

# INDEX

*Note:* Page numbers followed by “*n*” indicate notes.

- Adaptive expectations (*see* Backward-looking expectations)
  - Adjustment costs, 125–126
  - Aruoba–Diebold–Scotti Index (ADS Index), 6
    - business conditions, 6–7
    - chronology, 21–24
  - Asymmetric co-kurtosis conditions, 170
  - Asymmetric risks on forecasting distributions, 198–202
  - Asymptotic efficiency of ML estimation, 70
  - Autoregressive-moving-average model (ARMA model), 26
  - Auxiliary assumptions, 118–119
  - Average continuous ranked probability scores (ACRPS), 40–41
  - Average log predictive scores (ALPS), 40–41
  
  - B-model, 168
  - BAA-AAA spread, 159
  - Backward-looking expectations, 28
  - Bayes’ rule, 32, 38
  - Bayesian algorithm for linear models, 183
  - Bayesian estimation
    - methods, 32
    - of skewed SVAR model, 183–186
  - Bayesian inference, 34
    - posterior analysis, 34–39
  - Bayesian structural vector autoregressive model, 183
  - Big data approaches, 6
  
  - Brinca et al. (2016) multi-country BCA analysis, 96–97
  - Business cycle, 8
  - Business cycle accounting (BCA), 56 (*see also* Monetary business cycle accounting (MBCA))
    - economic relevance, 93–97
    - estimated parameters, 64–66
    - with investment adjustment costs, 106–113
  - Iskrev (2010) test for strict and weak identification, 68–71
  - Komunjer and Ng (2011) test for strict identification, 66–67
  - methodology, 57, 61–71
  - results, 71–93
  - state space form, 63–64
  - statistics for practitioners, 97–102
- Chari et al. (2007) BCA model, 72–75, 79–85, 95–96, 106–107
  - Cholesky decomposition, 39
  - Cholesky factorization, 39
  - Cholesky identification scheme, 181
  - Collinearity factor, 63
  - Composite Indicator of Systemic Stress (CISS), 178
  - Consumption, 159
  - Corporate bonds, 149
    - spreads, 140
  - Correlation, 47–48
  - Counterfactual, 191, 193
    - economies, 94
  - Cramér-Rao lower bounds (CRLBs), 78
  - Cramér-Rao theorem, 70

- Density function, 69
- Disturbance smoothing, 38–39
- Disturbance-based parametrization, 37
- Dot plot, 12–13
- Durables spending, 148–150
- Dynamic equilibrium models,
  - estimation of, 2
- Dynamic factor models, 6
- Dynamic stochastic general equilibrium (DSGE), 57, 62, 66, 98
  
- Economic relevance, 93
  - Brinca et al. (2016) multi-country BCA analysis, 96–97
  - Chari et al. (2007) BCA model, 95–96
- Empirical distance
  - between DSGE models, 101
  - measures, 98–102
- Estimated parameters, 64–66
- Euler equation, 140
- Euler method, 101
- Expectations hypothesis (EH), 140
  - of interest rates, 146–148
  
- FAVAR models, 4
- Financial variables, 148–150
- First-order necessary conditions, 115–117
- Fisher information matrix, 63, 68–70
- Folded normal distribution, 182
- Forecast metrics, 40–41
- Forecasting, 27
  - function, 32–34
- Forward-Filtering-Backward-Smoothing recursions (FFBS recursions), 34
- Forward-looking expectations, 28
- Forward-looking variables, 160–161
- Full path plot, 12–13
- Functional forms, 118–119
  
- Gaussian kernel, 38
- Gaussianity of structural shocks, 167
  
- GDP growth, 178–179
- GDP risks, 178
- Generalized method of moments (GMM), 166, 169–171
- Gensys state space, 123
  - adjustment costs, 125–126
  - log-linearized equilibrium conditions, 123–125
  - MBCA model, 126–127
  - representation, 127–135
- Gibbs sampler, 178
- Granger's lemma, 29, 33
- Great Financial Crisis, 180
- Great Recession, 10, 161
  - exit, 14–17
  
- Hessian matrix, 69
- Historical shock decomposition, 190–195
- Hourly wage, 159
  
- Identification, 62, 66–67
  - general principles of identification analysis, 68–70
  - strength, 70–71
- Impulse response functions (IRFs), 143, 195–198
- Industrial Production (IP), 19n14
- Inflation expectations, 47–48, 150–152
- Inflation gap, 29
- Inflation risks, 178
- International Association of Applied Econometrics (IAAE), 1
- Intratemporal optimality condition, 116
- Investment adjustment costs, BCA and MBCA model with, 106–113
- Iskrev (2010) test for strict and weak identification, 68, 77, 110–113
  - Chari et al. (2007) BCA model, 79–85
  - general principles of identification analysis, 68–70

- identification strength, 70–71
  - preliminaries, 68
  - Šustek (2011) MBCA model, 85–93
- J*-test, 170–171
- Jarque-Bera test statistic, 174*n*2
- Jensen's inequality, 69
- Kalman filter, 68
- Kalman smoother, 19*n*11
- Komunjer and Ng (2011) test for strict identification, 66–67, 71, 106
  - Chari et al. (2007) BCA model, 72–75, 106–107
  - Šustek (2011) MBCA model, 75–77, 107–110
- Kullback–Leibler distance (KL distance), 101
- Lagrangian function, 115
- Later-vintage path, 10–11
- Left-invertibility, 67
- Leverage effect models, 49–50*n*4
- Local identifiability, 98
- Log-likelihood function of sample, 68–69
- Log-linearized equilibrium conditions, 123–125
- Long-term interest rates, 145–146
- Manufacturing and Trade Sales (MTS), 19*n*14
- Markov Chain Monte Carlo algorithm (MCMC algorithm), 28
- Maximum likelihood estimation (ML estimation), 57
- Minimality, 67
- Model equations, 118
- Monetary business cycle accounting (MBCA), 57, 126–127
  - description, 58–60
  - equilibrium conditions, 60
  - with investment adjustment costs, 106–113
  - operational model, 60–61
  - prototype (M) BCA economy, 58–61
- Monetary policy, 150–152
  - changes in conduct of, 152
- Multiple source of error (MSOE), 27, 30, 34
- Multivariate skewed normal distribution (MSN distribution), 181
- NBER recession chronology, 19*n*10
- News shocks, 140
  - alternative news shock identification, 162–164
  - data and VAR model, 142–143
  - data sources and time-series construction, 158–159
  - results, 143–152
- Nominal variables, 159
- Non-Gaussian distributions, 171
- Nowcasting, 6
- Nowcasts, 27
  - construction, characteristics, and assessment, 7
  - construction and updating, 7–8
  - ex post characteristics, 8
  - performance assessment, 8–10
- 'One-wedge-off' economies, 94
- 'One-wedge-on' economies, 94
- Operational model, 119–120
- Optimization problem of household, 114
- Orthogonal innovations, 49*n*1
- Out-of-sample results, 41–46
- Pandemic Recession, 19*n*4
  - entry and exit, 10
  - later-vintage path, 10–11
  - real economic activity and COVID-19, 14
  - real-time vintages, 11–13
- Parameters, 122

- Perfect collinearity, 70
- Personal consumption expenditure (PCE), 40
- Point forecasts, 40
- Population, 62
- Posterior analysis, 34–39
- Precision-based algorithms, 50*n*14
- Precision-based samplers, 28
- Price index measure, 29
  
- Rational expectations (*see* Forward-looking expectations)
- Real economic activity, 6
  - great recession exit, 14–17
  - nowcast construction,
    - characteristics, and assessment, 7–10
  - pandemic recession entry and exit, 10–14
- Real interest rates, 148–150
- Real variables, 159
- Real-time vintages, 11–13
- Recession, 8
- Reduced source of error (RSOE), 27, 30, 34, 49*n*2
- Relevant moment selection criterion (RMSC), 170
- Representative consumer, 114
  - first-order necessary conditions, 115–117
  - Lagrangian function, 115
  - optimization problem of household, 114
- Representative producer, 117
  - optimization problem of firm, 117
- Robustness, 48
- Root mean square forecast errors (RMSFE), 40
  
- s*-lag *M*-variable SVAR model, 180
- Sensitivity, lack of, 69
- Sensitivity factor, 63
- Short-run response, 143–144
- Short-term interest rates, 145–146
  
- Single source of error (SSOE), 27, 30, 34
- Skewed shocks
  - Bayesian estimation of skewed SVAR model, 183–186
  - SVAR model with, 179–186
- Skewness, 178
- Small-data approaches, 6
- Snapshots, 11
- State correlation, 32–34
- State space form, 63–64
- States, 27, 29
- Statistics for practitioners, 97
  - empirical distance measures, 98–102
- Steady state, 120–121
- Stepsize, 136–138
- Structural shocks, 185
- Structural vector autoregressive models (SVAR models), 2, 165, 178
  - additional figures, 207–210
  - application to US labour market, 169–172
  - estimated monthly real GDP growth, 206
  - model, 167–169
  - sign-identified, 166
  - with skewed shocks, 179–186
  - tracking macroeconomic tail risks in Euro area, 186–202
- Survey of Professional Forecasters (SPF), 48
- Šustek (2011) MBCA model, 75–77, 107–110
- Symmetric co-kurtosis condition, 170
  
- Taylor-type nominal interest rate setting rule, 57
- Three-equation system, 29
- Time-varying coefficients VAR models, 2
- Tobin's *Q*, 159
- Total factor productivity (TFP), 140–141

- Tracking macroeconomic tail risks in
  - Euro area, 186
  - data and model specification, 186–188
  - evolution of skewness in, 188–190
  - macroeconomic impact of time varying skewness, 190–202
- Trend inflation, 27
- Trend inflation, 47–48
  
- Unobserved components models (UC models), 26–30
  - Bayesian inference, 34–39
  - evaluation, 40–49
  - modelling state correlation, 30–32
  - state correlation and forecasting function, 32–34
  - and state correlation assumptions, 31
- US Pandemic Recession, 17
  
- Variables, 122
- Vector autoregression model (VAR model), 140
  - specification for Minnesota prior in, 159–160
- Vector moving average (VMA), 98
  
- Wedges, 56
- Workhorse nowcasting approaches, 6
- Wu-Xia shadow rate, 159
  
- Zero-impact response of TFP, 154n11