

# **A system for dating and detecting turning points in the euro area**

**J. Anas, M. Billio, L. Ferrara and G. Mazzi**

**Discussion by**

**Michele Lenza**

**Econometric Modelling Division**

**European Central Bank**

# Aim of the paper

## 1) Dating the cycle ex post

- **business cycle** (BC, decrease in the level of economic activity)
- **growth cycle** (GC, decrease in the deviation of the level of economic activity from trend, output gap)

## 2) Early detection of turning points of the BC/GC

# Outline of the discussion

## **1) Dating the cycle ex post**

- Summary

- Point 1

## **2) Early detection of turning points of the BC/GC**

- Summary

- Points 2 - 4

# Dating the cycle ex-post

- Measures of economic activity: **GDP**, **IP** euro area
- Non-parametric (Bry-Boschan type) algorithm [**two** (five) consecutive **quarters** (months) of negative growth]
- **ABCD** approach: BC phase necessarily nested in a GC phase
- **Severity** and **synchronization** across euro area

# Point 1

## A comparison of ABCD-BC and CEPR dating

| <b>Paper</b> | <b>CEPR</b> |
|--------------|-------------|
| 74Q2-75Q1    | 74Q3-75Q1   |
| 80Q1-80Q4    | 80Q1-82Q3   |
| 81Q4-82Q4    |             |
| 92Q1-93Q1    | 92Q1-93Q3   |

- ABCD method shows marked differences with CEPR. In particular, in the 80's
- What explains the differences?

**CEPR report released on 2003**

GDP in the 80's recession was not always showing negative growth

➤ The CEPR experts committee noticed that while GDP stagnated, Employment and Investment were markedly decreasing

**Double dip recession in the paper due to failure to consider relevant measures of economic activity?**

# Point 1

## A comparison of ABCD-BC and CEPR dating

Figure 2 Euro area GDP vs investment, 1970-98

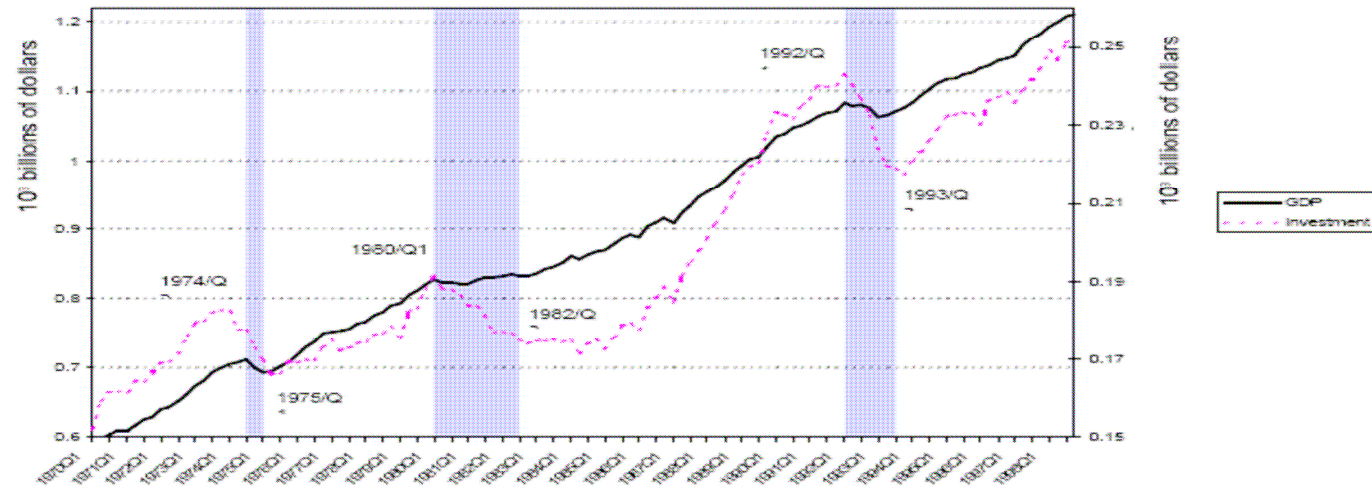
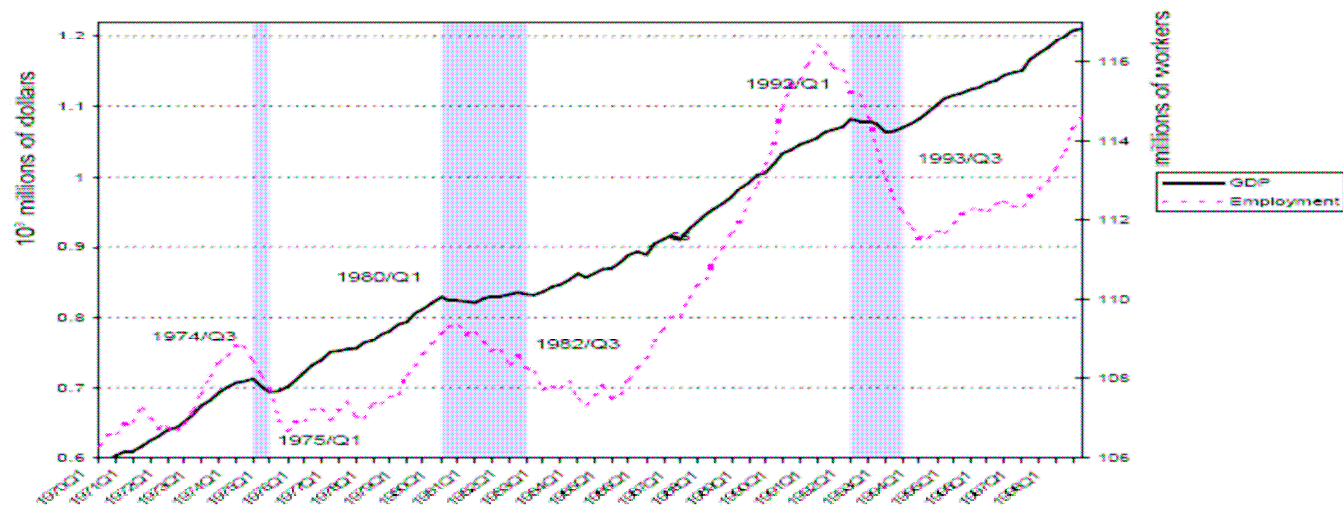


Figure 3 Euro area GDP vs employment, 1970-98



# Early detection of turning points

- Information: principal economic indicators, monthly variables
- Estimate **on the whole sample** FOR EACH INDICATOR a MS-AR model and the implied probability of being in a recession state (R)

$$y_t^m = \mu(S_t) + \sum_{i=1}^p \varphi(S_t) y_{t-i}^m + \varepsilon_t \Rightarrow P(R | y_{t-1}^m; \mu(S_t), \varphi(S_t), S_t \dots)$$

- Choose indicators that date the BC better (**ex post**)
  - **IP, unemployment rate and new car registrations**
- Aggregate the probabilities estimated from the indicators with weights proportional to measures of the **ex post** accuracy of the indicators
  - **Good tracking of recessionary episodes from the 1980's (but delays of several months)**

## Point 2

### Early detection: Real time analysis needed!

Can we trust the index for detecting turning points in real time?

- Estimation on full sample and revised data
- Model selection ex post
- Two of the three variables treated for breaks using full sample information
- Different timeliness of indicators disregarded

The empirical exercise does not allow us to understand how good is the indicator to track turning points in real time

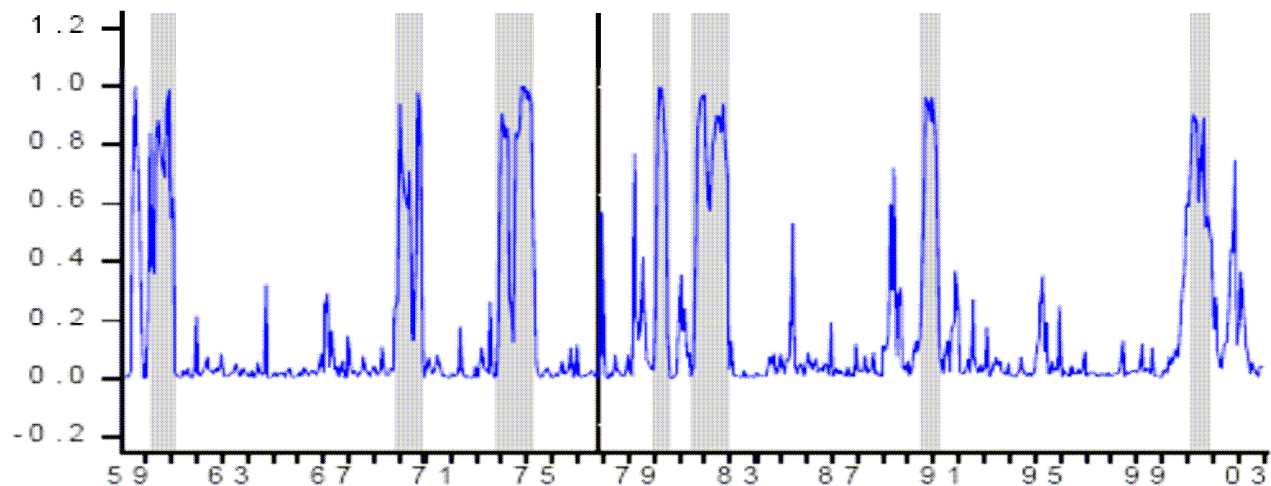
## Point 2

### Early detection: Real time analysis needed!

Chauvet and Hamilton (2005) propose a fully real time evaluation of the ability of filtered probabilities in capturing recessions in US

Idea: aggregate monthly info (MS-**VAR**) in order to tackle high frequency

Figure 9  
Current filter probabilities and NBER recessions based on real-time monthly data after 1977:12 and revised monthly data before 1977:12

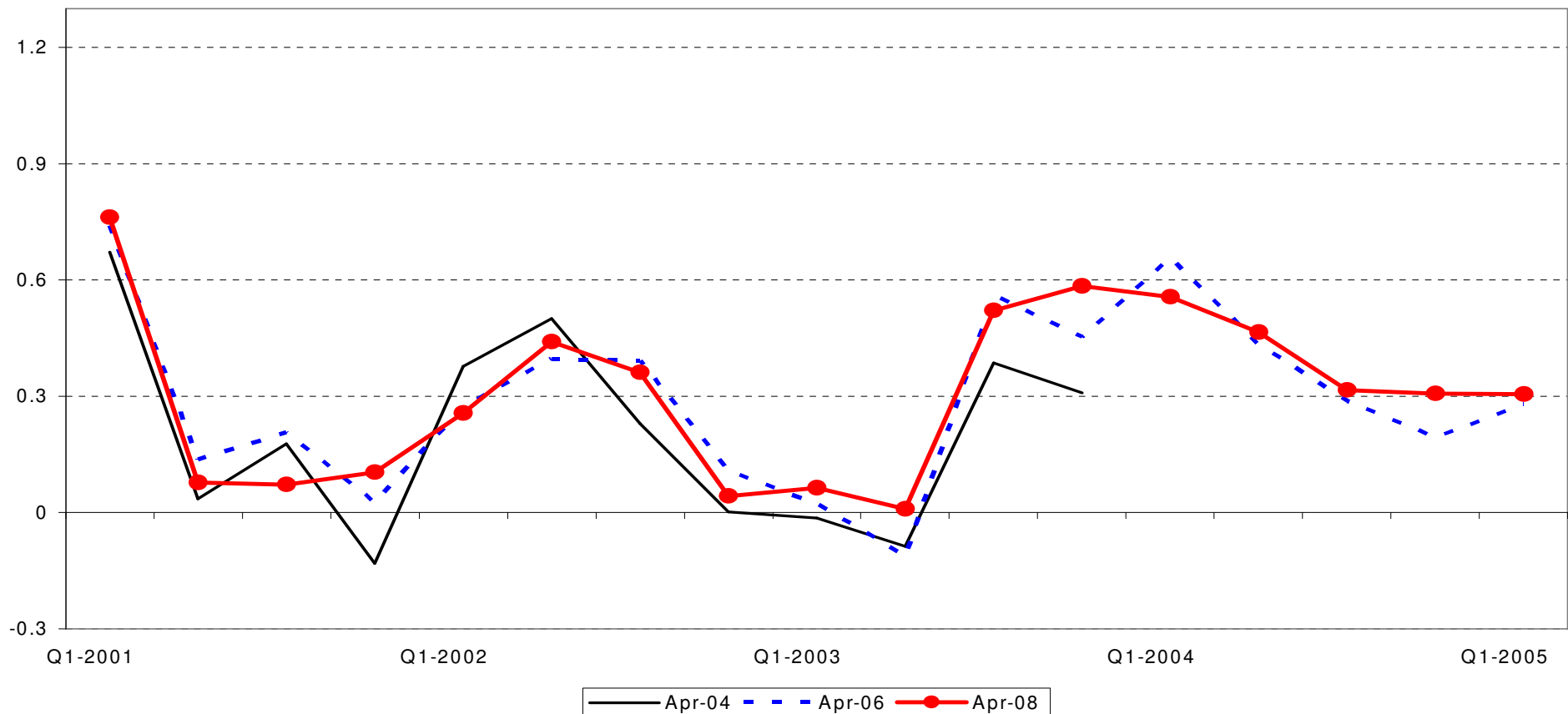


## Point 2

# Early detection: Real time analysis needed!

Revisions in euro area data: GDP in 2001 and 2003

### Euro Area GDP Quarterly Growth Rates



## Point 3

### Large information

Reliance on very little information. Large information allows to extract signals from noisy but timely variables in real time!

Giannone, Reichlin and Small (2008): use of a large amount of timely (daily, weekly, monthly) information to forecast US GDP growth

Idea: suppose that we have GDP ( $Y_t$ ) and a large set of monthly variables ( $X_t$ )

$$Y_{tq} = \Lambda F_{tq}^Q + e_{tm}$$

$$X_{tm} = \beta F_{tm}^M + a_{tm}$$

$F_{tq}^Q$  is obtained by time aggregation of  $F_{tm}^M$

## Point 3

### Large information

Extract “news” content about  $F_{tm}^M$  from  $X_{tm}$  by controlling out noise (“ $a_{tm}$ ”) and update estimate of  $F_{tm}^Q$  at each release of monthly (or higher frequency) information

Euro area applications (in use at the ECB) for GDP nowcasting: Banbura and Ruenstler (2007); Angelini, Camba-Mendez, Giannone, Reichlin and Ruenstler (2008)

Internal ECB work: financial variables (stock prices, yield curve) improve on nowcasts and one quarter ahead forecasts of GDP not including financial variables because of their timeliness in the evaluation sample 1999Q1 – 2008Q2

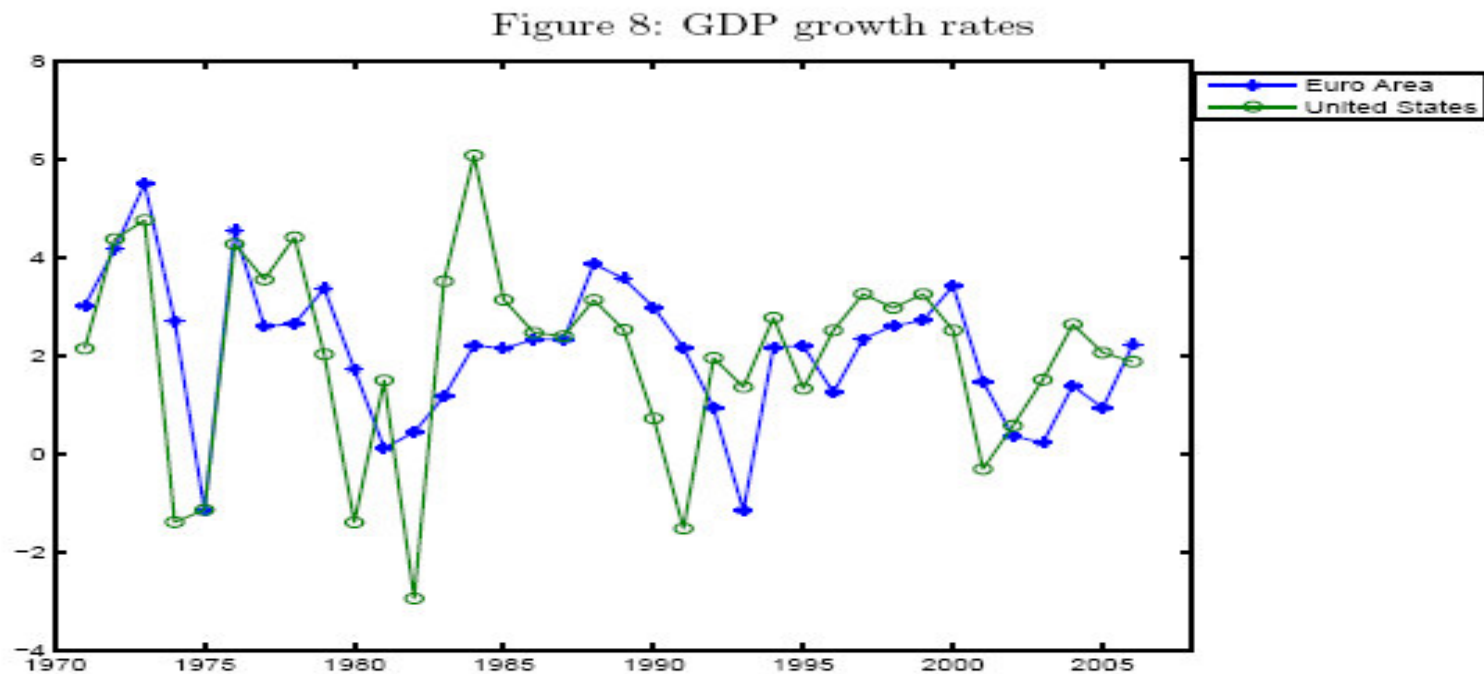
Financial variables completely disregarded in the paper.

## Point 4

### Large information: US – Euro Area

The paper also disregards another source of information on

the euro area business cycle: the US business cycle!!



## Point 4

### Large information: US – Euro Area

# Does US GDP help to forecast probabilities of recession in Europe? Focus on current recession

- Linear models (AR and Bivariate VAR). Harding and Pagan, 2002
- Estimate with Bayesian methods. Draw from the distribution of the parameters and derive the distribution of GDP forecasts.
- Probability of recession: probability of two consecutive quarters (including the current) of negative growth in the next year
- Data: EABCN Real time database and FED Philadelphia

# Point 4

## Large information: US – Euro Area

### Recession probabilities

