

International Seminar on Timeliness, Methodology and Comparability of Rapid Estimates of Economic Trends 27-29 May 2009, Ottawa

Session 4 : Extrapolating, Modelling econometric and sampling techniques used in the preparation of rapid estimates

A system of rapid estimates to improve real time monitoring of the economic situation:
the case of euro area

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Introduction

- Clear picture of economic movements
 - timely available statistics and statistical indicators
- Relevant improvements of PEEIs since 2002
 - timeliness
 - coverage
- Timeliness gap between Euro Area and USA
- PEEIs improvements:
 - increasing timeliness without lost of accuracy
 - long time series
 - high frequency data
 - extracting signals by means of specific indicators

Increasing data timeliness

- Speeding up data production process
 - advanced survey techniques
 - simplification of questionnaires
- Now-casting by means of statistical and econometric techniques
 - incomplete information set
- EU sampling techniques
 - not significant national samples
- Construction of coincident indicators
 - anticipating latest economic trends

Use of statistical and econometric techniques

- Using forecasting techniques to estimate the recent past and the present
- Not all forecasting models are admissible in official statistics
- Key principles of the construction of Flash Estimates:
 - use of all partial information whenever available
 - use of soft data only combined with a minimum of hard data
 - use of related indicators only in case of unavailability of relevant partial information
 - avoiding economic hypotheses in the model specifications
 - discarding univariate model specifications
 - selecting simple methodologically sound models

Euro Area Flash Estimates of Producer Price Index

	Flash t+16	Eurostat First estimate	Eurostat Final estimate	Error First estimate	Error Final estimate
2007m4	0.31	0.45	0.38	0.14	0.07
2007m5	0.28	0.29	0.38	0.01	0.10
2007m6	0.31	0.13	0.14	-0.18	-0.17
2007m7	0.25	0.26	0.30	0.01	0.05
2007m8	0.31	0.06	0.16	-0.25	-0.15
2007m9	0.24	0.36	0.41	0.12	0.17
2007m10	0.33	0.64	0.70	0.31	0.37
2007m11	0.78	0.90	0.91	0.12	0.13
2007m12	0.11	0.10	0.18	-0.01	0.07
2008m01	0.43	0.85	0.83	0.42	0.40
2008m02	0.74	0.66	0.57	-0.08	-0.17
2008m03	0.65	0.70	0.60	0.05	-0.05
2008m04	0.97	0.79	0.78	-0.18	-0.19
2008m05	0.93	1.21	1.19	0.28	0.26
2008m06	0.90	0.96	1.11	0.06	0.21
2008m07	1.73	1.23	1.40	-0.50	-0.33
2008m08	-0.25	-0.50	-0.39	-0.25	-0.14
2008m09	0.23	-0.20	-0.15	-0.43	-0.38
2008m10	0.01	-0.80	-0.89	-0.81	-0.90
2008m11	-1.26	-1.96	-2.07	-0.70	-0.81
2008m12	-1.19	-1.58	-1.49	-0.39	-0.30
2009m01	-0.79	-0.88	-1.13	-0.09	-0.34
2009m02	-0.57	-0.43	-0.43	0.14	0.14
2009m03	-0.69	-0.70	-0.70	-0.01	-0.01

Coincident indicators

- Forecasting the target variables during the reference period or right after its end
 - similar philosophy of Leading Indicators
- Fewer constraints in model specifications than Flash estimates
 - still avoiding economic hypotheses in model specifications
- Ongoing Eurostat projects on euro area coincident indicators
 - GDP, Employment, IPI
- Unsatisfactory results for IPI
 - high degree of volatility
- Alternative specifications of euro area GDP coincident indicators
 - three different Bridge equation models
 - a dynamic factor model

Euro area Coincident Indicators of the GDP growth

	Estimates t-30	Estimates t+0	Estimates t+30	Eurostat Flash t+45
2007Q1	0.5	0.5	0.5	0.57
2007Q2	0.4	0.4	0.4	0.34
2007Q3	0.7	0.7	0.9	0.71
2007Q4	0.3	0.3	0.4	0.41
2008Q1	0.25	0.3	0.45	0.8
2008Q2	0.2	0.2	0	-0.2
2008Q3	-0.3	-0.3	-0.2	-0.19
2008Q4	-0.5	-0.8	-1	-1.5
2009Q1	-1	-1.6	-1.6	-2.5

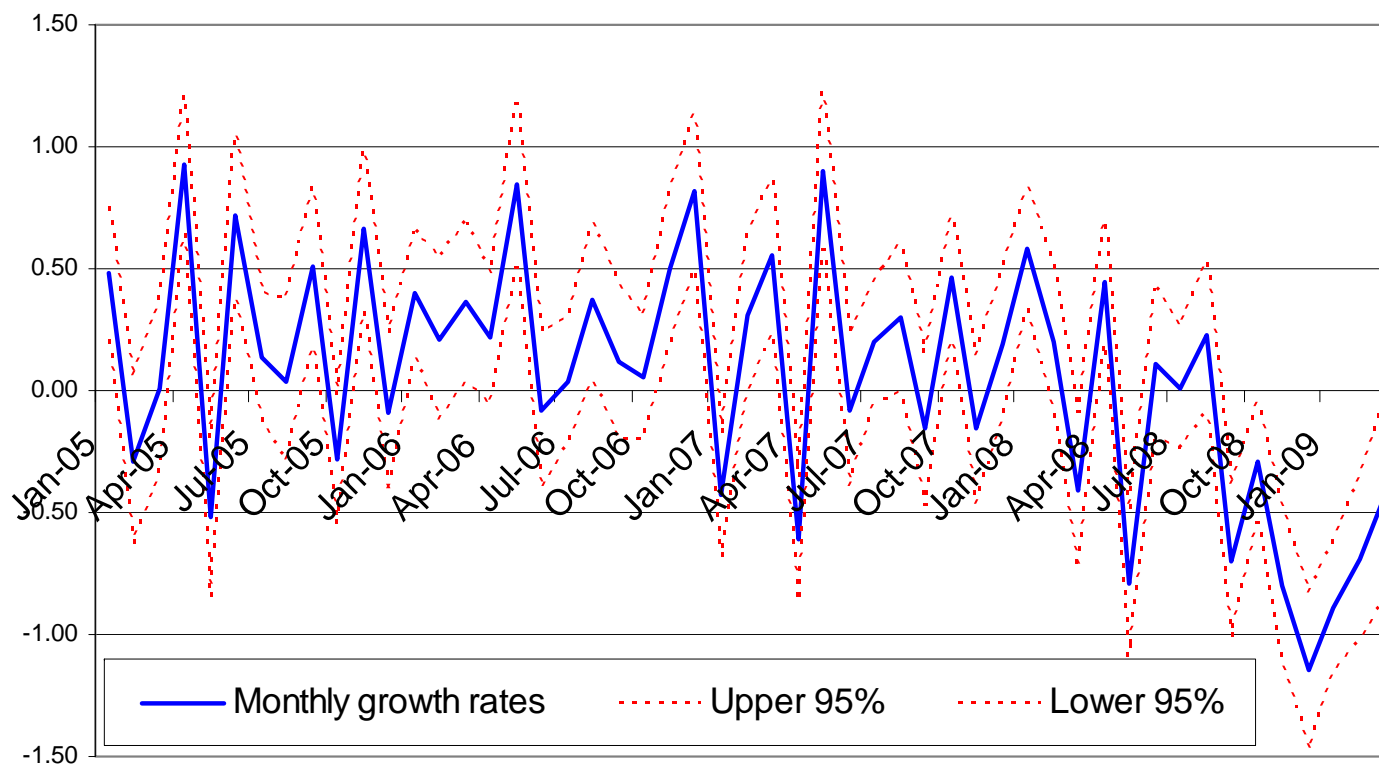
Monthly indicator of the economic activity

- Declining role of IPI as reference variable for business cycle analysis
 - service activities also characterized by cyclical movements
 - industrial fluctuations not necessary determine cycles for the whole economy
- GDP: ideal reference variable for business cycle analysis
 - only available at quarterly basis
 - construction of monthly GDP based on EA principles still problematic
- Several attempts to construct monthly proxies of GDP
 - Sweden, Finland, Estonia, U.K., Canada
- Ongoing Eurostat projects on the construction of euro area monthly indicator of the economic activity

Euro-MIND: methodological description

- Construction based on quarterly GDP, output and expenditure side components
- Selection for each component of a set of quantitative and qualitative monthly related indicators
- Modelling monthly indicators using a dynamic factor analysis casted in a state–space form
- Dealing with multi frequency data in a state-space form in order to convert temporal aggregation into a systematic sampling problem
- Achieving computational efficiency by converting a multivariate estimation problem into an univariate filtering and smoothing one
- Dealing with chain-linking measures by means of a multistep procedure exploiting the additivity property of Laspeyres volume measures on previous year basis
- Estimating Euro-MIND as a combination of output and expenditure estimates using weights reflecting the relative precision

Euro-MIND growth rate on previous month



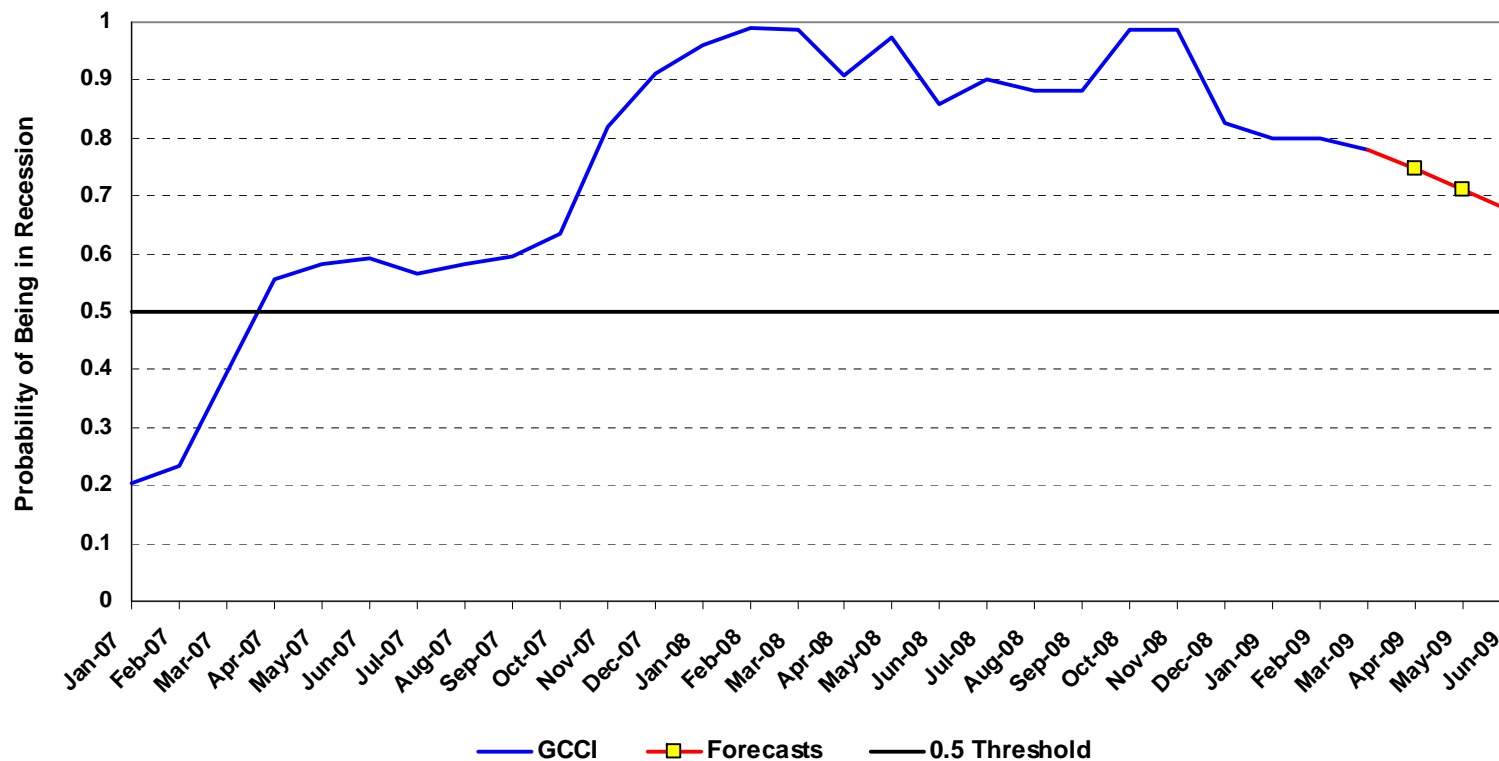
A statistical framework for business cycle analysis

- Not all needed information explicitly available by a simple data inspection
- Extracting signals and producing estimates for a better understanding of cyclical movements
- Eurostat ongoing activities aiming to the construction of a statistical framework for business cycle analysis
 - construction of chronologies
 - growth cycle, classical cycle
 - construction of coincident turning point indicators
 - estimates of growth cycle (i.e. output gap of GDP)
 - univariate and multivariate methods

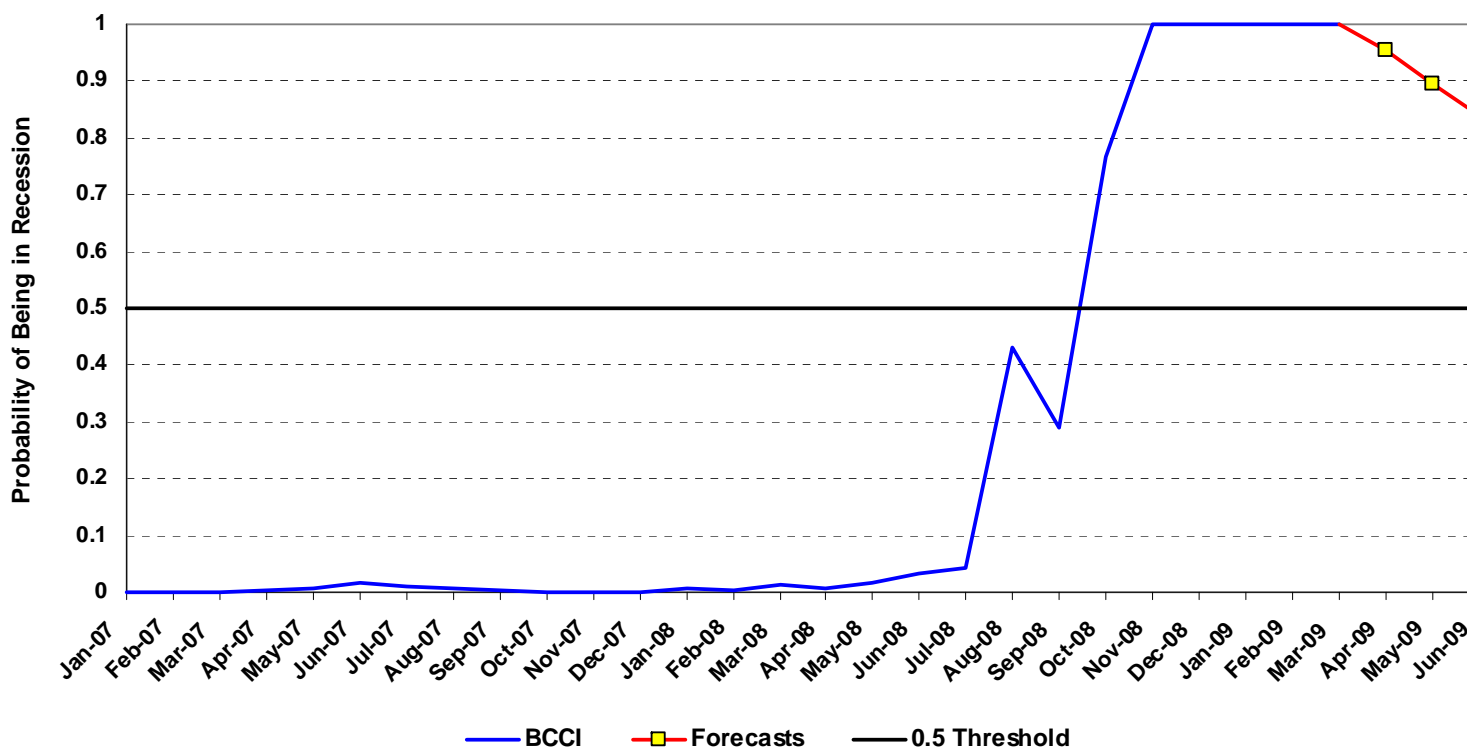
Euro area turning point coincident indicators

- simultaneous analysis of classical business cycle and growth cycle in the so called ABCD framework
- statistical dating of euro area turning points by means of a simple non parametric dating rule
- comparison of euro area and Member States dating to achieve a final statistical chronology ensuring the maximum degree of consistency between the two approaches
- preliminary investigation of alternative models for the construction of coincident turning point indicators for classical business cycle and growth cycle
- variables selection for the growth cycle coincident indicators
 - Employment expectation, Construction confidence indicator, Financial situation of the last 12 months, IPI, Imports of intermediate goods
- construction of the growth cycle coincident indicators (GCCCI) as a weighted mean of the transition probability returned by the five univariate two regimes Markov Switching models
 - equal weighting scheme
- variables selection for the business cycle coincident indicators
 - IPI, Unemployment rate, New cars registration
- construction of the business cycle coincident indicators (BCCI) as a weighted mean of the transition probability returned by the three univariate three regimes Markov Switching models
 - weighting scheme: 0.34, 0.46, 0.20 respectively

GCCI



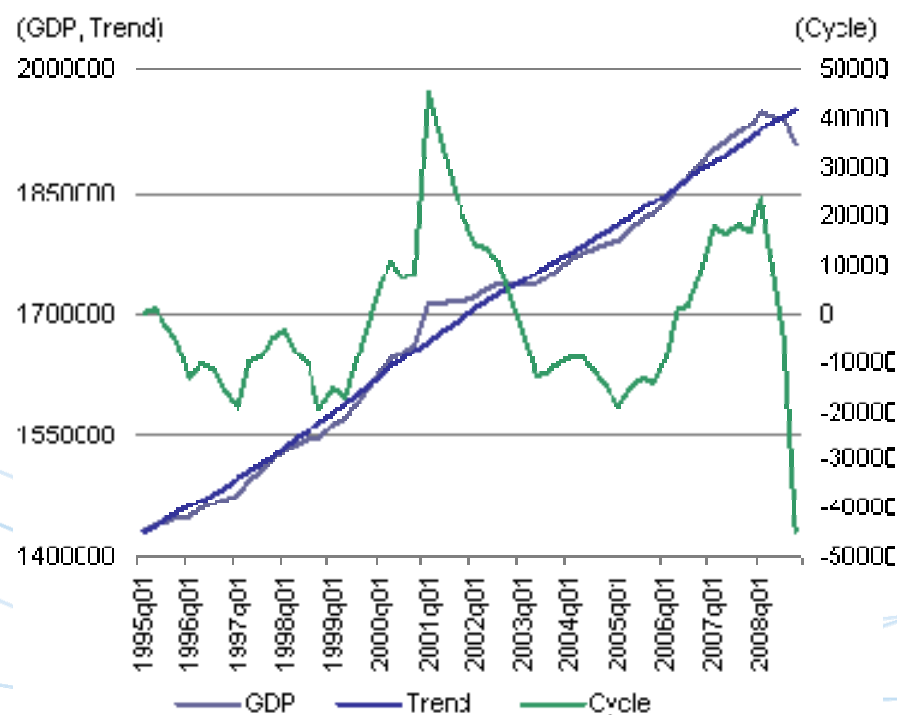
BCCI



Growth cycle estimates

- Crucial importance of growth cycle estimates for policy makers and analysts
 - monitoring the inflationary pressures
 - designing a monetary policy oriented to inflation control
- Trend–cycle estimated by means of filtering techniques
 - data revisions
 - end points estimates
- Ongoing Eurostat activities for the estimation of growth cycle
 - regular production of univariate growth cycle estimates
 - Hodrick-Prescott, Christiano-Fitzgerald, Unobserved Components models
- Studying alternative multivariate growth cycle estimates
 - structural VARs, Unobserved components

EA GDP trend-cycle decomposition using HP filter



Conclusions and improvement lines

- incorporating as much as possible national information into euro area models
- Investigating the possibility of constructing estimates using an indirect approach and working at Member States level
- investigating the usefulness of introducing additional data sources into our models
 - EuroMIND
- analysing more sophisticated data and models selection techniques
- testing alternative specification of turning point coincident indicators
 - reducing their lagging characteristics
- constructing a chronology and a turning point indicator also for the acceleration cycle
- studying alternative solutions to increase the reliability of endpoint estimates of detrending filters