

TIGER: Tracking Indexes for the Global Economic Recovery

By Eswar Prasad and Thomas Riveros

Technical Appendix

August 2026 NOTE: This update covers data through August 2026. It uses only figures that statistical agencies and data providers have released; in the case where data has not yet been published, we extrapolate data using historical growth rates or fill forward. Because many indicators are published with a lag, the most recent months are incomplete, especially for GDP, industrial production and trade. Missing recent months are extended by the fixed rules described under “Treatment of the most recent months.” In August 2026, 109 of the 212 country-indicator inputs are observed. The August confidence and financial readings rest mostly on observed data; the real activity reading is largely extrapolated and should be treated as provisional. This update also moves several indicators to new or updated sources and corrects two calculation errors (see “Changes since the April 2026 release”).

Methodology

In our analysis, we employ a statistical procedure called Principal Component Analysis (PCA), which is used widely in the physical and social sciences to summarize the common fluctuations in a set of variables. PCA is a transparent and straightforward procedure that can handle many variables and enables one to construct indicators of comovement across all variables in a dataset or a subset of them. This makes it well suited to the TIGER indexes, which combine information from different types of economic variables and multiple countries.

How the weights are chosen. Each variable is first standardized to have a mean of zero and a variance of one, so every variable enters the calculation with equal weight a priori, whatever its units or volatility. PCA then finds the weighted combination of the standardized variables, with the vector of weights restricted to unit length, that has the largest possible variance. This combination is the first principal component, and its weights are the first eigenvector of the variables’ correlation matrix. Variables that move closely with the others receive larger weights; variables whose movements are mostly idiosyncratic receive smaller ones. We rescale the weights to sum to one and apply them to the transformed indicators described in the table below, so each TIGER index is a weighted average of its inputs in their own units.

Estimation window and revisions. The weights are estimated over January 2006 through the latest month of each update. Because the weights are re-estimated with every update and source data are revised, past values of the indexes can change from one release to the next. In the charts, the group indexes are shown relative to their January 2016 value (January 2016 = 0); the country and indicator indexes are not rebased.

Two-input indexes. When an index has only two inputs, the first principal component always gives them loadings of equal size, and the weights become unstable or undefined when the two inputs are uncorrelated or negatively correlated. These indexes use fixed equal weights of 0.5: the financial indexes for Germany, Korea, Greece and Ireland, and the confidence index for Indonesia.

Dataset

Our dataset covers most of the G-20 countries and contains a set of key real, financial and confidence variables. The main constraint in expanding our dataset to cover more variables is the lack of consistent data availability at a high frequency, especially among the emerging markets. For example, it is difficult to get good data on employment levels for the emerging markets. Nevertheless, we have assembled a set of variables on which we were able to get reasonably timely and high-quality data. The countries and variables in our dataset are listed below. Note that the composite total indexes include only the Advanced Economies and Emerging Market Economies groups.

Advanced Economies

-Australia
 -Canada
 -France
 -Germany
 -Italy
 -Japan
 -Korea
 -Netherlands
 -Spain
 -United Kingdom
 -United States

Emerging Market Economies

-Argentina
 -Brazil
 -China
 -India
 -Indonesia
 -Mexico
 -Russia
 -South Africa
 -Turkey

Euro Periphery

-Greece
 -Ireland
 -Portugal

Economic Indicators*Real Activity Indicators*

-Employment
 -Exports
 -Industrial Production
 -Imports
 -GDP
 -Unemployment Rate

Financial Indicators

-Equity Market Index
 -Stock Market Capitalization
 -Credit Growth

Confidence Indicators

-Business Confidence
 -Consumer Confidence

Construction of the Indexes

By Country: For each country, a PCA across all of its available indicators gives the country composite index, and separate PCAs across its real activity, financial and confidence indicators give the three sub-indexes.

Composite Index – Business Confidence, Consumer Confidence, Employment, Exports, Imports, Industrial Production, GDP Growth, Equity Markets, Stock Market Capitalization, Credit Growth, Unemployment Rate

Real Activity Index – Employment, Exports, Imports, Industrial Production, GDP Growth, Unemployment Rate

Financial Index – Equity Markets, Stock Market Capitalization, Credit Growth

Confidence Index – Business Confidence, Consumer Confidence

By Group: The Advanced Economies, Emerging Market Economies and Total indexes are obtained by a second PCA across the country indexes of the countries in each group, separately for the composite index and for each sub-index. Greece, Ireland and Portugal have country indexes but do not enter the group indexes; Italy and Spain are included in the advanced economies.

By Indicator Variable: For each variable, a PCA across countries gives Total, Advanced Economies and Emerging Market Economies indexes of that variable (for example, an index of exports across all countries). The emerging market employment index covers only Mexico and Turkey, the two emerging markets with employment data, and weights them equally, so it reflects those two economies rather than emerging markets as a whole. From this update it is included in the Indicator Indexes sheet of the data file; earlier releases showed it only in the charts.

Description of Data and Source Information

Indicator Variable	Unit	Description	Source
Business Confidence	Index	OECD composite business confidence indicator, amplitude adjusted (long-term average = 100); enters as its deviation from 100	OECD Main Economic Indicators

Indicator Variable	Unit	Description	Source
Consumer Confidence	Index	OECD composite consumer confidence indicator, amplitude adjusted (long-term average = 100); enters as its deviation from 100	OECD Main Economic Indicators
Employment	Percent	12-month growth rate of total employment. Quarterly series repeat each quarter's value in its three months	CEIC Data Company, Ltd.; national sources
Exports	Percent	12-month growth rate of 3-month moving average. Goods, FOB, USD	IMF International Trade in Goods; latest months from OECD International Merchandise Trade Statistics
Imports	Percent	12-month growth rate of 3-month moving average. Goods, CIF, USD	IMF International Trade in Goods; latest months from OECD International Merchandise Trade Statistics
Industrial Production	Percent	12-month growth rate of 3-month moving average. Seasonally adjusted volumes (Indonesia: not seasonally adjusted)	World Bank, Global Economic Monitor; ELSTAT (Greece); BPS-Statistics Indonesia
GDP Growth	Percent	Quarterly, year-over-year real growth rate; each month in the quarter equals the quarterly rate. Released quarters only	OECD Quarterly National Accounts; Economist Intelligence Unit (Russia)
Equity Markets	Percent	12-month growth rate of month-end share price index in national currency	CEIC Data Company, Ltd.; OECD (South Africa from December 2023)
Stock Market Capitalization	Percent	12-month growth rate in national currency. Month-end values, dated in the following month	CEIC Data Company, Ltd.; Federal Reserve (FRED) exchange rate for Australia
Credit Growth	Percent	12-month growth rate in national currency. Credit to the private non-financial sector	IMF Monetary and Financial Statistics; ECB; Federal Reserve (FRED); Bank of Japan; Bank of England; Bank of Korea; People's Bank of China; Central Bank of the Republic of Türkiye
Unemployment Rate	Percent	OECD harmonised unemployment rate; enters as 100 minus the rate, so that higher values mean stronger conditions	OECD

Data as of October 2, 2026. New releases and revisions of the same series replace earlier vintages at each update.

Treatment of the Most Recent Months

The index runs through August 2026, but many indicators are published with a lag. Months not yet released are filled as follows. No forecasts or outside estimates are used.

- **Exports and imports:** each missing month equals the value twelve months earlier multiplied by one plus the average of the last twelve months' 12-month growth rates. Trade data are not seasonally adjusted, so carrying the last level forward would ignore regular seasonal swings, such as the August fall in European trade.
- **Credit and employment:** each missing month equals the value twelve months earlier multiplied by one plus the latest 12-month growth rate.
- **GDP:** the latest released quarter's growth rate is repeated until the next quarter is released.
- **Other indicators** (industrial production, equity prices, market capitalization, confidence and unemployment): the latest value is carried forward.
- **Isolated gaps:** a single missing month within an employment or unemployment series is interpolated linearly. The only case in this update is the United States in October 2025, when the household survey was not conducted during the federal government shutdown.

In August 2026, the observed inputs are all 21 equity market indexes and all 15 market capitalization series (July month-end values), 15 of 21 business confidence and 15 of 19 consumer confidence indexes, 11 of 18 credit series, exports and imports for 10 of 23 countries, 7 of 13 employment series and 5 of 15 unemployment rates. No August industrial production or GDP data are yet available.

Changes since the April 2026 Release

Data sources

- Data are collected directly from the official sources and data providers listed above through automated downloads, which replace the manual updates used previously.
- **Use of AI Tools:** We used AI tools to identify potential data sources, to port the index's R and Stata code into Python, and to review the writing for grammatical errors. The authors verified the data sources, checked the Python code output against the results of the original Stata code, and are responsible for all content.
- **GDP:** OECD Quarterly National Accounts for all countries except Russia, which remains on the Economist Intelligence Unit. Only released quarters are used; the April 2026 release used the source's estimate for the quarter not yet published.
- **Exports and imports:** the IMF history is extended with the latest months of OECD trade statistics, linked at the IMF level.
- **Industrial production:** Greece and Indonesia use their national indexes (ELSTAT and BPS-Statistics Indonesia) for the full history, in place of the World Bank series.
- **Equity markets:** month-end index levels from CEIC replace Bloomberg. The United States uses the NYSE Composite instead of the S&P 500, and China the Shanghai Composite for its full history. South Africa's series, discontinued in November 2023, is extended with OECD share prices. Mexico's IPC joins the current CEIC series (from June 2013) to the earlier vintage of the same series, with no change in level at the join.
- **Stock market capitalization:** Australia uses the ASX series in US dollars, converted to Australian dollars at the month-end exchange rate, because the local-currency series ended in June 2024.
- **Credit:** the IMF series previously used for Korea, Turkey and the United Kingdom have ended or stopped updating. Korea now uses Bank of Korea claims on non-financial corporations and households, Turkey the Central Bank of the Republic of Türkiye's claims on the private sector, and the United Kingdom the Bank of England's lending data; these are changes of definition. China continues the IMF series with the People's Bank of China's identical statistic from November 2025. Japan's input is rebuilt from the Bank of Japan's published growth rates, which corrects five months (September 2025–January 2026).
- **Confidence:** Canada's business confidence and Ireland's consumer confidence now come from current OECD data. This corrects Ireland's input, which had been recorded as zero from February 2023.

Calculation corrections

- **Advanced economies confidence index:** the normalization of the weights counted the Netherlands twice, so the weights summed to about 0.91 rather than one. With the correction, the index lies about 10 percent further from zero.
- **Consumer confidence indicator index:** from June 2023, the published Total series had repeated the Advanced Economies series. It now shows the Total series throughout.
- **Indonesia confidence index:** fixed equal weights, as described under Methodology.

Data Composition of TIGER Indexes

The matrix below shows which countries and variables are included across the aggregated TIGER indexes.

	Bus. Conf.	Cons. Conf.	Employ- ment	Exports	Imports	Industrial Production	GDP	Equity Market	Market Cap.	Credit Growth	Unemp. Rate
Advanced:											
Australia	x	x	x	x	x	-	x	x	x	x	x
Canada	x	-	x	x	x	x	x	x	-	-	x
France	x	x	x	x	x	x	x	x	x	x	x
Germany	x	x	x	x	x	x	x	x	-	x	x
Italy	x	x	x	x	x	x	x	-	-	x	x
Japan	x	x	x	x	x	x	x	x	x	x	x
Korea	x	x	x	x	x	x	x	-	x	x	x
Netherlands	x	x	x	x	x	x	x	x	x	x	x
Spain	x	x	x	x	x	x	x	x	x	x	x
UK	x	x	x	x	x	x	x	x	x	x	x
US	x	x	x	x	x	x	x	x	x	x	x
Emerging Markets:											
Argentina	-	-	-	x	x	-	x	x	-	-	-
Brazil	x	x	-	x	x	x	x	x	x	x	-
China	x	x	-	x	x	x	x	x	x	x	-
India	x	-	-	x	x	x	x	x	x	-	-
Indonesia	x	x	-	x	x	x	x	x	x	x	-
Mexico	x	x	x	x	x	x	x	x	x	x	-
Russia	-	-	-	x	x	x	x	x	x	-	-
South Africa	x	x	-	x	x	x	x	x	-	x	-
Turkey	x	x	x	x	x	x	x	x	x	x	x

Compared with the April 2026 appendix, this table now shows Turkey's unemployment rate, which is included in Turkey's indexes, and no longer shows stock market capitalization for Greece and Portugal, which does not enter any published index. The indexes themselves are unchanged in this respect.

Data Availability

The table below gives, for each variable and country, the last month of released data used in this update. All months are in 2026; GDP shows the latest released quarter. Market capitalization shows the month-end that its latest value refers to; following the index's convention, month-end values are dated in the following month, so these values enter the index as August. Variables without data for August 2026 are extended as described under "Treatment of the most recent months."

	Bus. Conf.	Cons. Conf.	Employ- ment	Exports	Imports	Industrial Production	GDP	Equity Market	Market Cap.	Credit Growth	Unemp. Rate
Advanced:											
Australia	May	Aug	Aug	Aug	Aug	-	Q2	Aug	Jul	Jul	Aug
Canada	Apr	-	Aug	Jul	Jul	May	Q2	Aug	-	-	Aug
France	Aug	Aug	Jun	Jul	Jul	Jun	Q2	Aug	Jul	Aug	Jul
Germany	Aug	Aug	Aug	Jul	Jul	Jun	Q2	Aug	-	Aug	Jul
Italy	Aug	Aug	Jun	Jul	Jul	Jun	Q2	-	-	Aug	Jul
Japan	Jun	Aug	Aug	Aug	Aug	Jun	Q2	Aug	Jul	Aug	Jul
Korea	Aug	Aug	Aug	Aug	Aug	Jun	Q2	-	Jul	Jul	Aug
Netherlands	Aug	Aug	Jun	Jul	Jul	Jun	Q2	Aug	Jul	Aug	Jul
Spain	Aug	Aug	Jun	Jul	Jul	Jun	Q2	Aug	Jul	Aug	Jul
UK	Aug	Aug	Jun	Jul	Jul	Jun	Q2	Aug	Jul	Jul	Jun
US	Aug	Aug	Aug	Jul	Jul	Jul	Q2	Aug	Jul	Aug	Aug
Emerging Markets:											
Argentina	-	-	-	Aug	Aug	-	Q2	Aug	-	-	-
Brazil	Aug	Aug	-	Aug	Aug	Jun	Q2	Aug	Jul	Jun	-
China	Aug	Jul	-	Aug	Aug	Jul	Q2	Aug	Jul	Aug	-
India	Feb	-	-	Jul	Jul	Jun	Q2	Aug	Jul	-	-
Indonesia	Jun	Jul	-	Aug	Aug	Jun	Q2	Aug	Jul	Jul	-
Mexico	Jul	Jul	Jun	Aug	Aug	Jun	Q2	Aug	Jul	Jul	-
Russia	-	-	-	Jul	Jul	Jul	Q2	Aug	Jul	-	-
South Africa	Aug	Jun	-	Aug	Aug	Jun	Q2	Aug	-	Jul	-
Turkey	Aug	Aug	Aug	Aug	Aug	Jun	Q2	Aug	Jul	Aug	Aug

Data Composition of Euro Periphery Country Indexes

The matrix below shows which variables are included in the country indexes for Greece, Ireland and Portugal. Italy and Spain are included in the Advanced Economies group above.

	Bus. Conf.	Cons. Conf.	Employ- ment	Exports	Imports	Industrial Production	GDP	Equity Market	Market Cap.	Credit Growth	Unemp. Rate
Greece	x	x	-	x	x	x	x	x	-	x	x
Ireland	x	x	-	x	x	x	x	x	-	x	x
Portugal	x	x	-	x	x	x	x	x	-	-	x

Data Availability for Euro Periphery

The table below gives the last month of released data for Greece, Ireland and Portugal, on the same basis as the table above. Availability for Italy and Spain is included in the Advanced Economies group.

	Bus. Conf.	Cons. Conf.	Employ- ment	Exports	Imports	Industrial Production	GDP	Equity Market	Market Cap.	Credit Growth	Unemp. Rate
Greece	Aug	Aug	-	Jul	Jul	Jul	Q2	Aug	-	Aug	Jul
Ireland	Aug	Aug	-	Jul	Jul	Jun	Q2	Aug	-	Aug	Jul
Portugal	Aug	Aug	-	Jul	Jul	Jun	Q2	Aug	-	-	Jul