China Time Series

Instructions

Annual data

Most annual series are downloaded directly from public sources. Some key series, however, are constructed by ourselves.

Quarterly data

All quarterly series, bar interest rates and reserve requirement ratios, are seasonally adjusted and all the series are constructed to cover as long a period as possible.

Using this dataset should reference: Chang C., K. Chen, D. Waggoner, and T. Zha, "Trends and Cycles in China's Macroeconomy," NBER Macroeconomics Annual Vol 30, 2016, 1-84, University of Chicago Press.

For the detailed methodology of constructing this dataset, please reference: Higgins P. and T. Zha, 2015, "China's Macroeconomic Time Series: Methods and Implications," Unpublished Manuscript,Federal Reserve Bank of Atlanta.

Monthly data

All monthly series, bar interest rates, are seasonally adjusted and used for out-of-sample forecasting in "Forecasting China's economic growth and inflation" by P. Higgins, T. Zha, and W. Zhong, published in China Economic Review 41 (2016) 46-61.

Revisions and copyrights

The dataset will be revised, expanded, and updated on a biannual basis, which can be downloaded at
* **FRBA** (English version)
* **SAIF** (Chinese version)

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Excel or csv files

- Annual data: `outdata*_hz_annual.xlsx` or `outdata*_hz_annual.csv`
- Quarterly data: `outdata*_hz_quarterly.xlsx` or `outdata*_hz_quarterly.csv`
- Monthly data: `outdata*_hz_monthly.xlsx` or `outdata*_hz_monthly.csv`

Note that * stands for the vintage date when the data was released.

Matlab .mat data files

The name of the Matlab data file is `outdata*_hz.mat`, where * stands for the vintage date when the data was released.

- The dataset `hz_data_?_struct.mat` contains the annual data `hz_data_a_struct`, the quarterly data `hz_data_q_struct`, and the monthly data `hz_data_m_struct`.
- To access the data, type at the Matlab prompt `load data*_hz` and then `hz_data_a_struct.V`,

`hz_data_q_struct.V` or `hz_data_m_struct.V`, where V stands for a particular variable explained below.

- For example, `hz_data_a_struct.GDPDeflator` gives the annual implicit price deflator for GDP, `hz_data_q_struct.GDPDeflator` contains the quarterly implicit price deflator for GDP, and `hz_data_m_struct.M2` gives the monthly data of M2 supply.

Quarterly dates have the convention of 1998=1998Q1, 1998.25=1998Q2, 1998.50=1998Q3, and 1998.75=1998Q4. Monthly dates have the convention of 1998=1998M1, 1998.08=1998M2, 1998.17=1998M3, 1998.25=1998M4, etc.

For quarterly data, for example, when you type at the Matlab prompt

- `>> q_dates_data = hz_data_q_struct.q_dates_data;`
- `>> logrealHHC = hz_data_q_struct.logrealHHC;`
- `>> logrealBusI = hz_data_q_struct.logrealBusI;`
- `>> logrealLaborIncome = hz_data_q_struct.logrealLaborIncome;`
- `>> ratioNewLoansNFEST2GDP = hz_data_q_struct.ratioNewLoansNFEST2GDP;`
- `>> ratioNewLoansNFESTBF2GDP = hz_data_q_struct.ratioNewLoansNFESTBF2GDP;`
- `>> [q_dates_data, logrealHHC, logrealBusI, logrealLaborIncome, ratioNewLoansNFEST2GDP, ratioNewLoansNFESTBF2GDP]`

you will see many NaNs. The symbols indicate no available data for those dates.

Annual data

The variable `yr_dates_data` represents annual dates (years). Some identities bar numerical rounding errors are:

- NominalGDP = NominalPrivC + NominalGovtC + NominalGCF+ NominalNetExports
- NominalGCF = NominalInvty + NomalGFCF
- NomalGFCF = NominalGovtGFCF + NominalPrivGFCF + NominalHHGFCF + NominalSOEexGovtGFCF + NominalNonSOEGFCF
- NominalBusGFCF = NominalPrivGFCF + NominalSOEGFCF + NominalNonSOEGFCF
- NominalNarOutput = NominalBusGFCF + NominalHHC

Other variables are listed below.

- **CPI**: Consumer price index
- **FAIPriceIndex**: Fixed asset investment price index
- **GFCFPriceIndex**: Price index for gross fixed capital formation
- **GDPDeflator**: Implicit price deflator for GDP by value added
- **NominalGDPva**: GDP by value added (RMB billion)
- **NominalRetailGoodsC**: Retail sales of consumer goods (RMB billion)
- **NominalFAI**: Fixed asset investment (RMB billion)
- **NominalGDP**: GDP by expenditure (RMB billion)
- **NominalNetExports**: Net exports by expenditure (RMB billion)
- **NominalHHC**: Household consumption by expenditure (RMB billion)
- **NominalGovtC**: Government consumption by expenditure (RMB billion)
- **NominalGCF**: Nominal gross capital formation (RMB billion)
- **NominalInvty**: Changes in inventories (RMB billion)
- **NominalGFCF**: Gross fixed capital formation with no inventories (RMB billion)
- **NominalGovtGFCF**: Gross fixed capital formation: government (RMB billion)
- **NominalPrivGFCF**: Gross fixed capital formation: private sector (RMB billion)—excluding government, households, SOEs, and other non-SOEs (joint ventures for example)
- **NominalHHGFCF**: Gross fixed capital formation: households (RMB billion)
- **NominalSOEGFCF**: Gross fixed capital formation: SOE (RMB billion)
- **NominalSOEexGovtGFCF**: Gross fixed capital formation: SOE excluding government (RMB billion)
- **NominalNonSOEGFCF**: Gross fixed capital formation: other non-SOE enterprises (RMB billion)
- **NominalBusGFCF**: Total business investment (gross fixed capital formation excluding household investment)
- **NominalNarOutput**: Narrow definition of output NominalBusGFCF + NominalHHC (investment +

consumption)

- **RatioGFCFPrice2CPI**: Relative prices of investment goods (to CPI)
- **LaborIncomeShare**: Labor income as a share of total value added
- **DPI**: Disposable personal income (RMB billion)
- **DPIBeforeTax**: Disposable personal income before taxes (RMB billion)
- **SavingRate**: Saving rate (as a percent of total value added): total
- **HHSavingRate**: Saving rate (as a percent of total value added): households
- **GovtSavingRate**: Saving rate (as a percent of total value added): government
- **NFESavingRate**: Saving rate (as a percent of total value added): non-financial enterprises
- **FISavingRate**: Saving rate (as a percent of total value added): financial institutions
- **AvgNominalWage**: Aggregate average nominal wages
- **ratioNewSTLoan**: Total short-term new bank loans (including those to financial institutions) as a percent of GDP
- **ratioNewMLTLoan**: Total medium- and long-term new bank loans (including those to financial institutions) as a percent of GDP
- **ratioNewNFESTLoan**: Short-term new bank loans to non-financial enterprises as a percent of GDP
- **ratioNewNFEMLTLoan**: Medium- and long-term new bank loans to non-financial enterprises as a percent of GDP
- **logrealHHC**: log real household consumption by expenditure (deflated by CPI)
- **logrealGovtC**: log real government consumption by expenditure (deflated by CPI)
- **logrealGCF**: log real gross capital formation (deflated by GFCFPriceIndex)
- **logrealGFCF**: log real gross fixed capital formation (with no inventories) (deflated by GFCFPriceIndex)
- **ValAdded**: CEIC ticker "CAAFTX CN: CN: Flow of Funds: Source: Value Added". This series is virtually identical to annual GDP-va (CEIC ticker "CATA – Gross Domestic Product") except in 2012 (perhaps due to revisions). Also, this series is in the same table is labor compensation in the online Flow of Funds **table**.
- **LaborISValAddInd**: 100*LaborCompensation/ValueAdded.
- **LaborISValAddIndHeavy**: Labor income share of value added in the heavy sector. Labor income is constructed by adding remuneration of employees for the heavy subset of the 17-industries in the input-output tables using the same heavy/heavy classification as in the 2016 NBER Macro Annual paper. These data are only available every two or three years and are Denton interpolated using the products of annual wage data and annual employment data by industry. We extrapolate the series beyond 2012, using regressions with annual value added industry (VAI) growth and annual "employment*wage" growth. Annual value-added is the sum of quarterly series VA_InpOut_Heavy across the 4-quarters of the year.
- **LaborISValAddIndLight**: Labor income share of value added in the light sector. Labor income is constructed by adding remuneration of employees for the light subset of the 17-industries in the input-output tables using the same light/heavy classification as in the 2016 NBER Macro Annual paper. These data are only available every two or three years and are Denton interpolated using the products of annual wage data and annual employment data by industry. We extrapolate the series beyond 2012, using regressions with annual value added industry (VAI) growth and annual "employment*wage" growth. Annual value-added is the sum of quarterly series VA_InpOut_Light across the 4-quarters of the year.
- **NSTRGFCF**: Gross fixed capital formation in structures [residential + nonresidential, RMB bill]. 1994-
- **NRESSTRGFCF**: Gross fixed capital formation in residential structures [RMB bill]. 1995-
- **NNONRESSTRGFCF**: Gross fixed capital formation in nonresidential structures [RMB bill]. 1995-
- **RealSOEVAIndex**: Annual index of real value added to state owned & holding industrial enterprises derived from the December value of CEIC ticker "CBEOCC – CN: VAI: YoY: ytd(Real): State Owned & Holding Enterprise". The index is normalized to 1.0 in 2006. 1998-.
- **RealPrivVAIndex**: Annual index of real value added to private industrial enterprises. The index is 1.0 in 2006 when the series begins. 2006-.
- **logrealAvgWage**: log(Average Annual Wage [CEIC ticker CGLA]) - log(deflator of GDPva).

Quarterly Data

The variable `q_dates_data` represents quarterly dates with the convention that 1998=1998Q1, 1998.25=1998Q2, 1998.50=1998Q3, and 1998.75=1998Q4. Some identities bar numerical rounding errors are:

- NominalGDP = NominalPrivC + NominalGovtC + NominalGCF+ NominalNetExports
- NominalGCF = NominalInvty + NomalGFCF

- NomalGFCF = NominalGovtGFCF + NominalPrivGFCF + NominalHHGFCF + NominalSOEexGovtGFCF + NominalNonSOEGFCF
- NominalBusGFCF = NominalPrivGFCF + NominalSOEGFCF + NominalNonSOEGFCF ;
- NominalNarOutput = NominalBusGFCF + NominalHHC

Other variables are listed below.

- **CPI**: Consumer price index, 1984Q1-
- **RetailPriceIndex**: Retail Price Index, 1986Q1-
- **FAIPriceIndex**: Fixed asset investment price index, 1984Q1-
- **GFCFPriceIndex**: Price index for gross fixed capital formation, 1984Q1-
- **GDPDeflator**: Implicit price deflator for GDP by value added, 1992Q1-
- **NominalGDPva**: GDP by value added (RMB billion), 1992Q1-
- **NominalRetailGoodsC**: Retail sales of consumer goods (RMB billion), 1984Q1-
- **NominalFAI**: Fixed asset investment (RMB billion) by eliminating the 1994Q4 outlier, 1990Q1-
- **NominalFAIGovt**: Fixed asset investment: government (RMB billion), 1995Q1-
- **NominalFAIPriv**: Fixed asset investment: private sector excluding SOEs and other non-SOEs (RMB billion), 1995Q1-
- **NominalFAISOEexGovt**: Fixed asset investment: SOEs excluding government (RMB billion), 1995Q1-
- **NominalFAINonSOE**: Fixed asset investment: other non-SOE enterprises (RMB billion), 1995Q1-
- **NominalGDP**: GDP by expenditure (RMB billion), 1992Q1-
- **NominalNetExports**: Net exports by expenditure (RMB billion), 1992Q1-
- **NominalExportsGoods**: Exports of goods reported by the Chinese customs (RMB million), 1992Q1-
- **NominalImportsGoods**: Imports of goods reported by the Chinese customs (RMB million), 1992Q1-
- **NominalHHC**: Household consumption by expenditure (RMB billion), 1990Q1-
- **NominalGovtC**: Government consumption by expenditure (RMB billion), 1990Q1-
- **NominalGCF**: Nominal gross capital formation (RMB billion), 1992Q1-
- **NominalInvty**: Changes in inventories (RMB billion), 1992Q1-
- **NominalGFCF**: Gross fixed capital formation with no inventories (RMB billion), 1990Q1-
- **NominalGovtGFCF**: Gross fixed capital formation: government (RMB billion), 1995Q1-
- **NominalPrivGFCF**: Gross fixed capital formation: private sector (RMB billion)—excluding government, households, SOEs, and other non-SOEs (joint ventures for example), , 1995Q1-
- **NominalHHGFCF**: Gross fixed capital formation: households (RMB billion), , 1992Q1-
- **NominalSOEGFCF**: Gross fixed capital formation: SOE (RMB billion), 1995Q1-
- **NominalSOEexGovtGFCF**: Gross fixed capital formation: SOE excluding government (RMB billion), 1995Q1-
- **NominalNonSOEGFCF**: Gross fixed capital formation: other non-SOE enterprises (RMB billion), 1995Q1-
- **NominalBusGFCF**: Total business investment (gross fixed capital formation excluding household investment), 1995Q1-
- **NominalNarOutput**: Narrow definition of output NominalBusGFCF + NominalHHC (investment + consumption), 1995Q1-
- **RatioGFCFPrice2CPI**: Relative prices of investment goods (to CPI), 1984Q1-
- **LaborIncome**: Interpolated labor income with extrapolation in early years, 1996Q1-
- **LaborIncomeShare**: Labor income as a share of total value added, 1996Q1-
- **LaborCompSumProvinces**: Sum of interpolated labor compensations across provinces according to the provincial GDP by income, 1996Q1-2012Q4
- **DPI**: Interpolated disposable personal income with extrapolation in early years, 1996Q1-
- **AvgNominalWage**: Aggregate average nominal wages, 1986Q1-
- **ReserveMoney**: Reserve money (RMB billion), 1993Q2-
- **M0**: M0 (RMB billion), 1990Q2-
- **M2**: M0 (RMB billion), 1990Q2-
- **RRR**: Required reserve ratio, 1985Q1-
- **ARR**: Actual reserve ratio, 1993Q2-
- **ERR**: Excess reserve ratio, 1993Q2-
- **R3mDeposit**: Time deposits rate: 3 months, 1989Q2-
- **R1dRepo**: The spliced series of 1-day Repo rate [CEIC ticker CMPAL] and 1-day chibor rate [CEIC ticker CMOAA], 1996Q1-
- **R7dRepo**: The 7-day Repo rate
- **R1dChibor**: The 1-day Chibor rate
- **R7dChibor**: The 7-day Chibor rate

- **BankLoansTotal**: End-of-quarter financial institution loans outstanding: total, 1978Q4-
- **BankLoansST**: End-of-quarter financial institution loans outstanding: short-term, 1994Q1-
- **BankLoansMLT**: End-of-quarter financial institution loans outstanding: medium and long terms, 1994Q1-
- **NewBankLoansNFEST**: New bank loans to non-financial enterprises (RMB billion): short term, 1994Q1-
- **NewBankLoansNFESTBF**: New bank loans to non-financial enterprises (RMB billion): short term and bill financing, 1994Q1-
- **NewBankLoansNFEMLT**: New bank loans to non-financial enterprises (RMB billion): medium and long terms, 1995Q1-
- **NominalShadowLoans**: Total nominal loans in shadow banking industries (entrusted loans+trusted loans+bank acceptance bills, RMB billion): 2001Q4-
- **LendingRatePBC1year**: One-year PBC benchmark lending rate. Daily CEIC ticker CMDABWD "CN: Nominal Lending Rate: Within 1 Year (Including 1 Year)". This is the adminstered PBOC policy benchmark 1-year lending rate. First converted to a monthly average and then an average of the three months. It systematically differs from PBOCLendRate1yr_Q a number of times in the early to mid 1990s, not just because one use monthly averages and one uses end-of-month observations. 1988Q4-
- **DepositRatePBC1year**: One-year PBC benchmark deposit rate. Daily CEIC ticker CDDAD "Time Deposit Rate: Household: CNY: 1 Year". This is the adminstered PBOC policy deposit rate. It appears to be end-of-month. First converted to a monthly average and then an average of the three months. It appears to be the same as TimeDepRate1yr_Q except for the fact that it uses monthly averages instead of end-of-month observations.
- **Employment**: Average of contemporaneous and 1-period lag of Emp_Q_SA. Approximates quarterly average of employment level. 1992Q1-
- **NGDPva_Heavy**: Nominal GDP value-added for heavy sector (RMB billon) seasonally adjusted.
- **NGDPva_Light**: Nominal GDP value-added for light sector (RMB billon) seasonally adjusted.
- **VA_InpOut_Heavy**: Derived from the corresponding annual series (the input-output table for value added to the heavy sector) interpolated by quarterly heavy NGDP series with the proportional Denton method modified to account for the corresponding annual series being available only every 2 or 3 years. Note that 1992 values are unreliable as proportional Denton interpolation is unreliable for the first 4 values or so of a series. Beyond 2012q4, this series is extrapolated by setting its growth rate to be identical to the growth rate of heavy value-added GDP series. 1992Q1-.
- **VA_InpOut_Light**: Derived from the corresponding annual series (the input-output table for value added to the light sector) interpolated by quarterly light NGDP series with the proportional Denton method modified to account for the corresponding annual series being available only every 2 or 3 years. Note that 1992 values are unreliable as proportional Denton interpolation is unreliable for the first 4 values or so of a series. Beyond 2012q4, this series is extrapolated by setting its growth rate to be identical to the growth rate of light value-added GDP series. 1992Q1-
- **NHeavyFAI**: Heavy sector net fixed assed investment [RMB million]. The series is is constructed with detailed fixed asset investment by industry.
- **NLightFAI**: Light sector net fixed assed investment [RMB million]. The series is is constructed with detailed fixed asset investment by industry.
- **InvRETotal**: Total real estate investment. Based on monthly CEIC ticker CECA—"Real Estate Investment: ytd: Total". Translate the ytd aggregation to quarterly sum of monthly values. RMB bn. Seasonally adjusted with SAS proc X12. 1994Q1-.
- **FAIRETotal**: Fixed asset investment in real estate. Based on monthly CEIC ticker COBDKJ—"CN: FAI: ytd: Tertiary Industry: Real Estate". Translate the ytd aggregation to quarterly sum of monthly values. RMB bn. Seasonally adjusted with SAS proc X12. 2004Q1-.
- **FAIRETotalBack**: Backcasted version of FAIRETotal using ration extrapolation with InvRETotal_Q_SA. 1994Q1-.
- **NSTRGFCF**: Seasonally adjusted estimated gross fixed capital formation in structures (RMB Bill) adjusted to be consistent with annual series NSTRGFCF. The annual NSTRGFCF is interpolated with the growth rate of another quarterly NSTRGFCF using the Fernandez interpolation. 1996Q1-.
- **NRESSTRGFCF**: Seasonally adjusted estimated gross fixed capital formation in residential structures (RMB Bill) adjusted to be consistent with annual series NRESSTRGFCF. The annual NRESSTRGFCF is interpolated with the growth rate of another quarterly NRESSTRGFCF using the Fernandez interpolation. 1996Q1-.
- **NNONRESSTRGFCF**: Seasonally adjusted estimated gross fixed capital formation in nonresidential structures (RMB Bill) adjusted to be consistent with annual series NNONRESSTRGFCF. The annual NNONRESSTRGFCF is interpolated with the growth rate of another quarterly NNONRESSTRGFCF using the Fernandez interpolation. 1996Q1-.

The following series are used for the VAR analysis in "Trends and Cycles in China's Macroeconomy" by Chang, Chen, Waggoner, and Zha, published at NBER Macroeconomic Annual Vol 30.

- logrealHHC = log(NominalHHC) - log(CPI) ;
- logrealBusI = log(NominalBusGFCF) - log(GFCFPriceIndex) ;
- logrealHHC_nipa = log(NominalHHC) - log(GDPDeflator) ;
- logrealBusI_nipa = log(NominalBusGFCF) - log(GDPDeflator) ;
- logrealNarrowY_nipa = log(NominalNarOutput) - log(GDPDeflator) ;
- logrealGDP_nipa = log(NominalGDP) - log(GDPDeflator) ;
- logrealGDP_va = log(NominalGDPva) - log(GDPDeflator) ;
- logrealLaborIncome = log(LaborIncome) - log(GDPDeflator) ;
- logrealDPI = log(DPI) - log(GDPDeflator) ;
- logM2 = log(M2) ;
- ratioNewLoansNFEST2GDP = NewBankLoansNFEST ./ NominalGDP ;
- ratioNewLoansNFESTBF2GDP = NewBankLoansNFESTBF ./ NominalGDP ;
- ratioNewLoansNFEMLT2GDP = NewBankLoansNFEMLT ./ NominalGDP ;

The following series are used for "Impacts of Monetary Stimulus on Credit Allocation and Macroeconomy: Evidence from China" by Chen, Higgins, Waggoner, and Zha, NBER Working Paper 22650.

- LendingRatePBC1year One-year PBC lending rate
- DepositRatePBC1year One-year PBC deposit rate
- Employment Total employment (rural + urban)
- NHeavyFAI Nominal FAI for the heavy sector
- NLightFAI Nominal FAI for the light sector
- PPI Producer price index, SA. Last 12 monthly observations are based on the CEIC ticker CIAIEJ "CN Producer Price Index MoM". All of the monthly observations before that are based on the CEIC ticker CIUA "Producer Price Index: Industrial Products (Previous Year = 100)". 1995Q4-2017Q1

The following time series are constructed for "Impacts of Monetary Stimulus on Credit Allocation and Macroeconomy: Evidence from China" by Chen, Higgins, Waggoner, and Zha, NBER Working Paper No. 22650.

- **LandPrice**:
- **NominalGCF**: Nominal Gross Capital Formation
- **FAInvPrice**: Fixed asset investment price
- **NominalGDPva**: Value added nominal GDP
- **RealGDPva**: Value added reeal GDP
- **GDPDeflator**:
- **R7dRepo**:
- **BankLoansTotal**:
- **BankLoansST**:
- **NGDPva_Heavy**:
- **NGDPva_Light**:
- **EntrustedLoans**: Total entrusted leanding, 2001Q4-2016Q2 (extrapolated before 2013)
- **TrustedLoans**: Total trusted leanding, 2001Q4-2016Q2 (extrapolated before 2013)
- **BankAccts**: Bank acceptance bills, 2001Q4-2016Q2 (extrapolated before 2013)
- **ShowdowBanking**: Total lending in the shadow banking industry, 2001Q4-2016Q2 (extrapolated before 2013)
- **AggFinancing**: Total aggregate social financing, 2002Q1-2017Q1 outstanding
- **RealEstateDomesticLoanFAI**: New loans to real estate, 1998Q1-2017Q1
- **HeavyIndustryDomesticLoanFAI**: New loans to the heavy sector in the whole economy, 2003Q1-2015Q4
- **LightIndustryDomesticLoanFAI**: New loans to the light sector in the whole economy, 2003Q1-2015Q4

The following time series are constructed for Liu, Wang, and Zha's "Land-Price Dynamics and Macroeconomic Fluctuations" published in Econometrica Vol. 81, No. 3 (May, 2013), 1147–1184.

- **pop**: Total population
- **CPriceExHousing**: Consumer goods price, excluding housing investment
- **NonFinBusinessLoans**: Bank loans outstanding to non-financial firms

The following time series are constructed for "Housing Market Spillovers: Evidence from an Estimated DSGE Model" by Iacoviello and Neri, publlished in American Economic Journal: Macroeconomics 2 (April 2010): 125-164.

- **ResidentialInvestment**:
- **GFCFPrice**: Price index for fixed gross capital formation
- **NonConstrEmp**: Employment in the non-housing (non-construction) sector
- **ConstrEmp**: Employment in the housing (construction) sector
- **NonConstrWage**: Average urban wage in the non-housing (non-construction) sector
- **ConstrWage**: Average urban wage in the housing (construction) sector

Monthly Data

The following series are used for "Forecasting China's economic growth and inflation" by Higgins, Zha, and Zhong, published in China Economic Review 41 (2016) 46-61.

- **Dates**: Monthly dates with the convention of 1998=1998M1, 1998.08=1998M2, 1998.17=1998M3, 1998.25=1998M4, etc.
- **NomGDP**: We interpolate seasonally adjusted quarterly nominal GDP value added with seasonally adjusted monthly nominal retail sales of consumer goods, nominal exports, nominal imports, and nominal value added of industry. For data prior to 1995M10, where nominal value added of industry is not available, we use a slightly different set of interpolaters.
- **GDPDeflator**: This monthly series is constructed in two steps. In the first step, we interpolate the seasonally adjusted quarterly GDP deflator with the seasonally adjusted monthly series of producer price index (PPI), retail price index, CPI and M2. The PPI is only available since 1995M10 and thus it is not used for interpolation prior to this month. The first-step GDP deflator is used to construct monthly real GDP as described below. In the second step, the monthly series is derived by dividing monthly nominal GDP by monthly real GDP as constructed below.
- **RealGDP**: This monthly series is constructed in two steps. In the first step, the monthly series is derived by dividing nominal GDP by the first-step monthly GDP deflator. In the second step, we perform an interpolation by constraining monthly real GDP to an quarterly aggregate equal to quarter real GDP.
- **NomConsumption**: We seasonally adjust the monthly series of retail sales of consumer goods. Before the seasonal adjustment the January and February year-to-date value is disaggregated.
- **NomInvestment**: We seasonally adjust both "capital construction + innovation" and total fixed-asset investment. The fixed-asset investment series starts in 1994 and the series for "capital construction + innovation" exists before 1994. We slice the two series, which gives rise to our investment series. The splice point is 1994. For this investment series, residual seasonality still exists because the January and February value needs be disaggregated and because a drop off in value after December is large. Hence, we perform a second round of seasonal adjustments using the X11-ARIMA method with its default settings. This additional adjustment eliminates much of the residual seasonality.
- **InvestmentPrice**: Based on the the seasonally adjusted quarterly investment price series, the monthly series is interpolated with the producer price index whose inflation rates are highly correlated with inflation rates of the investment price, value added of industry, and CPI. The series, starting in 1996M1 and ending in 2016M6, is relatively reliable since 2004Q1 when the CEIC began to publish the quarterly series. Prior to 2004, we interpolate the annual investment price deflator with the PPI.
- **CPI**: We seasonally adjust the monthly consumer price index series using the X-12 ARIMA method with regression dummies to account for the Chinese New Year effect.
- **M2**: We derive the M2 level series from the level series from 2015M7 to 2016M6 and the year-over-year growth rates published by the People's Bank of China for all other months. This constructed series alleviates serious problems of sudden changes or misalignments of statistical coverage for certain periods of the sample. We then seasonally adjust this series with dummy regressors for the months so that the year-over-year growth rates are the same as the year-over-year for the original data prior to seasonal adjustment. This method works well because the seasonal factors in the M2 level series are stable during our sample period.
- **NomImports**: The original monthly series is from the Chinese customs. The series is seasonally adjusted with the X-12 ARIMA method and with regression dummies to account for the Chinese New Year effect.
- **NomExports**: The original monthly series is from the Chinese customs. The series is seasonally adjusted with the X-12 ARIMA method and with regression dummies to account for the Chinese New Year effect.
- **Repo7Day**: The 7-day market rate for national interbank bond repurchases. This is a market rate

available since 1996M1.

- **DepositRate1YBench**: The one-year benchmark deposit rate set by the People's Bank of China. This series exists from 1988M10 on.
- **RealSOEVAYoY**: 12-month percent change in real value added to state owned & holding industrial enterprises. From CEIC ticker "CBEOAC: Real CN: VAI: YoY(Real): State Owned & Holding Enterprise", except for January and February of each year. For those two months, it is set to the February value of CEIC ticker "CBEOCC – CN: VAI: YoY: ytd(Real): State Owned & Holding Enterprise". Because the NBS rounds these growth-rates to 1-decimal point, it is unreliable to derive monthly or quarterly level series. 1998M8-.
- **RealPrivVAYoY**: 12-month percent change in real value-added of private industrial enterprises. From CEIC ticker "CBBNAA: CN: VAI: YoY(Real): Private Enterprise", except for January and February of each year. For those two months, it is set to the February value of CEIC ticker "CBBNAB – CN: VAI: YoY: ytd(Real): Private Enterprise". Because the NBS rounds these growth-rates to 1-decimal point, it is unreliable to derive monthly or quarterly level series. 2007M12-.