DATA SOURCES

Monthly Indicators of Global Real Economic Activity and Underlying Disaggregated Data

Global Economic Activity Indicator	Components	Transformation	Data source	Start date
Kilian index (REA)	Log of the nominal shipping cost index calculated as described in Hamilton (2019)	Deflated with U.S. CPI and linearly detrended (recursively)	JDH	1968.1
Real shipping cost factor	Freight rates for 61 shipping routes for different commodities (grain, coal, fertilizer, iron ore, scrap metal, oilseeds) – see Table 2A for details on shipping routes, the commodity shipped and the start dates	Nominal dollar prices deflated with U.S. CPI, growth rates computed as first log differences, and missing observations filled with EM algorithm	SI	1973.1
World industrial production index (WIP)	Industrial production of OECD, Brazil, China, India, Indonesia, the Russian Federation and South Africa aggregated as described in Baumeister and Hamilton (2019)	First log difference	BH	1958.1
Real commodity price factor	Aluminum	Nominal dollar prices deflated with U.S. CPI and growth rates computed as first log differences	WB	1972.5
	Barley		WB	1960.1
	Beef		WB	1960.1
	Coffee, Arabica		WB	1973.1
	Coffee, Robusta		WB	1973.1
	Copper		WB	1964.1
	Cotton, A Index		WB	1971.1
	Lead		WB	1960.1
	Logs, Malaysian		WB	1971.5
	Maize		WB	1972.1
	Nickel		WB	1973.1
	Palm Oil		WB	1964.1
	Rice, Thai 5%		WB	1960.1

	Rubber, SGP/MYS		WB	1960.1
	Sawnwood, Malaysian		WB	1971.5
	Soybeans		WB	1973.1
	Soybean Meal		WB	1973.1
	Soybean Oil		WB	1971.1
	Sugar, US		WB	1973.1
	Sugar, World		WB	1973.1
	Tin		WB	1960.1
	Wheat, US HRW		WB	1973.1
	Zinc		WB	1973.1
Global steel production factor	Crude Steel Production, US	Growth rates computed as first log differences and missing observations filled with EM algorithm	WSA	1968.1
	Crude Steel Production, Japan		WSA	1968.1
	Crude Steel Production, EU and other reporting countries (29 in total)		WSA	1968.1
	Crude Steel Production, China		WSA	1990.1
	Crude Steel Production, Eastern Europe		WSA	1990.1
	Crude Steel Production, Middle East		WSA	1990.1
	Crude Steel Production, Russia and Ukraine		WSA	1992.1

NOTES: The codes for the data sources are as follows: BH – Baumeister and Hamilton (2019) update of discontinued OECD series (https://sites.google.com/site/cjsbaumeister/OECD_plus6_industrial_production.xlsx?attredirects=0&d=1), JDH – Hamilton (2019) (http://econweb.ucsd.edu/~jhamilto/shipping_costs.xlsx), SI – Drewry's *Shipping Insight*, WB – World Bank Commodity Price Data, The Pink Sheet (http://pubdocs.worldbank.org/en/561011486076393416/CMO-Historical-Data-Monthly.xlsx), WSA – World Steel Association, Steel Statistical Yearbook (https://www.worldsteel.org/). The groupings for the crude steel production data comprise the following countries: EU and other reporting countries include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Turkey, the United Kingdom, former Yugoslavia (now consisting of Bosnia-Herzegovina, Croatia, Macedonia, Serbia, and Slovenia), Canada, Argentina, Brazil, Chile, Mexico, Venezuela, Australia, India, Republic of Korea, South Africa, and Taiwan; Eastern Europe includes the Czech Republic, Hungary, Poland, and the Slovak Republic; Middle East includes Egypt, Iran, and Saudi Arabia. The start date indicates the earliest available observation; however, in estimation the common start date is 1973.1.

Monthly Data Underlying the Global Economic Conditions Indicator (GECON)

Data category	Variable	Geographic coverage	Start date	Tcode	Data source	Data delay	Nowcast rule	Data revisions
Real economic activity	World Industrial Production Index	OECD + 6 non-member countries	1973.1	5	Baumeister-Hamilton (2019)	2	AG	Y
	Conference Board Leading Economic Index	US	1973.1	5	Datastream	1	AG	Y
	Consumer Confidence Index	OECD	1974.1	5	OECD MEI	1	RW	Y
Commodity prices	Copper Price	World	1973.1	5	World Bank	0		N
Financial indicators	Real Trade-Weighted U.S. Dollar Index: Broad	World	1973.1	5	FRED	0		Y
	MSCI World Stock Price Index	World	1972.1	7	Global Financial Data	0		N
	Excess Returns on Fama-French Portfolio: Transportation	World	1973.1	7	Ken French's website	2	RW	N
Transportation	Passenger Car Registrations	OECD	1973.1	5	OECD MEI	8	AG	Y
	Total Vehicle Miles Traveled	US	1973.1	5	FRED	2	AG	Y
Uncertainty measures	Caldara-Iacoviello Geopolitical Risk Index	World	1973.1	5	Caldara-Iacoviello (2018)	0		N
	Long-Run Oil Price Uncertainty	World	1989.4	1	Bloomberg	0		N
Expectations measures	University of Michigan Index of Consumer Expectations	US	1978.1	5	Michigan Survey	0		N
	Spread between Long-Run and Short-Run Oil Price Expectations	World	1988.11	1	Bloomberg	0		N
Weather indicators	Oceanic Niño Index	World	1973.1	1	NOAA	2	RC	Y
	Residential Energy Demand Temperature Index	US	1973.1	1	NOAA	1	RW	Y
Energy-related indicators	Energy Production and Electricity Distribution	EU28	1991.1	5	FRED	3	AG	Y

NOTES: Tcode indicates the transformation of the variable where 1 indicates the variable is included in its original units, 5 refers to taking first log differences, 7 stands for annual growth rates. The delay in data release is measured in months. Nowcasts are based on the average growth rate (AG), the most recent change (RC), and no change (RW).

Monthly Variables Contained in the Large Dataset

No	Variable description	Units	Tcode	Data source	Start date
REAL ECONOMIC ACTIVITY					
1	Leading Indicator: Business Situation, Canada	Percent	1	FRED	1973.1
2	Composite Leading Indicator, Japan	Index	5	CEIC	1985.1
3	Leading Indicator: Sales Expectations, Japan	Percent	1	FRED	1985.1
4	Leading Indicator, Korea	Index	4	CEIC	1973.1
5	Leading Indicator: Business Situation, Korea	Percent	1	FRED	1991.7
6	Leading Indicator: Production, UK	Percent	1	FRED	1975.1
7	Leading Indicator: Order Books, Brazil	Percent	1	FRED	1980.1
8	Leading Indicator: Production, Brazil	Percent	1	FRED	1980.1
9	Composite Leading Indicator, Mexico	Index	1	CEIC	1980.1
10	Composite Leading Indicator, Russia	Percent	1	CEIC	1997.9
11	Composite Leading Indicator, South Africa	Index	1	CEIC	1973.1
12	U.S. Recession Indicator[1]	Index	1	DS, UMS	1978.1
13	Chicago Fed National Activity Indicator	Index	1	FRED	1973.1
14	U.S. Index of Consumer Sentiment	Index	5	UMS	1978.1
15	Eurocoin	Index	1	CEPR	1999.1
16	Euro Area Business Climate Indicator	Index	1	TE	1985.1
17	Euro Area Economic Sentiment Indicator	Index	1	EC	1980.1
18	ISM Manufacturing PMI, US	Index	5	B	1973.1
19	PMI Manufacturing, EA	Index	5	B	1997.6
20	Developed Markets PMI: Manufacturing	Index	5	B	1998.1
21	Emerging Markets PMI: Manufacturing	Index	5	B	2004.4
22	ISM U.S. Manufacturing: New Export Orders	Index	5	B	1988.1
23	Global PMI Manufacturing: New Export Orders	Index	5	B	1998.1
24	Consumer Confidence, Brazil	Index	5	OECD	1994.6
25	Consumer Confidence, China	Index	5	OECD	1990.1
26	Consumer Confidence, Russia	Index	5	OECD	1998.11
27	Consumer Confidence, South Africa	Index	5	OECD	1982.6

[1] This recession indicator is constructed as the difference between the index of consumer sentiment from the Michigan survey and the Conference Board consumer confidence index. This composite indicator typically reaches a low prior to recessions.

28	Business Confidence, OECD	Index	5	OECD	1974.6
29	Business Confidence, Brazil	Index	5	OECD	1995.4
30	Business Confidence, China	Index	5	OECD	2000.2
31	Business Confidence, Russia	Index	5	OECD	1992.9
32	Business Confidence, South Africa	Index	5	OECD	1974.6
33	Sales: Retail Trade, OECD	Index	5	OECD	1973.1
34	Sales: Retail Trade, Russia	Index	5	OECD	1994.12
35	Sales: Retail Trade, South Africa	Index	5	OECD	1977.1
36	Unemployment Rate, Australia	Percent	1	OECD	1978.2
37	Unemployment Rate, EU18	Percent	1	EC	1998.4
38	Unemployment Rate, Japan	Percent	1	OECD	1973.1
39	Unemployment Rate, UK	Percent	1	FRED+EC	1973.1
40	Unemployment Rate, US	Percent	1	FRED	1973.1
41	Real Disposable Personal Income, US	Billions of chained 2012 dollars	5	FRED	1973.1
42	Real PCE: New Motor Vehicles, US	Quantity index	5	BEA	1973.1
43	Real PCE: Motorcycles, US	Quantity index	5	BEA	1973.1
44	Real PCE: Pleasure Boats, Aircraft and Other Recreational Vehicles, US	Quantity index	5	BEA	1973.1
45	Real PCE: Motor Vehicle Fuels, US	Quantity index	5	BEA	1973.1
46	Real PCE: Fuel Oil and Other Fuels, US	Quantity index	5	BEA	1973.1
47	Real PCE: Motor Vehicle Services, US	Quantity index	5	BEA	1973.1
48	Real PCE: Public Transportation, US	Quantity index	5	BEA	1973.1
49	Current Buying Conditions, Durables, US	Index	5	UMS	1978.1
50	Current Buying Conditions, Vehicles, US	Index	5	UMS	1978.1
51	IP: Consumer Energy Products, US	Index	5	FRB	1973.1
52	IP: Commercial Energy Products, US	Index	5	FRB	1971.1
53	IP: Oil and Gas Well Drilling, US	Index	5	FRB	1973.1
54	IP: Petroleum and Coal Products, US	Index	5	FRB	1973.1
55	IP: Motor Vehicles and Parts, US	Index	5	FRB	1973.1
56	IP: Aerospace and Transportation Equipment, US	Index	5	FRB	1973.1
57	IP: Mining, US	Index	5	FRB	1973.1
58	IP: Autos (Consumer),US	Index	5	BEA	1973.1

59	IP: Fuels (Consumer), US	Index	5	FRB	1973.1
60	IP: Converted Fuel (Materials), US	Index	5	FRB	1973.1
61	IP: Primary Energy (Materials), US	Index	5	FRB	1973.1
62	PPI: Motor Vehicles and Equipment, US	Index	5	BLS	1973.1
63	PPI: Aircraft and Aircraft Equipment, US	Index	5	BLS	1973.1
64	Real Manufacturing Inventories: Petroleum Products, US	Millions of chained 2012 dollars	5	BEA	1973.1
65	Real Manufacturing Inventories: Motor Vehicles, US	Millions of chained 2012 dollars	5	BEA	1973.1
66	Real Value of Manufacturer's New Orders: Motor Vehicles and Parts, US	Millions of chained 2012 dollars	5	FRED	1992.2
67	Capacity Utilization: Petroleum and Coal Products, US	Percent	5	FRB	1973.1
68	Capacity Utilization: Mining, US	Percent	5	FRB	1973.1
69	Capacity Utilization: Automobile and Light Duty Vehicle, US	Percent	5	FRB	1973.1
FINANCIAL INDICATORS[2]					
70	S&P GSCI Energy Index	Index	7	GFD	1983.1
71	S&P 500 Utilities	Index	7	GFD	1972.1
72	S&P 500 Energy	Index	7	GFD	1972.1
73	S&P 500 Air Freight and Logistics	Index	7	GFD	1972.1
74	S&P 500 Airlines	Index	7	GFD	1972.1
75	S&P 500 Railroad	Index	7	GFD	1972.1
76	S&P 500 Automobiles	Index	7	GFD	1972.1
77	S&P 500 Oil, Gas and Consumable Fuels	Index	7	GFD	1972.1
78	Dow Jones: Transportation	Index	7	B	1972.1
79	Dow Jones: Utilities	Index	7	B	1972.1
80	Dow Jones: Industrials	Index	7	B	1972.1
81	FF: Oil	Index	7	FF	1972.1
82	FF: Chemicals	Index	7	FF	1972.1
83	FF: Cars	Index	7	FF	1972.1
84	FF: Utilities	Index	7	FF	1972.1
85	NYSE Arca Oil Index	Index	7	GFD	1984.11

[2] All returns for sub-categories of S&P 500, DJ, and FF are calculated as excess returns relative to the respective overall market performance.

86	Real Broad Effective Exchange Rate: Australia	Index	5	FRED	1994.1
87	Real Broad Effective Exchange Rate: Canada	Index	5	FRED	1994.1
88	Real Broad Effective Exchange Rate: Chile	Index	5	FRED	1994.1
89	Real Broad Effective Exchange Rate: Norway	Index	5	FRED	1994.1
90	Real Broad Effective Exchange Rate: South Africa	Index	5	FRED	1994.1
91	Real Broad Effective Exchange Rate: New Zealand	Index	5	FRED	1994.1
92	Real Broad Effective Exchange Rate: Euro Area	Index	5	FRED	1994.1
93	Real Broad Effective Exchange Rate: China	Index	5	FRED	1994.1
94	Real Broad Effective Exchange Rate: India	Index	5	FRED	1994.1
95	Real Broad Effective Exchange Rate: UK	Index	5	FRED	1994.1
96	Real Broad Effective Exchange Rate: Japan	Index	5	FRED	1994.1
97	Chicago Fed Adjusted Financial Conditions	Index	1	FRED	1973.1
98	10Y/1Y Treasury Yield Spread	Percent	1	FRED	1973.1
99	Moody's Baa/Aaa Corporate Bond Yield Spread	Percent	1	FRED	1973.1
100	Real Rate: 1Y Treasury Constant Maturity Rate – CPI Inflation Rate Over Preceding Year	Percent	1	FRED	1973.1
TRANSPORTATION					
101	Passenger Car Registrations, EU28	Index	5	OECD	1973.1
102	Passenger Car Registrations, US	Index	5	OECD	1973.1
103	Passenger Car Registrations, Canada	Index	5	OECD	1973.1
104	Passenger Car Registrations, Japan	Index	5	OECD	1974.1
105	Passenger Car Registrations, Norway	Index	5	OECD	1973.1
106	Passenger Car Registrations, New Zealand	Index	5	OECD	1974.1
107	Passenger Car Registrations, South Africa	Index	5	OECD	1973.1
108	Passenger Car Registrations, India	Index	5	OECD	2001.5
109	Passenger Car Registrations, Korea	Index	5	OECD	1993.1
110	Passenger Car Registrations, Turkey	Index	5	OECD	1989.1
111	Vehicle Production, Brazil (de-trended)	Quantity	1	CEIC	1984.1
112	Vehicle Production, China*	Quantity	5	CEIC	1986.1
113	Vehicle Production, Mexico*	Quantity	5	CEIC	1983.1
114	U.S. Real Transportation Costs	Index	5	FRED	1973.1
115	U.S. Truck Sales	Index	5	BEA	1973.1
116	U.S. Electric Car Sales	Number	5	EV	2010.12

117	Rail Freight Intermodal Traffic, US	Ton miles	5	FRED	2000.1
118	Rail Freight Carloads, US	Carloads	5	FRED	2000.1
119	Truck Tonnage, US	Index	5	FRED	2000.1
120	Tonnage Carried on Internal U.S. Waterways	Millions of short tons	5	FRED	2000.1
UNCERTAINTY MEASURES					
121	Global Economic Policy Uncertainty Index	Index	5	BBD	1997.1
122	OPEC Newspaper Index	Index	5	P	1986.1
123	CBOE S&P 500 Volatility Index	Index	5	GFD	1986.1
124	Short-Run Gasoline Price Uncertainty[3]		1	B	1987.1
125	Long-Run Natural Gas Price Uncertainty[c]		1	B	1990.6
EXPECTATIONS MEASURES					
126	Expected Change in Personal Financial Situation, US	Index	5	UMS	1978.1
127	Expected Change in Real Family Income, US	Index	5	UMS	1978.1
128	Expected Change in Interest Rates, US	Index	5	UMS	1978.1
129	Expected Change in Unemployment, US	Index	5	UMS	1978.1
130	Expected Change in Business Conditions, US	Index	5	UMS	1978.1
131	Expected Average Increase in Gasoline Prices Over the Next 5 Years, US	Cents per gallon	5	UMS	1992.11
132	Spread between Long-Run and Short-Run Heating Oil Price Expectations[4]		1	B	1989.8
133	Spread between Long-Run and Short-Run Natural Gas Price Expectations[d]		1	B	1990.6
WEATHER INDICATORS					
134	Global Temperature Anomalies	Degrees Celsius	5	NOAA	1973.1
135	Heating Degree Days, US*	Index	1	EIA MER	1973.1
136	Heating Degree Days, EU28*	Index	1	EC	1974.1

[3] Price uncertainty is defined as realized volatility and is calculated as follows: $vol_p^m = 100 * \sqrt{\frac{252}{n} * (\sum_{d=1}^{n} (\Delta f_d^m)^2)}$ where Δf_d^m is the daily return for the oil futures contract on day d in month m computed as the log difference between the futures price on day d and $d-1$, and n is the number of trading days in a given month. Long-run refers to futures with 12-month maturity and short-run to futures with 3-month maturity.

[4] Price expectations are proxied by log futures prices where short-run refers to contracts with 3 months to maturity and long-run refers to contracts with 12 months to maturity.

137	Cooling Degree Days, US*	Index	1	EIA MER	1973.1
138	Cooling Degree Days, EU28*	Index	1	EC	1974.1
139	Heating Degree Days, Deviation from Normal, US	Index	1	HA	1997.5
140	Cooling Degree Days, Deviation from Normal, US	Index	1	HA	1998.7
141	Temperature Fluctuations for 48 US States	Index	1	HA	1973.1
ENERGY-RELATED INDICATORS					
142	Electricity Consumption, China*	Billion kWh	5	CEIC	1986.4
143	Electricity Consumption, India*	Million kWh	5	CEIC	1987.9
144	Electricity Consumption, Korea*	Million kWh	5	CEIC	1979.1
145	Electricity Consumption, South Africa*	GWh	5	CEIC	1985.1
146	Electricity Consumption, UK*	TWh	5	UKBEIS	1995.1
147	Electricity Consumption, US*	Million kWh	5	EIA MER	1973.1
148	Total Energy Carbon Dioxide Emissions*	Million metric tons	5	EIA MER	1973.1
149	U.S. Motor Gasoline Stocks	Million barrels	5	EIA MER	1973.1
150	U.S. Total Petroleum Stocks	Million barrels	5	EIA MER	1973.1

NOTES: The end of the sample for all data series is 2018.8. If data are available at a frequency higher than monthly, we obtain monthly data by averaging. Tcode indicates the stationarity transformation code for each variable where Tcode = 1 indicates that the variable is included in its original units, Tcode = 4 stands for log-levels, Tcode = 5 refers to taking first log differences, and Tcode = 7 stands for year-on-year growth rates. An asterisk indicates that the series has been seasonally adjusted using the X13-ARIMA procedure. The codes for the data sources are as follows: B – Bloomberg, BBD – Baker, Bloom, and Davis (2016) (http://www.policyuncertainty.com/), BEA – Bureau of Economic Analysis, BLS – Bureau of Labor Statistics, CEIC (https://www.ceicdata.com), CEPR – Centre for Economic Policy Research (https://cepr.org/data), DS – Datastream, EC – European Commission Eurostat, EIA MER – U.S. Energy Information Administration *Monthly Energy Review*, EV – Monthly Plug-In Electric Vehicles Sales Scorecard (https://insideevs.com/monthly-plug-in-sales-scorecard/), FF – Fama-French 17 Industry Portfolios (average value-weighted returns) (https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html), FRB – Federal Reserve Board of Governors Database, FRED – Federal Reserve Bank of St. Louis Economic Database, GFD – Global Financial Database, HA – Haver Analytics, UMS – Survey of Consumers, University of Michigan (http://www.sca.isr.umich.edu/), NOAA – U.S. National Oceanic and Atmospheric Administration, National Climatic Data Center (https://www.noaa.gov/), OECD – OECD Main Economic Indicators Database, P – data generously updated and provided by Mike Plante from Plante (2019), TE – Trading Economics, UKBEIS – U.K. Department of Business, Energy & Industrial Strategy.