

Economic Activity Index for the People's Republic of China

The indicator selection process for constructing an Economic Activity Index (EAI) for the People's Republic of China (PRC) is based on an automatic variable selection process. The approach uses statistical techniques to guide the identification of the basic set of indicators. To improve the EAI's accuracy in tracking the economic cycle in the PRC, the possible inclusion or exclusion of indicators are also explored. The indicator selection procedures for the PRC are:

- i. Monthly indicators are extracted. For the PRC, the monthly data for estimating the EAI start in 2000. Data starting after 2000 are excluded. These include the Macroeconomic Climate Index, which starts in 2015; the urban unemployment rate, which starts in 2017; the New Economy Index, which starts in 2017; the Caixin China Composite Purchasing Managers' Index (PMI), the Caixin China General Manufacturing PMI, and the Caixin China General Services PMI, which start in 2018; and the Consumer Confidence Index for income, which starts in 2016.
- ii. Further treatment to the data is applied as needed:
 - a. Series with different base years are spliced to have a common base year. The latest base year is always used as the rule of thumb.
 - b. Series with obvious seasonal patterns are adjusted to remove seasonality using the X13-ARIMA package in EViews.
 - c. Series in the year-to-date format are transformed into monthly values by deducting the values of the previous month in a year from the values of each month of the year. This is done to the total residential floor space sold, the profits of industrial enterprises, and utilized foreign direct investment.
 - d. Series in levels are converted into log values. Variables already in percentages or rates of change are retained for the estimation.
 - e. An autoregressive of order one—AR(1)—procedure is applied to complete the series in the dataset to the latest month of the observation to deal with ragged ends.
 - f. All indicators are rescaled to have a mean zero and standard deviation of one.
- iii. To identify the relevant indicators for inclusion in constructing the EAI for the PRC, three alternative filters are used:
 - a. Correlation method: The correlation of each indicator with the gross domestic product (GDP) growth rate is computed using Pearson's correlation, and those indicators with less than 50% correlation are removed. This set of indicators are called GDP growth-correlated indicators.
 - b. Model averaging techniques: The two most common ways of model averaging—Bayesian model averaging and weighted-average least squares—are used. These averaging techniques help determine the set of indicators for constructing the EAI.
- iv. For the PRC, Bayesian model averaging produced the EAI with the best fit to track growth cycles.
- v. To improve the fit, an ad hoc examination—using economy-specific knowledge—of the existing set of indicators was conducted. The following indicators were added.
 - a. M2 money supply, which represents the amount of liquidity in circulation; the household saving deposits rate, which reflects the cost of money; and the profits of industrial enterprises, which reflect business conditions. These frequently watched

indicators by Bloomberg were added to improve the EAI's accuracy in tracking the target gap cycles.

- b. Total passengers carried, which reflects the dynamics of tourism; residential floor space sold, which reflects the dynamics of the real estate sector; loans that reflects credit expansion; and suppliers' delivery time PMI and new export orders PMI, which reflect business trends in the manufacturing sector. These indicators were added to improve the EAI's performance and follow Domenico Giannone, Silvia Miranda Agrippino, and Michele Modugno's 2013 paper Nowcasting China Real GDP (https://cirano.qc.ca/conferences/public/pdf/realtime2013/Papers/Giannone_Miranda.pdf).
- c. The international commodity price of soybeans, which was preselected by the weighted-average least squares method.

List of Selected Indicators

CATEGORY	ECONOMIC INDICATOR
CONSUMPTION	<p>Name: Consumer Confidence (NSA, 100+=Optimistic)</p> <p>Description: The Consumer Confidence Survey conducted by China Economic Monitoring & Analysis Center (CEMAC) of the National Bureau of Statistics started from the year of 1998. The Consumer Confidence Index is resulted from this survey. The index is ranged between “0” and “200”. “0” represents extremely pessimistic. “200” represents extremely optimistic. “100” is the critical value between optimistic and pessimistic. When consumer confidence index is higher than 100, it shows that consumers are becoming optimistic. The higher the index value to 200, the more optimistic consumers are. When consumer confidence index is lower than 100, it shows that consumers are becoming pessimistic. The lower the index value to 0, the more pessimistic consumers are.</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-1990</p> <p>Unit: INDEX</p> <p>Source: HAVER/China National Bureau of Statistics</p> <p>Data transformation: Log</p>
CONSUMPTION	<p>Name: Retail Sales (NSA)</p> <p>Description: Total retail sales of consumer goods refer to the sum of retail sales of commodities sold by wholesale and retail trades, catering services, publishing, post and telecommunications and other service industries to urban and rural households for household consumption and to social institutions for public consumption.</p> <p>Frequency: Monthly</p> <p>Start Date: Oct-1983</p> <p>Unit: 100 mn RMB</p> <p>Source: HAVER/China National Bureau of Statistics</p> <p>Data transformation: SA, Log</p>
CONSUMPTION	<p>Name: Floor Space Sold: ytd: Residential: Total</p> <p>Description: This refer to all residential floor space that have been sold in the reference period.</p> <p>Frequency: Monthly</p> <p>Start Date: Mar-1998</p> <p>Unit: sq m th</p> <p>Source: CIEC/National Bureau of Statistics</p> <p>Data transformation: Log</p>
CONSUMPTION	<p>Name: Passenger Carried: Total</p> <p>Description: Freight (Passenger) Traffic refers to the volume of freight (passenger) transported with various means. Freight passenger traffic is calculated in the number of persons. Despite the type of freight and travelling distance, despite the travelling distance and ticket price, the passenger traffic is calculated by the principle that one person can be counted only once in one travel. The passenger who travel with a half price ticket or a child ticket is also calculated as one person. The freight (passenger) traffic provides a quantitative measure to show how the transport industry serves the national economy and people, and is also an important indicator for planning the transport industry and for studying the development scale and speed of the transport industry.</p> <p>Frequency: Monthly</p> <p>Start Date: Aug-1998</p> <p>Unit: Person mn</p> <p>Source: CEIC/National Bureau of Statistics</p> <p>Data transformation: Log</p>

CATEGORY	ECONOMIC INDICATOR
INVESTMENT	<p>Name: IP: Electricity Production (NSA)</p> <p>Description: Total energy production refers to the total production of primary energy by all energy producing enterprises in the country in a given period of time. It is a comprehensive indicator to show the level, scale, composition and pace of development of energy production of the country. The production of primary energy includes that of coal, crude oil, natural gas, hydro-power and electricity generated by nuclear energy and other means such as wind power and geothermal power. However, it does not include the production of fuels of low calorific value, bio-energy, solar energy and secondary energy converted from primary energy.</p> <p>Frequency: Monthly</p> <p>Start Date: Feb-1998</p> <p>Unit: 100 mn KWH</p> <p>Source: HAVER/China National Bureau of Statistics</p> <p>Data transformation: SA, Log</p>
INVESTMENT	<p>Name: China: Real Industrial Value Added (NSA)</p> <p>Description: Real Industry value added is the total value of goods and services produced by an industry, after deducting the cost of goods and services used in the process of production. Industry refers to the material production sector which is engaged in the extraction of natural resources and processing and reprocessing of minerals and agricultural products, including (1) extraction of natural resources, such as mining, salt production (but not including hunting and fishing); (2) processing and reprocessing of farm and sideline produces, such as rice husking, flour milling, wine making, oil pressing, silk reeling, spinning and weaving, and leather making; (3) manufacture of industrial products, such as steel making, iron smelting, chemicals manufacturing, petroleum processing, machine building, timber processing; water and gas production and electricity generation and supply; (4) repairing of industrial products such as the repairing of machinery and means of transport (including cars). In industrial statistics surveys, the units of enquiry are corporate industrial enterprises with independent accounting systems.</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-1992</p> <p>Unit: yoy, %</p> <p>Source: HAVER/China National Bureau of Statistics</p> <p>Data transformation: SA</p>
INVESTMENT	<p>Name: FDI: Utilized: ytd (annual data included all finance)</p> <p>Description: The foreign investments are basically divided into direct investment and other means of investment. The direct investment, which is widely adopted, includes Sino-foreign joint ventures, joint exploitation and exclusively foreign-owned enterprises, foreign-funded share-holding companies and joint development. The other means of investment includes compensation trade and processing and assembling.</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-1997</p> <p>Unit: USD mn</p> <p>Source: CEIC/Ministry of Commerce</p> <p>Data transformation: Log</p>

CATEGORY	ECONOMIC INDICATOR
INVESTMENT	<p>Name: PMI: Mfg: New Export Order</p> <p>Description: Purchasing Managers Index (PMI) is an index summarized and compiled through the results of the monthly survey of enterprises purchasing managers. It covers every links of the enterprises, including purchasing, production, logistics, and so on. It is one of the leading indices which was commonly adopted by international society to monitor the macroeconomic trends, and played an important role in forecasting and monitoring. The Composite PMI Output Index, belonging to the PMI indicator system, is a composite index reflecting the changes in the output in current period of the entire industry (manufacturing and non-manufacturing industries). The threshold of PMI is usually using 50 percent as the cut-off point for economic performance. If PMI above 50 percent, it reflects the overall economy is expanding; if less than 50 percent, it reflects the overall economy is in recession. This sub-index refers to the New Export orders</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-2005</p> <p>Unit: %</p> <p>Source: CEIC/National Bureau of Statistics</p> <p>Data transformation: none</p>
INVESTMENT	<p>Name: PMI: Mfg: Suppliers' Delivery Time</p> <p>Description: Purchasing Managers Index (PMI) is an index summarized and compiled through the results of the monthly survey of enterprises purchasing managers. It covers every links of the enterprises, including purchasing, production, logistics, and so on. It is one of the leading indices which was commonly adopted by international society to monitor the macroeconomic trends, and played an important role in forecasting and monitoring. The Composite PMI Output Index, belonging to the PMI indicator system, is a composite index reflecting the changes in the output in current period of the entire industry (manufacturing and non-manufacturing industries). The threshold of PMI is usually using 50 percent as the cut-off point for economic performance. If PMI above 50 percent, it reflects the overall economy is expanding; if less than 50 percent, it reflects the overall economy is in recession. This sub-index refers to the Supplier Delivery time</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-2005</p> <p>Unit: %</p> <p>Source: CEIC/National Bureau of Statistics</p> <p>Data transformation: none</p>
INVESTMENT	<p>Name: Fixed Asset Investment: ytd: Growth: New Construction</p> <p>Description: Capital construction refers to the new construction projects or extension projects and the related work of the enterprises, institutions or administrative units mainly for the purpose of expanding production capacity or improving project efficiency covering only projects each with a total investment of RMB 500,000 and over.it includes: (1) New construction projects arranged both in the plan of capital construction and the plan of innovation; extension projects with the newly increased production capacity up to the standard of a large and medium-sized project; and the projects of moving the whole factory to a new site so as to improve the distribution of productive forces; and (2) New construction projects, extension projects or restoration projects with total investment of RMB 500,000 and over by state-owned units, though listed neither in the plan of capital construction nor in the plan of innovation; and the projects of building additional business houses by the administrative units and institutions and building welfare facilities by the administrative units.</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-2004</p> <p>Unit: %</p> <p>Source: CEIC/National Bureau of Statistics</p> <p>Data transformation: none</p>

CATEGORY	ECONOMIC INDICATOR
INVESTMENT	<p>Name: Industrial Enterprises: ytd: Profits: Total</p> <p>Description: The system of business survey of 5000 principal industrial enterprises was initiated in 1990. The business survey encompasses monthly statistics of financial indicators of industrial enterprises and quarterly conducted questionnaire research of business conditions of these enterprises. The state-owned large-and medium-size industrial enterprises constitute the majority of surveyed enterprise with some representative collectively owned enterprises and conglomerates of handsome economic scale also being included in the samples. Since 1993, some joint venture, foreign-funded and share-holding industrial enterprises have entered into the survey successively. The surveyed enterprises involve 27 industries and the structure of sample enterprises is commensurate with that of China's industrial enterprises. The outcome of the business survey can basically reflect the business conditions of China's industry.</p> <p>Frequency: Monthly</p> <p>Start Date: Dec-1998</p> <p>Unit: RMB bn</p> <p>Source: CEIC/National Bureau of Statistics</p> <p>Data transformation: Log</p>
TRADE	<p>Name: Export FOB</p> <p>Description: Export Goods include domestic goods and re-export goods which are exported to foreign countries or sent to customs' warehouse or to the commercial free zone to subtract from the stock of material resources of the country.</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-1992</p> <p>Unit: USD mn</p> <p>Source: CEIC/General Administration of Customs</p> <p>Data transformation: SA, Log</p>
TRADE	<p>Name: Commodity Price: Nominal: Agriculture: Food: Oils and Meals: Soybeans</p> <p>Description: The World Bank monitors major commodity markets important to the developing countries. The Pink Sheet is a comprehensive commodity price dataset which covers more than 70 commodities with historical price up to 1960. The monthly release contains the prices from the previous month. Soybeans c.i.f. Rotterdam</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-2000</p> <p>Unit: USD/Metric Ton</p> <p>Source: CEIC/World Bank</p> <p>Data transformation: SA, Log</p>
GOVERNMENT	<p>Name: Government Expenditure</p> <p>Description: Government Expenditure refers to the distribution and use of the funds the government finance has raised. It includes: Expenditure for capital construction, Innovation funds of the enterprises, Geological prospecting expenses, Expenditures for science and technology promotion, Expenditure for supporting rural production, Operating expenses of the departments of farming, forestry, water conservancy and meteorology etc., Operating expenses of the departments of industry, transport and commerce, Operating expenses of the departments of culture, education, science and public health, Pension for the disabled or for the families of the bereaved and relief funds for social welfare, Expenditures for national defense, Administrative expenses, Expenditure for price subsidies.</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-1995</p> <p>Unit: RMB bn</p> <p>Source: CEIC/Ministry of Finance</p> <p>Data transformation: Log</p>

CATEGORY	ECONOMIC INDICATOR
FINANCIAL	<p>Name: Private Sector Credit (EOP, NSA)</p> <p>Description: Domestic credit to private sector by banks refers to financial resources provided to the private sector by other depository corporations (deposit taking corporations except central banks), such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim.</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-2002</p> <p>Unit: RMB bn</p> <p>Source: HAVER/People's Bank of China/Haver Analytics</p> <p>Data transformation: Log</p>
FINANCIAL	<p>Name: Loan</p> <p>Description: Loans refers to loans of all forms provided by financial institutions to non-financial sectors, including short-term loans, medium and long-term loans, government loans, foreign exchange loans and other loans. Data are collected from deposit money banks. Deposit money banks are the central bank and banking institutions (deposit money and specified deposit institutions). The source data are from the PBOC's "All Accounts" financial reporting system. This system collects stock data on monetary statistics and banking supervision indicators in a uniform format electronically from banking institutions. The system allows collection of detailed data for classifying bank accounts by economic sector and financial instrument. Since 2002, the central bank has revised the system of monetary and financial statistics in line with the IMF Manual on Monetary and Financial Statistics.</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-1997</p> <p>Unit: RMB bn</p> <p>Source: CEIC/The People's Bank of China</p> <p>Data transformation: Log</p>
FINANCIAL	<p>Name: Money Supply M2</p> <p>Description: M2 is M1 plus time, savings, other deposits of resident sectors other than central government and banking institutions and security margin requirement. From June 2001, the coverage of monetary aggregate M2 has been expanded to include the margin account maintained with securities companies (also part of other deposits).</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-1997</p> <p>Unit: RMB bn</p> <p>Source: CEIC/The People's Bank of China</p> <p>Data transformation: Log</p>
FINANCIAL	<p>Name: Index: Shanghai Stock Exchange: Composite</p> <p>Description: The securities listed at the SSE fall into three categories: stocks, bonds and funds. Securities investment funds were first traded on the SSE in 1998. The securities listed at the SSE fall into three categories: stocks, bonds and funds. Securities investment funds were first traded on the SSE in 1998. The SSE Index series reflects the level of prosperity of different industries and overall changes in the price of their shares. This provides investors with benchmark system of different investment portfolios. The SSE Composite Index takes December 19, 1990 as base day and the total market capitalization of all listed shares on that day as base period. The base period index is set as 100 points and has been officially published since July 15, 1991.</p> <p>Frequency: Monthly</p> <p>Start Date: Jan-2000</p> <p>Unit: 19Dec1990=100</p> <p>Source: CEIC/Shanghai Stock Exchange</p> <p>Data transformation: SA, Log</p>

CATEGORY	ECONOMIC INDICATOR	
FINANCIAL	Name:	Policy Rate: Month End: Rediscount Rate
	Description:	The rediscount rate, or policy rate, is the interest rate charged by a central bank for loans of reserve funds to commercial banks and other financial intermediaries. The discount rate serves as an important indicator of the condition of credit in an economy. Because raising or lowering the discount rate alters the banks' borrowing costs and hence the rates that they charge on loans, adjustment of the discount rate is considered a tool to combat recession or inflation. The discount rate also is used to deal with balance-of-payments deficits—that is, to regulate international movements of capital.
	Frequency:	Monthly
	Start Date:	Jan-1998
	Unit:	% pa
	Source:	CEIC/The People's Bank of China
	Data transformation:	none
FINANCIAL	Name:	Savings Deposits Rate
	Description:	The savings deposit rate is the interest rate paid by commercial banks or financial institutions on cash deposits of savings account holders
	Frequency:	Monthly
	Start Date:	Sep-1988
	Unit:	% pa
	Source:	CEIC/The People's Bank of China
	Data transformation:	none
EXTERNAL SECTOR	Name:	Commodity Price: Nominal: Agriculture: Food: Oils and Meals: Fish Meal
	Description:	The World Bank monitors major commodity markets important to the developing countries. The Pink Sheet is a comprehensive commodity price dataset which covers more than 70 commodities with historical price up to 1960. The monthly release contains the prices from the previous month. Fishmeal (any origin) 64-65%, c&f Bremen, estimates based on wholesale price, beginning 2004; previously c&f Hamburg
	Frequency:	Monthly
	Start Date:	Jan-2000
	Unit:	USD/Metric Ton
	Source:	CEIC/World Bank
	Data transformation:	SA, Log
EXTERNAL SECTOR	Name:	US Effective Federal Funds Rate
	Description:	Federal funds rate is the target interest rate set by the Federal Open Market Committee (FOMC) at which commercial banks borrow and lend their excess reserves to each other overnight
	Frequency:	Monthly
	Start Date:	Jul-1954
	Unit:	% pa
	Source:	HAVER/Federal Reserve Board
	Data transformation:	none
EXTERNAL SECTOR	Name:	US ISM Manufacturing PMI
	Description:	The ISM manufacturing index or PMI measures the change in production levels across the U.S. economy from month to month. A PMI above 50 indicates an expansion of the manufacturing segment of the economy compared to the previous month. A reading of 50 means no change. A reading below 50 suggests a contraction.
	Frequency:	Monthly
	Start Date:	Jan-1948
	Unit:	Index
	Source:	HAVER/Institute for Supply Management
	Data transformation:	none