Draft of the Data Report*

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1. A Real Time Data Set For DSGE-Estimation And Forecasting

2. US Variables

2.1. Real Output (xgdp_q_obs)

(a) Raw Time Series:

1. ROUTPUT: Real GNP/GDP (Billions of real dollars, seasonally adjusted)
   - Source: Philadelphia Fed,
   - Quarterly observations.
   - Quarterly vintages from 1965:Q4 to 2014:Q1. Reflect the data available in the middle month of the quarter.

(b) Transformation:

- xgdp_q_obs: Quarterly Real GNP/GDP Growth
- First Difference in log quarterly observations:

$$xgdp\_q\_obs_t = (\ln(ROUTPUT_t) - \ln(ROUTPUT_{t-1})) \times 100$$

- Saved in OUTPUT/xgdp_q_obs

2.2. Real Consumption (pcer_q_obs)

(a) Raw Time Series:

1. NCON: Nominal Personal Consumption Expenditures (Billions of real dollars, seasonally adjusted)
   - Source: Philadelphia Fed,
   - Quarterly observations
   - Release frequency: quarterly (from 1965:Q4 to 2014:Q1). Quarterly vintages reflect the data available in the middle of the quarter.
2. PNGP_J is the deflator (for the definition see Section 5)

(b) Transformation:

- pcer_q_obs: Quarterly Real Personal Consumption Expenditures Growth
- First Difference in log of deflated quarterly observations:

$$pcer\_q\_obs_t = \left(\ln\left(\frac{NCON_t}{PNGP\_J_t}\right) - \ln\left(\frac{NCON_{t-1}}{PNGP\_J_{t-1}}\right)\right) \times 100$$

- Saved in PCER/pcer_q_obs

2.3. Real Investment (*fpi_q_obs*)

(a) Raw Time Series:

1. FPI: Fixed Private Investment[1] (Billions of real dollars, seasonally adjusted annual rate)
   - Source: ALFRED/StLouis,
   - Quarterly observations.
   - Release frequency: neither monthly nor quarterly.
2. PNGP_J is the deflator (for the definition see Section 5)

(b) Transformation:

- Quarterly vintages reflect the latest ALFRED/StLouis-release before the 15th of the middle month of the quarter.
- fpi_q_obs: Quarterly Real Fixed Private Investment Growth
- First Difference in log of deflated quarterly observations:

$$fpi\_q\_obs_t = \left(\ln\left(\frac{FPI_t}{PNGP\_J_t}\right) - \ln\left(\frac{FPI_{t-1}}{PNGP\_J_{t-1}}\right)\right) \times 100$$

- Saved in FPI/fpi_q_obs

2.4. Real Wages (*wage_obs*)

(a) Raw Time Series:

1. WSD: Wage and Salary Disbursements (Billions of real dollars, seasonally adjusted, at annual rate)
   - Source: Philadelphia Fed,
   - Quarterly observations
   - Release frequency:Quarterly(from 1965:Q4 to 2014:Q1). Quarterly vintages reflect the data available in the middle of the quarter.
2. PNGP_J is the deflator (for the definition see Section 5).

(b) Transformation:

- wage_obs: Real Wage Growth
- First Difference in log of quarterly observations:

$$wage\_obs = \left(\ln\left(\frac{WSD_t}{PNGP\_J_t}\right) - \ln\left(\frac{WSD_{t-1}}{PNGP\_J_{t-1}}\right)\right) \times 100$$

- Saved in WAGE/wage_obs

[1] This title is as given by ALFRED and values are in nominal terms.

2.5. *Inflation (pgdp_q_obs)*

(a) Raw Time Series:

1. P: Price Index for GNP/GDP. Index level, seasonally adjusted. Base Year: see DATADSGE/BaseIndex
   - Source: Philadelphia Fed,
   - Quarterly observations
   - Release frequency: Quarterly (from 1965:Q4 to 2014:Q1). Quarterly vintages reflect the data available in the middle of the quarter.

(b) Transformation:

- pgdp_q_obs: Quarter-To-Quarter Rate of Inflation
- First Difference in log of quarterly observations:

$$pgdp\_q\_obs = (\ln(P_t) - \ln(P_{t-1})) \times 100$$

(c) Computation of $PNGP\_J$ (column J in MW vintages)

- Computation of $PNGP\_Level$ (column I in MW vintages)

$$PNGP\_Level_t = \begin{cases} \ln(P_t) \text{ if } t = 1 \text{ which corresponds to} 1960Q1 \\ \\ PNGP\_Level_{t-1} + pgdp\_q\_obs_t \text{ if } t > 1 \end{cases}$$

- Finally, $PNGP\_J_t = \exp(PNGP\_Level_t)$
- Saved in PGNP/PNGP_J

2.6. *RFF (rff_q_obs)*

(a) Raw Time Series:

1. FEDFUNDS: Effective Federal Funds Rate
   - Source: FRED/StLouis
   - Quarterly observations: from 1954:Q1 to 2014:Q1
   - Release: Not revised
   - Quarterly data corresponds to the average of monthly data over months in the quarter. Not Seasonally Adjusted

(b) Transformation: Divide annual rate by four: $rff\_q\_obs = FEDFUNDS/4$

- Saved in FEDFUNDS

2.7. *Hours (hours_obs)*

(a) Raw Time Series:

1. H: Indexes of Aggregate Weekly Hours, Total. Base Year: see DATADSGE/BaseIndex
   - Source: Philadelphia Fed,
   - Monthly observations: from 1964-Jan onward
   - Release frequency: Monthly. From 1971:M9 onward
2. CE16OV:Civilian Employment
   - Source: ALFRED/StLouis,
   - Monthly observations.
   - Release frequency: neither monthly nor quarterly.

(b) Transformation:

- Hours worked quarterly vintages are obtained by taking the index in the middle month of the quarter. Quarterly observations are averages of the monthly observations in the quarter (HOURS_Q). For employment, quarterly vintages obtained by considering the latest release before the 15th of the month in the middle of the quarter while quarterly observations are computed by averaging.
- Hours Per Capita:

$$HOURS\_PER\_CAPITA_t = \ln\left(\frac{HOURS\_Q_t}{CE16OV_t}\right)$$

- Finally:

$$hours\_obs_t = HOURS\_PER\_CAPITA_t - HPTrend(HOURS\_PER\_CAPITA_t, 16000)$$

- Saved in HOURS/hours_obs

2.8. *Real Money Balances: M2 (real_m2_growth)*

(a) Raw Time Series:

1. M2SL: M2 Money Stock (Billions of real dollars, seasonally adjusted)
   - Source: ALFRED/StLouis,
   - Monthly observations: from 1959-Jan to 2014-Feb
   - Release frequency: Monthly. The series so-obtained is dubbed M2_Q.
2. PNGP_J is the deflator (for the definition see Section 5).

(b) Transformation:

- Quarterly vintages obtained by taking the middle month of the quarter and averaging the monthly observations
- First Difference in log of quarterly observations:

$$real\_m2\_growth_t = \left(\ln\left(\frac{M2\_Q_t}{PNGP\_J_t}\right) - \ln\left(\frac{M2\_Q_{t-1}}{PNGP\_J_{t-1}}\right)\right) \times 100$$

- Saved in M2/real_m2_growth

2.9. Credit Spreads:

(a) Raw Time Series:

1. Moody's Baa (FRB_H15_Baa_monthly): the annualized Moody's Seasoned Baa Corporate Bond Yield
   - Source: Board of Governors of the Federal Reserve System
   - Monthly observations: from 1919-Jan onward
   - Quarterly observations,FRB_H15_Baa_Q, obtained by averaging the monthly observations
2. Moody's Aaa (FRB_H15_Aaa_monthly): the annualized Moody's Seasoned Aaa Corporate Bond Yield
   - Source: Board of Governors of the Federal Reserve System
   - Monthly observations: from 1919-Jan up to 2014-May
   - Quarterly observations,FRB_H15_Aaa_Q, obtained by averaging the monthly observations
3. TB10YR(FRB_H15_Treasury): the 10-Year Treasury Note Yield at Constant Maturity
   - Source: Board of Governors of the Federal Reserve System
   - Monthly observations: from 1953-Apr up to 2014-May
   - Quarterly observations,FRB_H15_Treasury_Q, obtained by averaging the monthly observations
4. Gilchrist and ZakrajÅek(gzspr_nf) spread index
   - Source: http://www.aeaweb.org/articles.php?doi=10.1257/aer.102.4.1692
   - Monthly observations: from 1973-Jan up to 2012-Dec
   - Quarterly observations,GZ_Q, obtained by averaging the monthly observations

(b) Transformation:

- Baa_10YTB: quarterly spread as Moody's Baa over TB10YR,

$$Baa\_10YTB = (FRB\_H15\_Baa\_Q - FRB\_H15\_Treasury\_Q)/4$$

- Baa_Aaa: quarterly spread as Moody's Baa over Aaa

$$Baa\_Aaa = (FRB\_H15\_Baa\_Q - FRB\_H15\_Aaa\_Q)/4$$

- Baa_RFF: quarterly spread as Moody's Baa over FEDFUNDS

$$Baa\_RFF = (FRB\_H15\_Baa\_Q - FEDFUNDS)/4$$

- Gilchrist and ZakrajÅek index:

$$GZ = GZ\_Q/4$$

2.10. Mortgage debt by type of holder and property

(a) Raw Time Series:

1. $MDOTHMFICBTPMFR\_2$ and $MDOTHMFICBTP1T4FR\_2$: Mortgage Debt Outstanding by Type of Holder and Property: Major Financial Institutions: Commercial Banks for Multifamily residences and One-to-four family residences (Millions of Dollars, not seasonally adjusted)
2. $MDOTHMFIDITPMFR\_2$ and $MDOTHMFIDITP1T4FR\_2$: Mortgage Debt Outstanding by Type of Holder and Property: Major Financial Institutions: Depository institutions for Multifamily residences and One-to-four family residences (Millions of Dollars, not seasonally adjusted)
    - Source: ALFRED/StLouis,
    - $MDOTHMFICBTPMFR\_2$, observations: from 1951-Oct to 2013-Oct. Vintages releases: Jan 23th 2014 and March 06th 2014
    - $MDOTHMFICBTP1T4FR\_2$,observations: from 1951-Oct to 2013-Oct. Vintages releases: Jan 23th 2014 and March 06th 2014
    - $MDOTHMFIDITPMFR\_2$, observations: from 1949-Oct to 2014-Jan. Vintages release: June 05th 2014
    - $MDOTHMFIDITP1T4FR\_2$, ,observations: from 1951-Oct to 2013-Oct. Vintages releases: Jan 23th 2014 and March 06th 2014 For each of these variables, the quarterly observations obtained by taking the observation of the first month in the quarter.
3. PNGP_J is the deflator .

(b) Transformation:

- MDOTHMFICB: Mortgage Debt Outstanding by Type of Holder and Property: Commercial banks;

$$MDOTHMFICB = MDOTHMFICBTPMFR\_2 + MDOTHMFICBTP1T4FR\_2$$

- MDOTHMFIDI: Mortgage Debt Outstanding by Type of Holder and Property: Depository Institution;

$$MDOTHMFIDI = MDOTHMFIDITPMFR\_2 + MDOTHMFIDITP1T4FR\_2$$

- DLNQuaterly

$$MDOTHMFICBGROWTH_t = \left(\ln\left(\frac{MDOTHMFICB_t}{PNGP\_J_t}\right) - \ln\left(\frac{MDOTHMFICB_{t-1}}{PNGP\_J_{t-1}}\right)\right) \times 100$$

and

$$MDOTHMFIDIGROWTH_t = \left(\ln\left(\frac{MDOTHMFIDI_t}{PNGP\_J_t}\right) - \ln\left(\frac{MDOTHMFIDI_{t-1}}{PNGP\_J_{t-1}}\right)\right) \times 100$$

2.11. C and I Loans

(a) Raw Time Series:

1. $EVANQ$: Total Value of Loans for All C and I Loans, All Commercial Banks (Millions of Dollars, not seasonally adjusted)
   - Source: ALFRED/StLouis,
   - Quarterly, 1st Full Wk. in 2nd Mo. Of Qtr: from 1997-Apr to 2014-Jan
   - These data are collected during the middle month of each quarter and are released in the middle of the succeeding month. First vintage release: 2011-03-21. Latest vintage release: 2014-04-01.
2. PNGP_J is the deflator.

(b) Transformation:

- The vintage of a quarter (EVANQ_Q) corresponds to the latest release before the 15th of the middle month of the quarter
- First Difference in log of quarterly observations:

$$EVANQ\_QGROWTH_t = \left(\ln\left(\frac{EVANQ\_Q_t}{PNGP\_J_t}\right) - \ln\left(\frac{EVANQ\_Q_{t-1}}{PNGP\_J_{t-1}}\right)\right) \times 100$$

3. Christiano Motto Rostagno (2014) dataset

As in Christiano Motto Rostagno (2014) Risk shock paper the aim is to collect observations on 12 variables. These include the 8 standard variables used in the DNSG14 model [2] and extends it with the following 4 variables:

1. Relative price of investment goods (pinv_q_obs) ,
2. Loans to non financial corporations (credit_q_obs),
3. Measure for the slope of the term structure (spreadl_obs),
4. Indicator for the entrepreneurial net worth (networth_q_obs).

In what follows we discuss the aforementioned 4 series and their construction. Due to data availability the real time data series are substituted for their final, most recent release, as of 2019.01.01.

3.1. Relative price of investment goods (pinv_q_obs)

(a) Raw Time Series:

1. $A006RD$: Implicit Price Deflators for Gross Domestic Product: Gross private domestic investment - Quarterly
   - Source: BEA/NIPA-T10109, https://db.nomics.world/BEA/NIPA-T10109
   - Quarterly, 1st Full Wk. in 2nd Mo. Of Qtr.
   - Seasonally adjusted
   - Index 2012=100
   - 1947-01-01 to 2018-07-01
2. $A191RD$: Implicit Price Deflators for Gross Domestic Product: Gross private domestic investment price deflator - Quarterly
   - Seasonally adjusted
   - Index 2012=100
   - 1947-01-01 to 2018-07-01
   - Note: The final reading of the GDP deflator was used to ensure data consistency.

(b) Transformation:

- First Difference in log of quarterly observations of the investment deflator devided by the GDP deflator:

$$pinv\_q\_obs_t = \left(\ln\left(\frac{A006RD_t}{A191RD_t}\right) - \ln\left(\frac{A006RD_{t-1}}{A191RD_{t-1}}\right)\right) + 1$$

[2] 1. xgdp_q_obs,2. pgdp_a_obs, 3. rff_a_obs, 4. pcer_q_obs, 5. fpi_q_obs, 6. wage_obs, 7. hours_obs, 8. cp_q_obs

3.2. Loans to non financial corporations (credit_q_obs)

(a) Raw Time Series:

1. $LoanstoHH : loans\_hh = DBNOMICS : BIS/data/CNFS/Q.US.H.A.M.XDC.A$
2. $LoanstoNFC : loans\_nfc = DBNOMICS : BIS/data/CNFS/Q.US.H.A.M.XDC.A$
3. $US\,population : pop = DBNOMICS : OECD/MEI/USA.LFWA64TT.STSA.Q$
4. $US\,DGPdeflator : A191RD = DBNOMICS : BEA/A191RD$

(b) Transformation:

$$credit\_q\_obs_t = ln\left(\left(\frac{loans\_hh_t}{pop_t * A191RD_t}\right) + \left(\frac{loans\_nfc_t}{pop_t * A191RD_t}\right) * 10^6\right) - \\ - ln\left(\left(\frac{loans\_hh_{t-1}}{pop_{t-1} * A191RD_{t-1}}\right) + \left(\frac{loans\_nfc_{t-1}}{pop_{t-1} * A191RD_{t-1}}\right) * 10^6\right) + 1;$$

3.3. Measure for the slope of the term structure (spreadl_obs)

(a) Raw Time Series:

1. $Longrate : longrate = DBNOMICS : USA.IRLTLT01.ST.QYield10-yearfederalgovernmentsecurities$
2. $Shortrate : shortrate = DBNOMICS : FED/H15/129.FF.O-Qaurterlyaverageof Federal fundsOvernight$

(b) Transformation:

$$spreadl\_obs_t = (longrate_t - shortrate_t) + 1$$

3.4. Indicator for the entrepreneurial net worth (networth_q_obs)

(a) Raw Time Series:

1. $nw = DowJonesWilshire5000index, deflatedbytheGDPpricedeflator.BoardofGovernorsoftheFederalReserveS$
   $BureauofEconomicAnalysis, Quarterlyfrequency$

(b) Transformation:

$$networth\_q\_obs_t = ln\,(nw_t) - ln\,(nw_{t-1}) + 1$$

4. Euro Area Variables

4.1. Real Output Growth (xgdp_q_obs)

(a) Raw Time Series:

1. RTD.Q.S0.S.G_GDPM_TO_U.E: Nominal GDP (Seasonally adjusted, not working day adjusted, Gross domestic product at market price - Current prices, Euro)
   - Source: Real Time Database-RTD- (context of Euro Area Business Cycle Network).
   - Quarterly observations.
   - Release frequency: Quarterly. Quarterly vintages (GDPVint) reflect the latest RTD-release before the 15th of the middle month of the quarter.
   - DEFLATORVint is the GDP-deflator

(b) Transformation:

- xgdp_q_obs: Quarterly Real GDP Growth
- First Difference in log of quarterly observations:

$$xgdp\_q\_obs_t = (\ln\left(\frac{GDPVint_t}{DEFLATORVint_t}\right) - \ln\left(\frac{GDPVint_{t-1}}{DEFLATORVint_{t-1}}\right)) \times 100$$

4.2. Real Consumption Growth (pcer_q_obs)

(a) Raw Time Series:

1. RTD.Q.S0.S.G_FCHI_TO_U.E: Private Consumption Nominal (PCN) (Seasonally adjusted, not working day adjusted, Final consumption of households and NPISHs - Current prices, Euro).
   - Source: Real Time Database-RTD- (context of Euro Area Business Cycle Network).
   - Quarterly observations from 1995:Q1 to 2013:Q4.
   - Release frequency: Quarterly. Quarterly vintages (PCNVint) reflect the latest RTD-release before the 15th of the middle month of the quarter.
2. DEFLATORVint is the GDP-deflator (for the definition see Section 5)

(b) Transformation:

- pcer_q_obs: Quarterly Real Personal Consumption Expenditures Growth
- First Difference in log of quarterly observations:

$$pcer\_q\_obs_t = \left(\ln\left(\frac{PCNVint_t}{DEFLATORVint_t}\right) - \ln\left(\frac{PCNVint_{t-1}}{DEFLATORVint_{t-1}}\right)\right) \times 100$$

4.3. Real Investment (fpi_q_obs)

(a) Raw Time Series:

1. RTD.Q.S0.S.G_GFCF_TO_U.E: Gross Fixed Capital Formation Nominal (Seasonally adjusted, not working day adjusted, Gross fixed capital formation - Current prices, Euro).
   - Source: Real Time Database-RTD- (context of Euro Area Business Cycle Network).
   - Quarterly observations from 1995:Q1 to 2013:Q4
   - Release frequency: Quarterly. Quarterly vintages (GFCFVint) reflect the latest RTD-release before the 15th of the middle month of the quarter.
2. DEFLATORVint is the GDP-deflator (for the definition see Section 5).

(b) Transformation:

- fpi_q_obs: Quarterly Real Fixed Private Investment Growth
- First Difference in log of quarterly observations:

$$fpi\_q\_obs_t = \left(\ln\left(\frac{GFCFVint_t}{DEFLATORVint_t}\right) - \ln\left(\frac{GFCFVint_{t-1}}{DEFLATORVint_{t-1}}\right)\right) \times 100$$

4.4. Inflation (pgdp_q_obs)

(a) Raw Time Series:

1. RTD.Q.S0.S.G_GDPM_TO_D.X : Price Index for GDP (Seasonally adjusted, not working day adjusted, Gross domestic product at market price - Deflator, Index).
   - Source: Real Time Database-RTD- (context of Euro Area Business Cycle Network).
   - Quarterly observations: from 1995:Q1 to 2013:Q4
   - Quarterly vintages (DEFLATORVint) reflect the latest RTD-release before the 15th of the middle month of the quarter.

(b) Transformation:

- pgdp_q_obs: Quarter-To-Quarter Rate of Inflation
- DLNQuaterly

$$pgdp\_q\_obs = (\ln(DEFLATORVint_t) - \ln(DEFLATORVint_{t-1})) \times 100$$

4.5. RFF (rff_q_obs)

(a) Raw Time Series:

1. RTD.M.S0.N.C_EONIA.E: Monthly, Neither seasonally nor working day adjusted, Rate - Eonia rate, Euro.
    - Source: Real Time Database-RTD- (context of Euro Area Business Cycle Network).
    - Monthly observations from 1994Jan to 2014Feb of annual nominal interest rate.
    - Quarterly vintages (RFFVint) reflect average of monthly observations-in the quarter- of the latest RTD-release before the 15th of the middle month of the quarter.

(b) Transformation: Divide annual rate by four: $rff\_q\_obs = RFFVint/4$

4.6. Real Money Balances: M3 (real_m3_growth)

(a) Raw Time Series:

1. RTD.M.S0.Y.M_M3_V_NC.E: Monthly, Working day and seasonally adjusted, Monetary aggregate M3, all currencies combined - MFIs, central government and post office giro institutions reporting sector - Euro area counterpart, Non-MFIs excluding central government sector - outstanding amounts at the end of the period (stocks), Euro
    - Source: Real Time Database-RTD- (context of Euro Area Business Cycle Network).
    - Monthly observations: from 1970Jan to 2014Jan
    - Quarterly vintages (M3Vint) obtained by taking the latest RTD-release before the 15th of the middle month of the quarter and averaging the monthly observations.
2. DEFLATORVint is the GDP-deflator.

(b) Transformation:

- DLNQuaterly real money balances

$$real\_m3\_growth_t = \left(\ln\left(\frac{M3Vint_t}{DEFLATORVint_t}\right) - \ln\left(\frac{M3Vint_{t-1}}{DEFLATORVint_{t-1}}\right)\right) \times 100$$