Green Shoots in the Euro Area -
A Real Time Measure

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Discussed by

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Literature and Motivation

- Markov Switching Dynamic Factor Models (MSDF):
    Chauvet (1995, 1998), Kim and Yoo (1995), Kim and Nelson (2008)

- Real time analysis: Chauvet and Hamilton (2006) and Chauvet and Piger (2008, 2010)

- This paper: extension of MSDF model that includes ragged edges and mixed frequencies

Goal

- Model generates coincident indicator and probabilities of recession

- Tool to forecast Euro area recessions in real time:
    - ➢ particularly, real time probabilities of recession

Model

- Mixture of quarterly GDP and Employment with Monthly hard and soft series

- Markov Switching in the drift parameter as in Chauvet (1995, 1998), Chauvet and Hamilton (2006) and Kim and Yoo (2005)

- Assume that autocorrelation of the common factor can be captured by regime switching rather than by autoregressive parameters: that is, assume AR(1) for factor as in Chauvet (1995, 1998), Chauvet and Hamilton (2006)

  o Chauvet (1995, 1998) and Chauvet and Hamilton (2006) find this is the best specification for real time analysis. More robust to structural breaks

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Discussion – Model Assumptions

- Revision shocks assumed to be independent
  - Reasonable?
    - Example for US data: van Dijk and Swanson (2006) test for rationality (efficiency and unbiasedness) versus errors-in-variable for IP. Findings: SA IP remains irrational for at least 12 months (i.e., past of the revisions can be used for prediction); b) fully revised IP data greater than preliminary data (agencies underestimate IP number); c) NSA preliminary data more correlated with fully revised data than SA.
    - Revision volatility is larger during recessions than expansions.

- Exclusion of benchmark revisions. How important are they?

US:

  - Business cycle asymmetries: non-benchmark revisions higher in expansions than recessions.

 - Break: mean non-benchmark revision for is much smaller post-1972.

Discussion – Model Assumptions (cont.)

- Assumption: arithmetic mean can be approximated by geometric mean. Is this reasonable on average? How is the approximation around turning points?

    o Tests, Simulation?

- Approximate filter

    o Properties?

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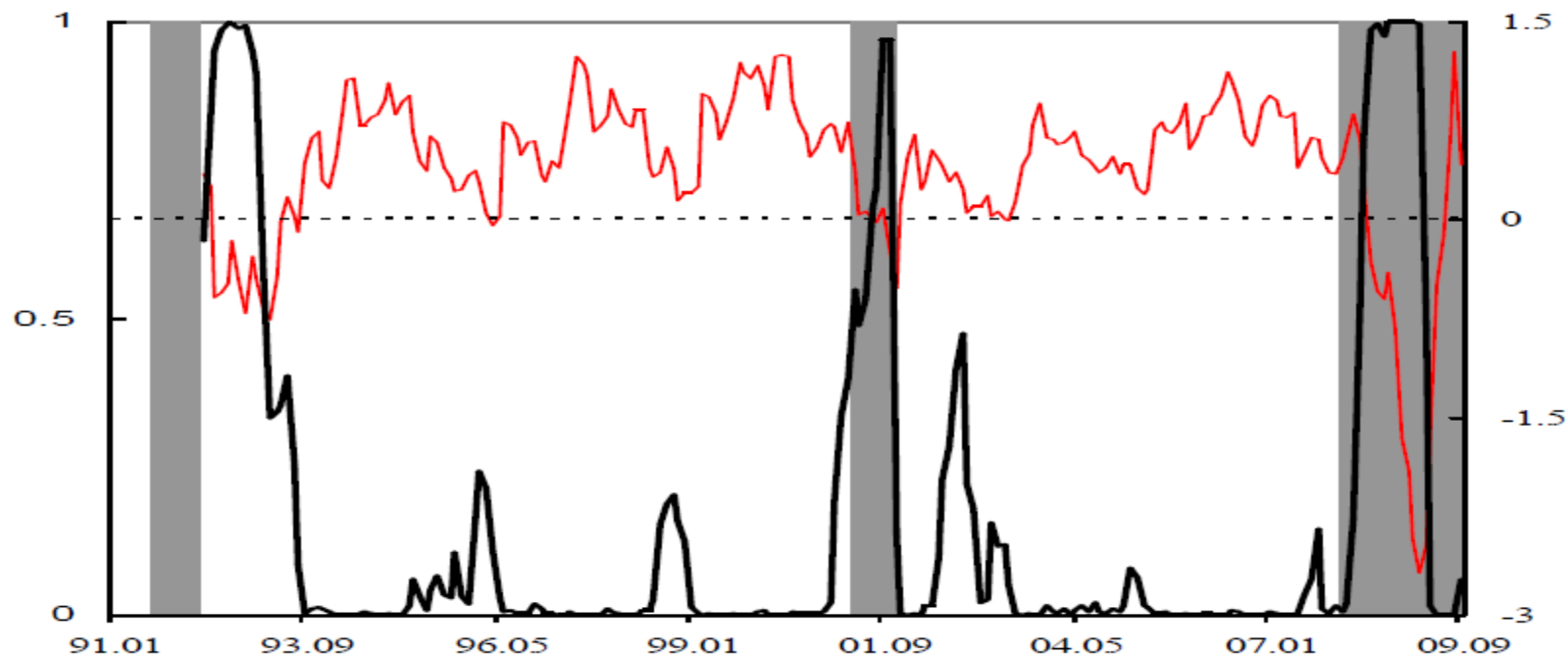   Results
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Results

- Eurocoin vs MSDF: highly correlated around turning points, but notice that MSDF switches earlier than Eurocoin
  - o Faster detection of turning point: common finding in MSDF
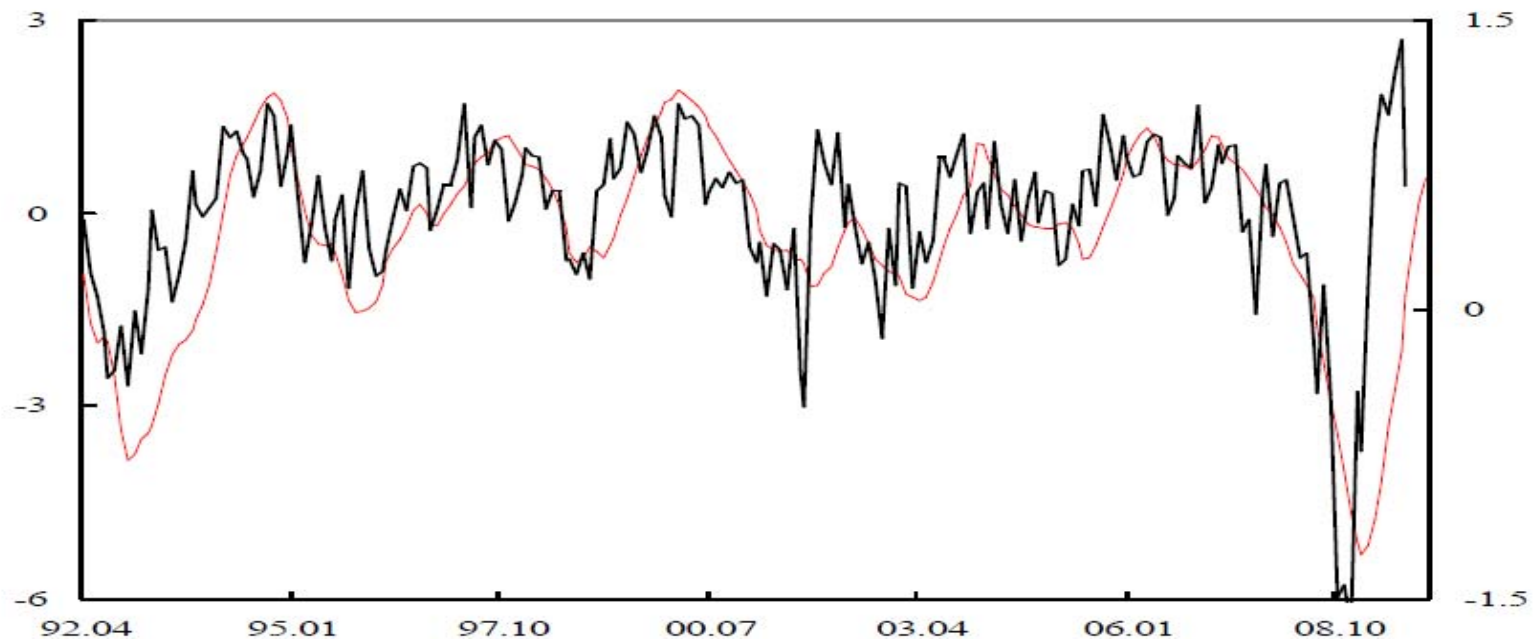
Results

- Best tool are the probabilities of recession to gauge information on weakness or strength of the economy

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Results – In Sample

In-sample forecast

- Using vintage May 13, 2009, paper compares forecasts with actual data in 2009:1, 2009:2, 2009:3:
    - Suggestion: extend analysis to include peak of last recession.

        - Peaks harder to forecast than troughs

- Compares turning points from models with NBER

    - How about turning points from the Euro Area (CEPR)?

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Results – Real Time

Real time forecast: vintage data from 2004:01-2010:01

- Compare MSDF with Euro-Sting using MSE, DM test.

    o Equal predictive accuracy not rejected

- Why not use asymmetric loss functions (e.g. LINLIN penalize more negative errors) and White's (2000) reality check

- Major advantage of DFMS model is to allow for asymmetries: larger forecast errors in other models are clustered around beginning and end of recessions points, exactly when this information is needed most. DFMS scores the best around turning points:

    o Turning point analysis, and tests of resolution, calibration, and comparison with benchmark: QPS, Murphy's test, Score Skill test

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Real Time Probabilities of Recession

- Real Probabilities of recession in the Euro area:

  - Recent recession: peak in July 2008; trough in April 2009

  - What is the lag in the availability of the most timely data? One month?

    - Make table with dates in which the announcement of turning points would have been made by the model, and which variables are calling tp

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Future Directions for Mixed Frequency MSDF

It will be useful to see some evaluation of the value-added of high-frequency data for business cycle monitoring. Suggestions:

- What is the gain of mixing high-frequency data?

- Is the real time identification of turning points improved? Paper shows that GDP series per se would have grossly missed the beginning and end of the last recession

- Is the announcement of turning points with mixed frequency MSDF more timely compared to DFMS model that uses only monthly data? Announcement due to quarterly data or readily available hard and soft data?

- Advantage: model can compute GDP growth forecast. Are nowcasts of specific variables in addition to GDP improved in real time?

MSDF for the US

- MSDF – Chauvet (1995, 1998): IP, Manufacturing and Trade Sales, Personal Income, Employment

- Smoothed probabilities of recession closely match NBER-dated recessions.

Probabilities of Recession up to July 2010
using data available in October 2010

Smoothed Probabilities of Recession

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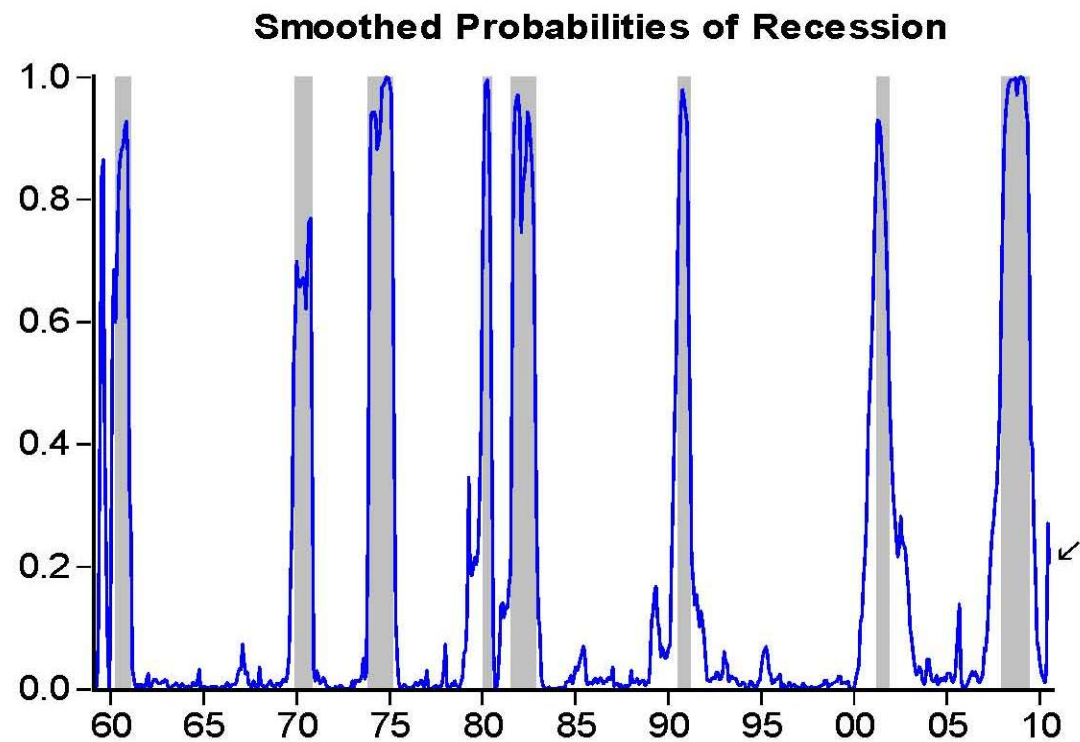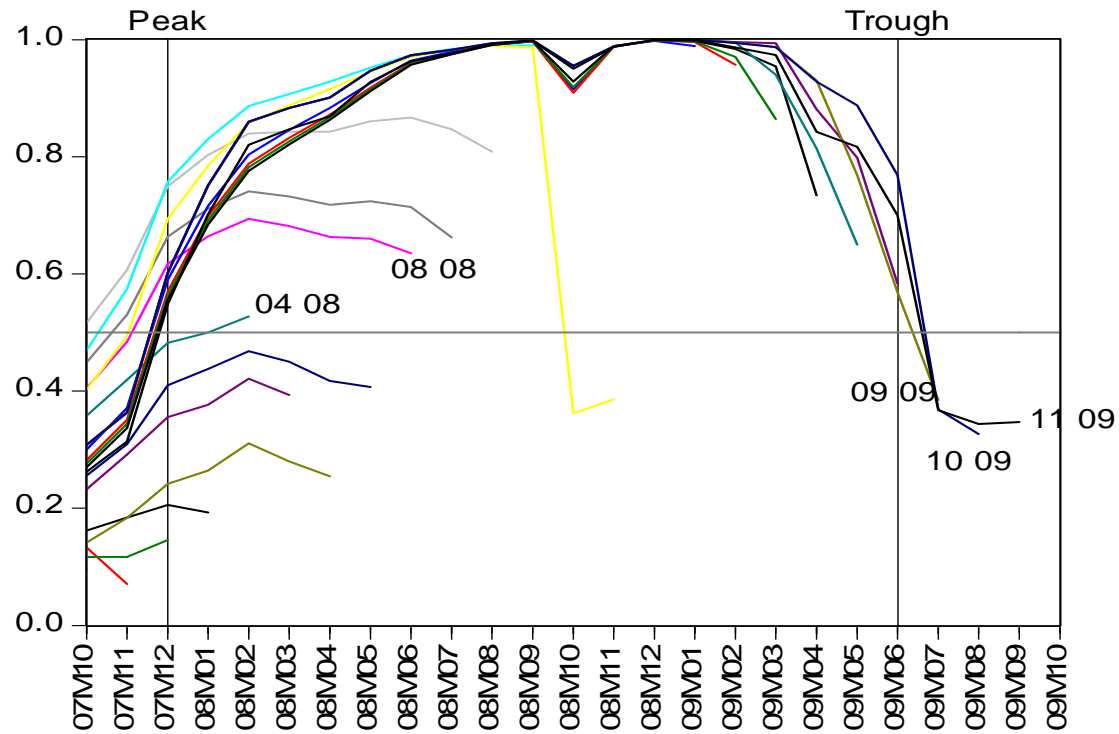
Real Time Probabilities of Recession for the US

- Uncertainty in real time regarding the true state of the economy:

- NBER announced that the recession ended in November 2001 only in July 2003 (20 months after the fact); the beginning of the 2007-2009 recession in December 2007, 12 months later (in December 2008); the end of the 2007-2009 recession in June 2009, 15 months later (in September 2010)

- MSDF very successful in calling turning points in real time (Chauvet and Hamilton 2006, Chauvet and Piger 2008, 2010)

- Real time recursive probabilities of a recession match closely the NBER recessions, rising around the beginning of recessions and decreasing around their end.

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Real Time Probabilities of Recession for the US

- The great advantage of the objective method is the timely announcement of turning points. The algorithm does very well in announcing the beginning and end of downturns compared with statements released by the NBER.

- Real time (Chauvet and Hamilton, Chauvet and Piger):

- The model would have beaten in calling the beginning of a recession in 3 out of 5 occasions (the start of the 1990, 2001 and 2007 recessions) and would have coincided in two cases (1980 and 1982 recessions).

- The advantage MSDF is even more significant for dating end of recessions. Model beats the NBER announcements in all occasions, with leads from 3 to 20 months. MSDF model would have announced end of recessions earlier than the NBER:
    - 1980 recession: 8 months; 1981-82 recession: 3 months; 1990-91 recession: 17 months; 2001 recession: 20 months, 2007-09 recession: 15 months

Real Time Probabilities – Recent Recession in the US

o The Real Time Probabilities of Recession – (4 variables: Total Civilian Employment)
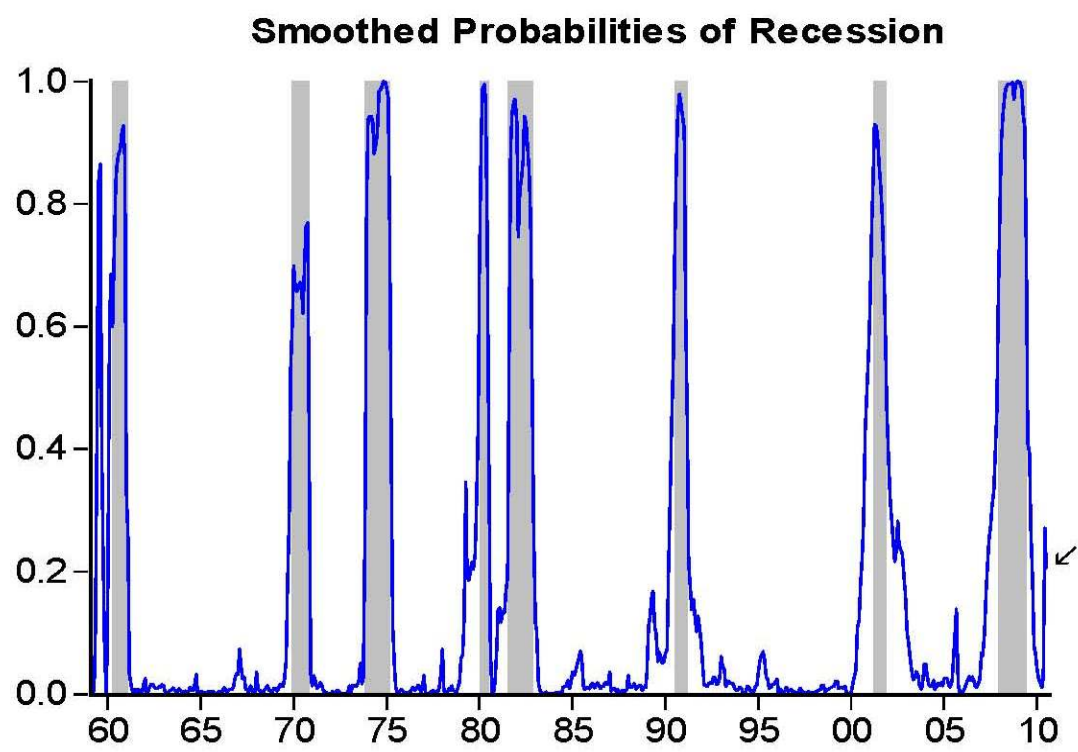
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Real Time Probabilities – Recent Recession in the US

Real Time Probabilities of Recession (4 variables: Payroll)

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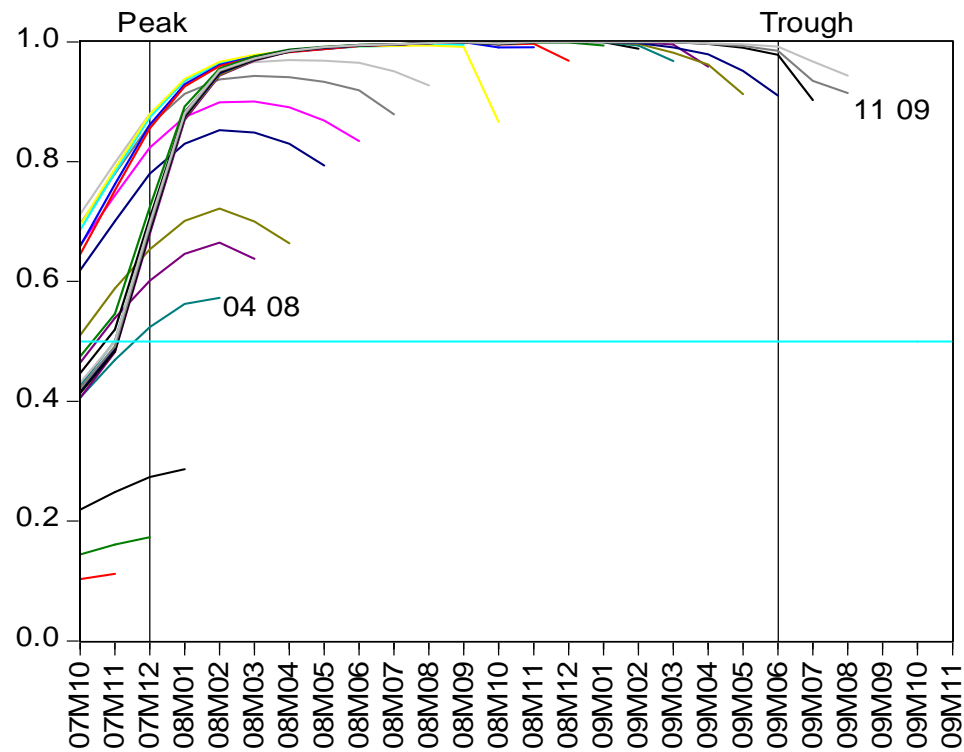
Last available information

Probabilities of Recession up to July 2010
using data available in October 2010

Smoothed Probabilities of Recession

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- Notice that the 1990-1991, 2001, and 2007-2009 recessions were followed by slow recovery. Recovery after 2001 and 2007-2009 recession sluggish due to payroll employment: "jobless recovery"

- Chauvet and Piger (2010): Probability of recession remain high during the recovery when payroll is used together with other coincident series, but not if other measures of employment are used (employment from household survey).

- Payroll is the series used by the NBER to date recessions. Delay in calling tp by NBER due to this series

- Real time signaling of turning points differs when using coincident variables with Payroll vs Household Survey employment.