030	0.341	-0.104

Table 4 reports lead–lag correlations between the uncertainty indices and key macroeconomic aggregates, namely real GDP growth and HICP inflation. Across all three uncertainty indicators, correlations with GDP growth are negative at short horizons and reach their largest magnitudes contemporaneously or when uncertainty leads GDP by one quarter. This pattern is consistent with periods of elevated uncertainty being associated with weaker economic activity. The strongest negative correlations are observed for the macroeconomic uncertainty index, particularly at leads of zero and one quarter, while the news-based and survey-based indices display similar, albeit slightly smaller, associations.

At longer leads, the magnitude of the negative correlations with GDP diminishes and, in some cases, turns positive, especially for the macroeconomic index. This likely reflects the cyclical nature of both uncertainty and output growth, rather than evidence of a stable predictive relationship at longer horizons.

Correlations with HICP inflation are uniformly positive across indices and lags, indicating that periods of elevated uncertainty tend to coincide with higher inflation. The cor-

relations are relatively stable across leads and lags and broadly similar across indicators, suggesting that the relationship between uncertainty and inflation is not driven by the specific construction of the uncertainty index.

Table 4: **Lead–lag correlations with macroeconomic aggregates**

lag	news/GDP	survey/GDP	macro/GDP	news/HICP	Survey/HICP	Macro/HICP
-4	-0.096	0.064	0.054	0.12	0.182	0.286
-3	-0.166	-0.074	-0.144	0.136	0.178	0.236
-2	-0.228	-0.186	-0.275	0.163	0.191	0.24
-1	-0.305	-0.271	-0.353	0.16	0.216	0.244
0	-0.312	-0.298	-0.329	0.139	0.252	0.263
1	-0.255	-0.212	-0.099	0.139	0.294	0.317
2	-0.116	-0.153	0.122	0.12	0.314	0.3
3	0.042	-0.103	0.268	0.092	0.307	0.249
4	0.101	-0.113	0.312	0.072	0.262	0.153

4 Conclusion

This paper has constructed three complementary measures of economic uncertainty for Slovenia and evaluated their statistical properties, correlations and behaviour during major economic events. While all the indices capture broad turning points in the business cycle, their amplitude, persistence and timing differ materially. The macroeconomic index responds chiefly to large, sustained shocks reflected in realised macroeconomic volatility. The survey-based dispersion index provides a timely signal of uncertainty perceived by firms and tends to increase ahead of or alongside broader macroeconomic uncertainty, while displaying greater persistence during prolonged periods of stress. The news-based index reacts most rapidly to narrative-driven events, including international developments, but is also the most volatile and sensitive to short-lived swings in media attention, suggesting a stronger exposure to shifts in economic narratives than to realised macroeconomic instability.

Lead–lag correlations indicate that news- and survey-based indicators can serve as early-warning signals for subsequent increases in macroeconomic uncertainty, particularly in episodes when uncertainty propagates to actual behaviour of firms and households. At the same time, their limited correlation with each other suggests that they might capture distinct dimensions of uncertainty. This reinforces the case for a complementary approach rather than reliance on a single indicator.

From a policy perspective, the three indices provide useful tools for real-time monitoring of uncertainty and its potential implications for the Slovenian economy. They can also be incorporated into econometric frameworks to quantify the effects of uncertainty shocks on domestic business cycle dynamics and to assess the extent to which uncer-

tainty in Slovenia co-moves with global developments. Together, these indices establish a foundation for systematic, data-based monitoring of uncertainty in the Slovenian economy.

5 Appendix

Table 5: **List of variables used in the macroeconomic uncertainty index**

Group	R object / column	Short description	Source (in code)	Freq. / unit (as downloaded)	Transformation (for analysis / Jurado-style)
Industrial production	ind_prod_manuf — MIG_ING	Industrial production, NACE MIG_ING	Eurostat sts_inpr_m	Monthly, index (I21), SCA	log-difference (monthly growth); demean & scale
Industrial production	ind_prod_manuf — MIG_NRG_X_D_E	Industrial production, NACE MIG_NRG_X_D_E	Eurostat sts_inpr_m	Monthly, index (I21), SCA	log-diff; demean & scale
Industrial production	ind_prod_manuf — MIG_CAG	Industrial production, NACE MIG_CAG	Eurostat sts_inpr_m	Monthly, index (I21), SCA	log-diff; demean & scale
Industrial production	ind_prod_manuf — MIG_DCOG	Industrial production, NACE MIG_DCOG	Eurostat sts_inpr_m	Monthly, index (I21), SCA	log-diff; demean & scale
Industrial production	ind_prod_manuf — MIG_NDCOG	Industrial production, NACE MIG_NDCOG	Eurostat sts_inpr_m	Monthly, index (I21), SCA	log-diff; demean & scale
Industrial production	ind_prod_manuf — B	Industrial production, NACE B (mining/quarrying)	Eurostat sts_inpr_m	Monthly, index (I21), SCA	log-diff; demean & scale
Industrial production	ind_prod_manuf — C	Industrial production, NACE C (manufacturing)	Eurostat sts_inpr_m	Monthly, index (I21), SCA	log-diff; demean & scale
Industrial production	ind_prod_manuf — D	Industrial production, NACE D (electricity/gas/water)	Eurostat sts_inpr_m	Monthly, index (I21), SCA	log-diff; demean & scale
Business & consumer surveys (BCS)	economic_sentiment — BS-ESI-I	Economic Sentiment Indicator (ESI)	Eurostat ei_bssi_m_r2	Monthly, index / SA	use level (index); demean & scale
Business & consumer surveys (BCS)	industry_BCS — BS-IPT	Industry: production development past 3 months (balance)	Eurostat ei_bsin_m_r2	Monthly, balance / SA	use level (balance); demean & scale
Business & consumer surveys (BCS)	retail_BCS — BS-RPBS	Retail: business activity past 3 months (balance)	Eurostat ei_bsrt_m_r2	Monthly, balance / SA	level; demean & scale

Business & consumer surveys (BCS)	services_BCS — BS-SABC	Services: business activity past 3 months (balance)	Eurostat ei_bsse_m_r2	Monthly, balance / SA	level; demean & scale
Business & consumer surveys (BCS)	construction_BCS — BS-CTA-BAL	Construction: activity past 3 months (balance)	Eurostat ei_bsbu_m_r2	Monthly, balance / SA	level; demean & scale
Business & consumer surveys (BCS)	construction_BCS — BS-COB-BAL	Construction: orders / other balance	Eurostat ei_bsbu_m_r2	Monthly, balance / SA	level; demean & scale
Business & consumer surveys (BCS)	construction_BCS — BS-CCI-BAL	Construction confidence / other balance	Eurostat ei_bsbu_m_r2	Monthly, balance / SA	level; demean & scale
Business & consumer surveys (BCS)	consumer_BCS — BS-GES-LY	Consumers: gen. econ. situation past 12 months (balance)	Eurostat ei_bsco_m	Monthly, balance / SA	level; demean & scale
Business & consumer surveys (BCS)	consumer_BCS — BS-MP-PR	Consumers: major purchases present (balance)	Eurostat ei_bsco_m	Monthly, balance / SA	level; demean & scale
Business & consumer surveys (BCS)	consumer_BCS — BS-CSMCI	Consumer sentiment indicator	Eurostat ei_bsco_m	Monthly, index / SA	level; demean & scale
Labour market	unemployment — TOTAL	Unemployment rate (total)	Eurostat une_rt_m	Monthly, % (PC_ACT), SA	use level (rate); demean & scale (or first diff if trending)
Labour market	unemployment — Y_LT25	Unemployment rate, youth (<25)	Eurostat une_rt_m	Monthly, % (PC_ACT), SA	level; demean & scale
Labour market	employment_expectations — BS-IEME-BAL	Employer / internal employment expectations (balance)	Eurostat ei_bsee_m_r2	Monthly, balance	level; demean & scale
Labour market	employment_expectations — BS-CEME-BAL	Another employment expectation series (balance)	Eurostat ei_bsee_m_r2	Monthly, balance	level; demean & scale
Labour market	employment_expectations — BS-REM-BAL	Employment expectations (balance)	Eurostat ei_bsee_m_r2	Monthly, balance	level; demean & scale
Labour market	employment_expectations — BS-SEEM-BAL	Employment expectations (balance)	Eurostat ei_bsee_m_r2	Monthly, balance	level; demean & scale
Labour market	consumer_unemployment_expectations — BS-UE-NY	Consumers: unemployment expectations next 12 months (balance)	Eurostat ei_bsco_m	Monthly, balance / SA	level; demean & scale
Housing / construction	housing_permits — CPA_F41001_41002 (total)	Building permits — total sqm	Eurostat sts_cobp_m	Monthly, area (sqm), SCA	log-diff (growth) or level depending on variance; demean & scale

Housing / construction	housing_permits — CPA_F41001 (residential)	Building permits — residential sqm	Eurostat sts_cobp_m	Monthly, sqm, SCA	log-diff; demean & scale
Housing / construction	housing_permits — CPA_F41002 (nonresidential)	Building permits — non-residential sqm	Eurostat sts_cobp_m	Monthly, sqm, SCA	log-diff; demean & scale
Housing / construction	EC_construction_BCS — BS-CTA-BAL	Construction BCS (building activity past 3 months)	Eurostat ei_bsbu_m_r2	Monthly, balance / SA	level; demean & scale
Orders & inventories — industry	BCS_consumer_goods_orders — INDU.SI.CONS.2.BS.M	Orders — consumer goods (balance)	EC ZIP / Excel (industry MIG file)	Monthly, balance	level; demean & scale
Orders & inventories — industry	BCS_capital_goods_orders — INDU.SI.INVE.2.BS.M	Orders — capital goods	EC ZIP / Excel	Monthly, balance	level; demean & scale
Orders & inventories — industry	BCS_INTM_goods_orders — INDU.SI.INTM.2.BS.M	Orders — intermediate goods	EC ZIP / Excel	Monthly, balance	level; demean & scale
Orders & inventories — industry	BCS_CDUR_goods_orders — INDU.SI.CDUR.2.BS.M	Orders — consumer durables	EC ZIP / Excel	Monthly, balance	level; demean & scale
Orders & inventories — industry	BCS_CNDU_goods_orders — INDU.SI.CNDU.2.BS.M	Orders — consumer non-durables	EC ZIP / Excel	Monthly, balance	level; demean & scale
Orders & inventories — industry	BCS_FOBE_goods_orders — INDU.SI.FOBE.2.BS.M	Orders — food/beverages	EC ZIP / Excel	Monthly, balance	level; demean & scale
Orders & inventories — industry	BCS_consumer_goods_stocks — INDU.SI.CONS.4.BS.M	Stocks — consumer goods	EC ZIP / Excel	Monthly, balance	level; demean & scale
Orders & inventories — industry	BCS_capital_goods_stocks — INDU.SI.INVE.4.BS.M	Stocks — capital goods	EC ZIP / Excel	Monthly, balance	level; demean & scale
Orders & inventories — industry	BCS_INTM_goods_stocks — INDU.SI.INTM.4.BS.M	Stocks — intermediate goods	EC ZIP / Excel	Monthly, balance	level; demean & scale
Orders & inventories — industry	BCS_CDUR_goods_stocks — INDU.SI.CDUR.4.BS.M	Stocks — consumer durables	EC ZIP / Excel	Monthly, balance	level; demean & scale
Orders & inventories — industry	BCS_CNDU_goods_stocks — INDU.SI.CNDU.4.BS.M	Stocks — consumer non-durables	EC ZIP / Excel	Monthly, balance	level; demean & scale
Orders & inventories — industry	BCS_FOBE_goods_stocks — INDU.SI.FOBE.4.BS.M	Stocks — food/beverages	EC ZIP / Excel	Monthly, balance	level; demean & scale
Retail subsector	BCS_retail_stocks — RETA.SI.TOT.2.BS.M	Retail stocks (total)	EC ZIP / Excel (retail file)	Monthly, balance	level; demean & scale
Retail subsector	BCS_retail_order_exp — RETA.SI.TOT.3.BS.M	Retail order expectations (total)	EC ZIP / Excel	Monthly, balance	level; demean & scale

Retail subsector	retail_turnover	Retail turnover index (NACE G47_X_G473, VOL_SLS)	Eurostat sts_trtu_m	Monthly, index (I21), SCA	log-diff; demean & scale
Monetary / credit	M3	M3 monetary aggregate (ECB BSI code)	ecb::get_data()	Monthly	log (or log-diff); demean & scale
Monetary / credit	M2	M2 monetary aggregate	ECB BSI	Monthly	log (or log-diff); demean & scale
Monetary / credit	M1	M1 monetary aggregate	ECB BSI	Monthly	log (or log-diff); demean & scale
Monetary / credit	loans_to_nfc	Loans to non-financial corporations (ECB BSI)	ECB BSI	Monthly	log (or log-diff); demean & scale
Exchange rates	NEER — NEER42	Nominal effective exchange rate (NEER42)	Eurostat ei_mfef_m	Monthly	log; demean & scale
Exchange rates	REER — REER42CPI	Real effective exchange rate (REER42 CPI)	Eurostat ei_mfef_m	Monthly	log; demean & scale
Money market	money_market — IRT_M1	Money market 1M (EA)	Eurostat irt_st_m	Monthly, %	level; demean & scale
Money market	money_market — IRT_M3	Money market 3M (EA)	Eurostat irt_st_m	Monthly, %	level; demean & scale
Bond yields	bond_yield — MCBY	Long-term bond yield (10y, MCBY) for SI	Eurostat irt_lt_mcby_m	Monthly, %	level; demean & scale (or first diff if trending)
PPI	PPI_manufacturing — C → PPI_C	PPI — NACE C	Eurostat sts_inppd_m	Monthly, index I21	log-diff; demean & scale
PPI	PPI_manufacturing — MIG_NRG → PPI_MIG_NRG	PPI — MIG_NRG	Eurostat sts_inppd_m	Monthly, index I21	log-diff; demean & scale
PPI	PPI_manufacturing — B → PPI_B	PPI — NACE B	Eurostat sts_inppd_m	Monthly, index I21	log-diff; demean & scale
PPI	PPI_manufacturing — MIG_CAG → PPI_MIG_CAG	PPI — MIG_CAG	Eurostat sts_inppd_m	Monthly, index I21	log-diff; demean & scale
PPI	PPI_manufacturing — MIG_ING → PPI_MIG_ING	PPI — MIG_ING	Eurostat sts_inppd_m	Monthly, index I21	log-diff; demean & scale
PPI	PPI_manufacturing — MIG_DCOG → PPI_MIG_DCOG	PPI — MIG_DCOG	Eurostat sts_inppd_m	Monthly, index I21	log-diff; demean & scale
PPI	PPI_manufacturing — MIG_NDCOG → PPI_MIG_NDCOG	PPI — MIG_NDCOG	Eurostat sts_inppd_m	Monthly, index I21	log-diff; demean & scale

HICP / prices	HICP — CP00 → HICP_CP00	HICP — total (CP00)	Eurostat prc_hicp_midx	Monthly, index I15	log-diff; demean & scale
HICP / prices	HICP — CP03 → HICP_CP03	HICP — food & non-alcoholic bev (CP03)	Eurostat prc_hicp_midx	Monthly	log-diff; demean & scale
HICP / prices	HICP — CP06 → HICP_CP06	HICP — clothing & footwear (CP06)	Eurostat prc_hicp_midx	Monthly	log-diff; demean & scale
HICP / prices	HICP — CP07 → HICP_CP07	HICP — housing (CP07)	Eurostat prc_hicp_midx	Monthly	log-diff; demean & scale
HICP / prices	HICP — GD → HICP_GD	HICP — goods (GD)	Eurostat prc_hicp_midx	Monthly	log-diff; demean & scale
HICP / prices	HICP — SERV → HICP_SERV	HICP — services	Eurostat prc_hicp_midx	Monthly	log-diff; demean & scale
HICP / prices	HICP — TOT_X_FOOD_S → HICP_TOT_X_FOOD_S	HICP — total excl. food & energy	Eurostat prc_hicp_midx	Monthly	log-diff; demean & scale
HICP / prices	HICP — TOT_X_HOUS → HICP_TOT_X_HOUS	HICP — total excl. housing	Eurostat prc_hicp_midx	Monthly	log-diff; demean & scale
HICP / prices	HICP — TOT_X_EDUC_HLTH_SPR → HICP_TOT_X_EDUC_HLTH_SPR	HICP — total excl. education/health/…	Eurostat prc_hicp_midx	Monthly	log-diff; demean & scale
Stocks / equity	stocks	Equity index (ECB code FM.M.U2.EUR.DS.EI.DJES50I.HSTA) — DJ EuroStoxx 50 series	ecb::get_data()	Monthly, index	log-returns / monthly log-diff; demean & scale
Trade	trade — EXP_IVU	Exports — unit-value index (IVU)	Eurostat ext_st_eabec	Monthly	log-diff; demean & scale
Trade	trade — EXP_TRD_VAL	Exports — trade value	Eurostat ext_st_eabec	Monthly	log-diff; demean & scale
Trade	trade — IMP_IVU	Imports — unit-value index	Eurostat ext_st_eabec	Monthly	log-diff; demean & scale
Trade	trade — IMP_TRD_VAL	Imports — trade value	Eurostat ext_st_eabec	Monthly	log-diff; demean & scale
Oil	oil	Brent / crude price series (ECB code FM.M.GB.EUR.4F.CY.EUCRBRDT.HSTA)	ecb	Monthly, price	log; demean & scale (or log-diff)
Other	car_registrations (commented out)	Car registrations — code present but download commented	ecb	—	log; demean & scale

Table 6: **List of questions in the survey-based index**

Sector	Question topic	Variable Codes used
Industry	Production expectations	INDU.SI.TOT.5.P.M, INDU.SI.TOT.5.M.M
	Order book or demand expectations	INDU.SI.TOT.6.P.M, INDU.SI.TOT.6.M.M
	Employment or business climate expectations	INDU.SI.TOT.7.P.M, INDU.SI.TOT.7.M.M
Services	Business climate or demand expectations	SERV.SI.TOT.3.P.M, SERV.SI.TOT.3.M.M
	Employment or order book expectations	SERV.SI.TOT.5.P.M, SERV.SI.TOT.5.M.M
	Production or activity expectations	SERV.SI.TOT.6.P.M, SERV.SI.TOT.6.M.M
Retail trade	Sales expectations	RETA.SI.TOT.3.P.M, RETA.SI.TOT.3.M.M
	Employment expectations	RETA.SI.TOT.4.P.M, RETA.SI.TOT.4.M.M
	Business situation or order book expectations	RETA.SI.TOT.5.P.M, RETA.SI.TOT.5.M.M
	Business climate or stock of goods	RETA.SI.TOT.6.P.M, RETA.SI.TOT.6.M.M
Construction	Production expectations	BUIL.SI.TOT.4.P.M, BUIL.SI.TOT.4.M.M
	Order book or employment expectations	BUIL.SI.TOT.5.P.M, BUIL.SI.TOT.5.M.M

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