ClubMed? Cyclical fluctuations in the Mediterranean basin

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Introduction

• The nature and the transmission properties of business cycles around the globe dramatically changed since the early 1980s.

- Emerging market economies have now a important role in the shaping world business cycles.

- Trade and financial linkages considerably increased: spillovers potentially much more relevant than in the past.

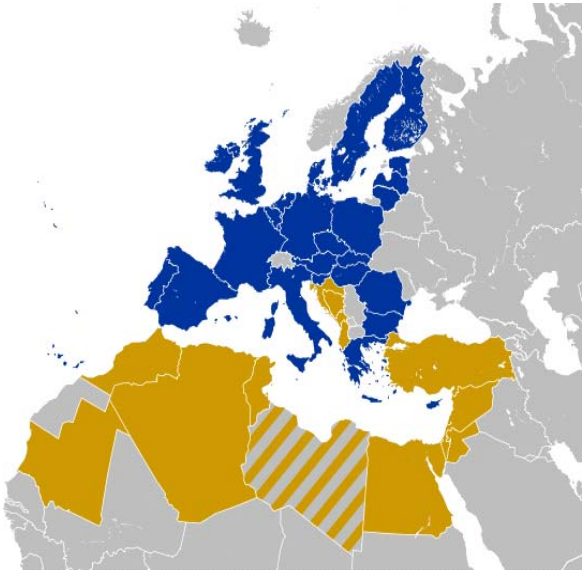
• Does the Mediterranean basin conforms to these international trends? Issue relevant from three different perspectives.

• Euromediterranean/The Union for the Mediterranean partnerships seek free trade agreements in the area, want to promote regional interdependences and intend to share the prosperity the new order generates.

i) How business cycles in the Mediterranean look like?

ii) Would increase interdependencies change their nature and features?

The Euromediterranean partnership (Barcelona process)



• Kydland and Zarazaga, 2002, Aguiar and Gopinah, 2007: business cycles in developed and developing countries alike; differences in the productivity process are sufficient to explain existing cyclical differences.

Garcia-Cicco et al., 2010, Chang and Fernandez, 2010, and Benczur and Raftai, 2010: heterogeneities are pervasive; structural differences generate cyclical differences.

i) Are cyclical fluctuations in less developed Mediterranean countries similar to those of the most advanced southern EU members?

ii) What role national and idiosyncratic factors play in explaining the differences?

• Hebling and Bayoumi, 2003, Stock and Watson, 2003, Kose et al., 2001, 2009, Canova et al., 2007, Walti, 2009, Altug and Bildirici, 2010: are business cycles converging or decoupling ?

Two hypotheses:

- Increased cross-border interdependences should lead to convergence.

- Increased economic integration could lead to more asynchronous output fluctuations (see e.g. Heathcothe and Perri, 2004).

i) Are business cycles of the Mediterranean basin converging or decoupling? Will increased interdependencies bring about cyclical convergence?

ii) What is the expected evolution of Mediterranean business cycles in the years to come?

This paper

- Sheds some light on the nature of business cycle fluctuations in the Mediterranean region.

- Analyzes time profile of the estimated indicators to assess convergence in light of existing theories.

- Studies the relative importance of regional and national factors in determining the features of cyclical fluctuations.

- Predicts the future paths of cyclical fluctuations in the region and compares them with WEO predictions.

Results

- Important heterogeneities are present. Best is a model with three regional indicators. Fluctuations in Eastern and Southern countries differ from those of the major European countries in the area in terms of volatility, persistence and synchronicity.

- The time variations in the regional indicators are inconsistent a pure convergence or a pure decoupling view. Both phenomena are present, are local in nature, temporary and revertible.

- Country specific and idiosyncratic influences matter. If we exclude the recent 2008 episode, little evidence that their relative importance has been reduced over time.

- If the current trends persist, GDP growth will be not show any tendency to converge. GDP growth will be persistently below average in the major European countries of the region. Countries in the East side will quickly return to above average growth rates. Arab and North Africa countries will return to their average growth rates, ending the decade of exceptional growth rates.

Methodology

Panel TVC-VAR Canova and Ciccarelli (2004, 2009).

$$y_{it} = D_{it}(L)Y_{t-1} + F_{it}(L)W_{t-1} + e_{it}$$

$i = 1, ..., 15$ countries, y_{it} is a 3×1 vector, W_t are the exogenous variables.

(1) Coefficients specific to each variable-country.

(2) Coefficients time-varying.

(3) Allow for lagged interdependencies.

Overparametrized!!

Hierarchical structure

$$Y_t = X_t \delta_t + E_t \qquad E_t \sim N(0, \Omega)$$

$$\delta_t = \Xi \theta_t + u_t \qquad u_t \sim N(0, \Omega \otimes V)$$

$$\theta_t = \theta_{t-1} + \eta_t \qquad \eta_t \sim N(0, B_t)$$

- Use Bayesian methods for estimation.

- Prior densities for (Ω, B_0, θ_0) proper but loose.

- E_t, u_t, η_t uncorrelated.

- θ_t are factors driving the coefficient vector δ_t

• Idea: shrink δ_t into θ_t (much smaller dimensional vector); Ξ_j matrices with elements equal to zero or one.

- θ_{1t} captures movements in the coefficients vector δ_t common to all countries and variables (a 1×1) or to all variables of countries in a region (a $s \times 1$ vector).

- θ_{2t} is the country specific component (a 15×1 vector).

- θ_{3t} is the variable specific component (3×1 vector).

- θ_{4t} is the exogenous variable component (1×1 vector).

- u_t captures unmodelled features of the coefficients vector.

Observable Index model

$$Y_t = \mathcal{Z}_{1t}\theta_{1t} + \mathcal{Z}_{2t}\theta_{2t} + \mathcal{Z}_{3t}\theta_{3t} + \mathcal{Z}_{4t}\theta_{4t} + v_t = \mathcal{Z}_t\theta_t + v_t$$

$$\mathcal{Z}_{it} = X_t\Xi_i,\ v_t = E_t + X_t u_t$$

- Regressors $\mathcal{Z}_t$ are averages of lags of the VAR variables. Dynamically span lagged interdependencies between variables and countries.

- θ_t vector time varying loadings (to be estimated).

- $\mathcal{Z}_{1t}\theta_{1t}$ observable common indicator.

- $\mathcal{Z}_{2t}\theta_{2t}$ observable national indicators, etc.

Data

- 1980-2009. Demeaned and standardized growth rates of GDP, consumption and investment, PPP adjusted.

- Use Portugal, Spain, France, Italy, Greece, Macedonia, Albania, Cyprus, Turkey, Israel, Syria, Egypt, Tunisia, Algeria, Morocco.

- Exogenous variables: world GDP growth (WEO)

- VAR: 1 lag for all endogenous and exogenous variables.

One or more cycle?

Model	M1	M2	M3	M4
Marginal Likelihood	-1453	-1463	-1451	-1464

- Model M1 has one common factor.

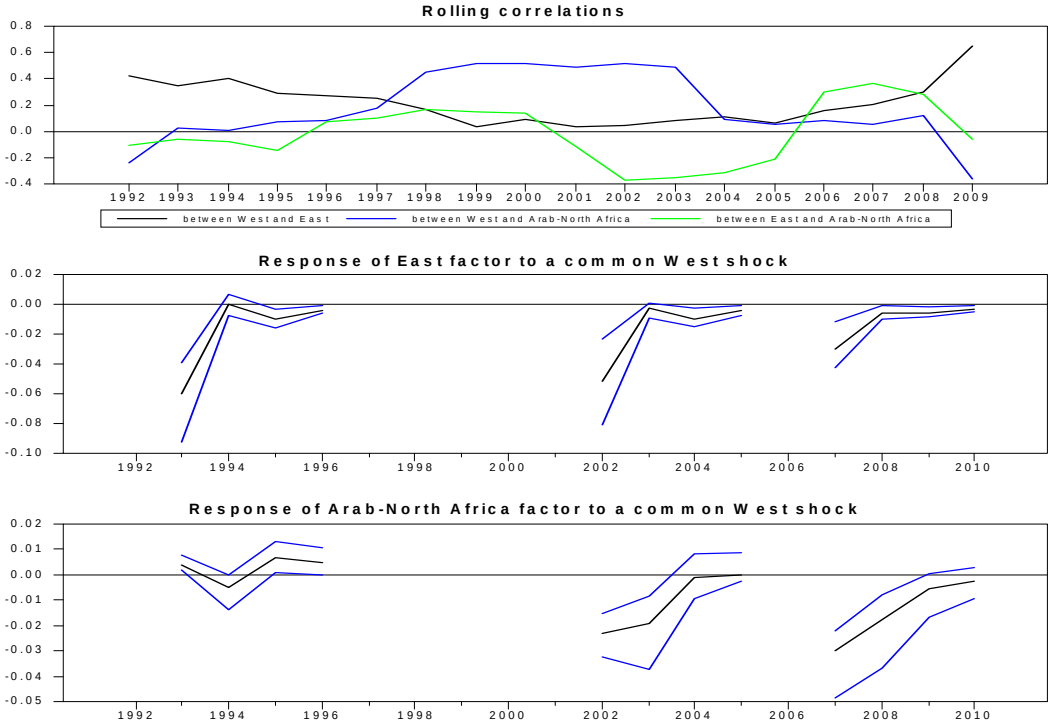
- Model M2 has one factor for Euro countries and one for the others.

- M3 has one factor for the coefficients of the variables of Portugal, Spain, France, Italy and Greece, one for the coefficients of the variables of Malta, Cyprus, Albania, Macedonia, Turkey and Israel; and one for the coefficients of the variables of the other countries.

- M4 has two common factors depending on whether initial real GDP of the country was above or below the mean (above the mean are France, Italy, Spain, Portugal, Greece, Cyprus, Malta, Israel and Macedonia).

Convergence or Decoupling?

Figure 1. Rolling correlations and impulse responses



Conclusions 1

- Cyclical dynamics independent of initial conditions or monetary arrangements.

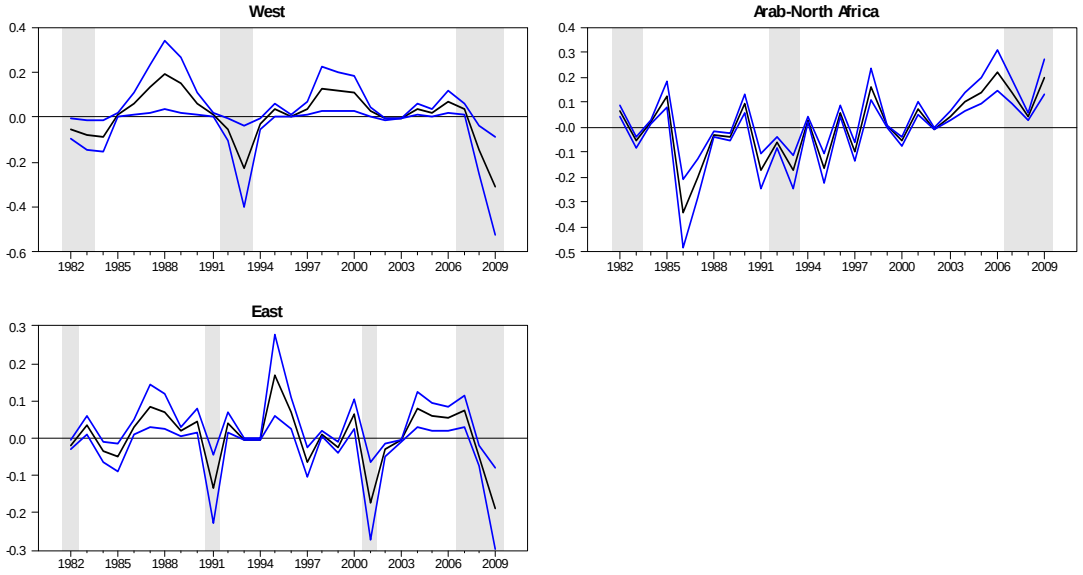
- Business cycles in different regions of the Mediterranean have different dynamics. Synchronicity up and down. In general, Arab-North Africa becoming generally more correlated and the East generally less correlated with the West.

- Big change in the last two years of the sample: the Arab-North Africa region is escaping the crisis; the West and the East are badly hit.

What are the properties of regional cyclical indicators?

Figure 2. COMMON FACTORS

posterior median and 68% Bayesian credible interval



- Business cycles in different regions of the Mediterranean are different in terms of volatility, serial correlation and regional synchronicity.

- The regional indicators do not show any clear tendency to become more similar over time nor to diverge.

What drive cyclical fluctuations?

Table 2: Percentage of the variance explained by the regional indicators

		ΔY	Δi	ΔC
West	France	0.85	0.81	0.55
	Italy	0.67	0.79	0.65
	Spain	0.94	0.93	0.92
	Portugal	0.61	0.51	0.43
	Greece	0.28	0.36	0.39
East	Cyprus	0.33	0.09	0.21
	Turkey	0.40	0.31	0.24
	Israel	0.44	0.03	0.20
	Albania	0.08	0.03	0.08
	Macedonia	0.05	0.21	0.11
Arab- North Africa	Syria	0.03	0.27	0.01
	Egypt	0.10	0.26	0.10
	Morocco	0.15	0.38	0.03
	Algeria	0.24	0.41	0.23
	Tunisia	0.13	0.20	0.06

Figure 3. Historical decomposition. West

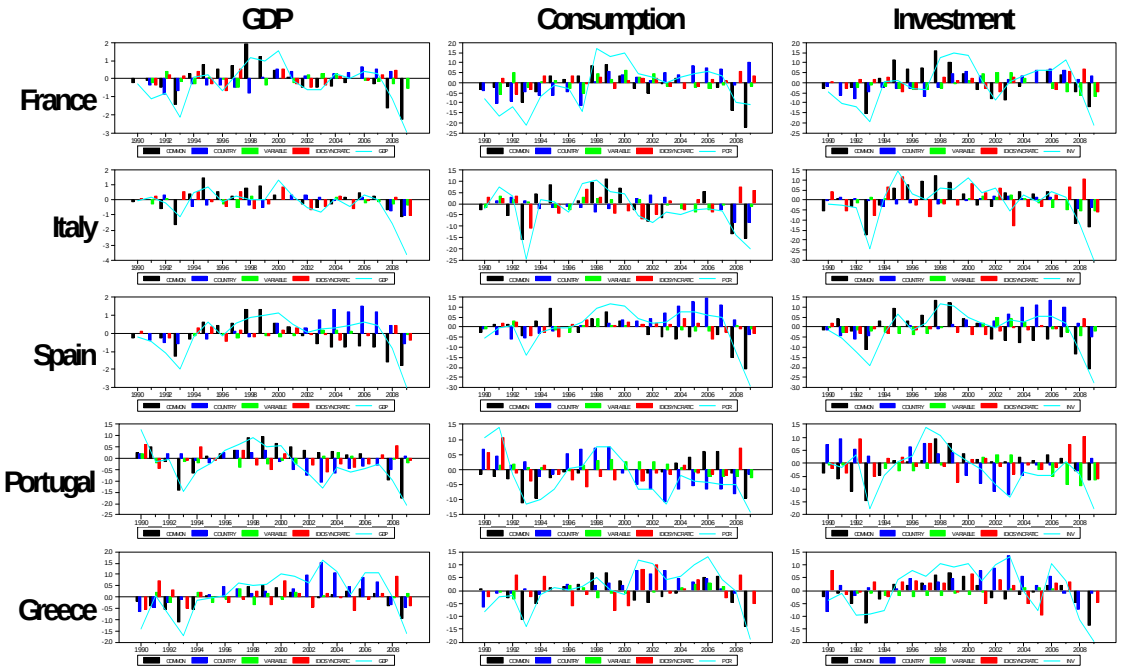


Figure 4. Historical decomposition. East

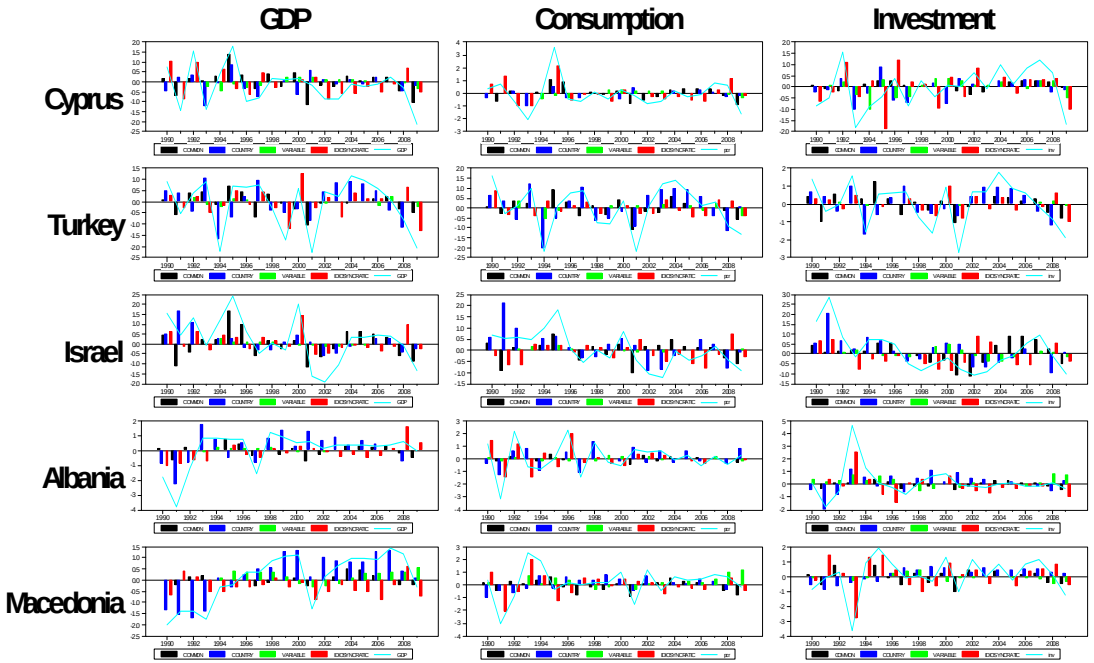
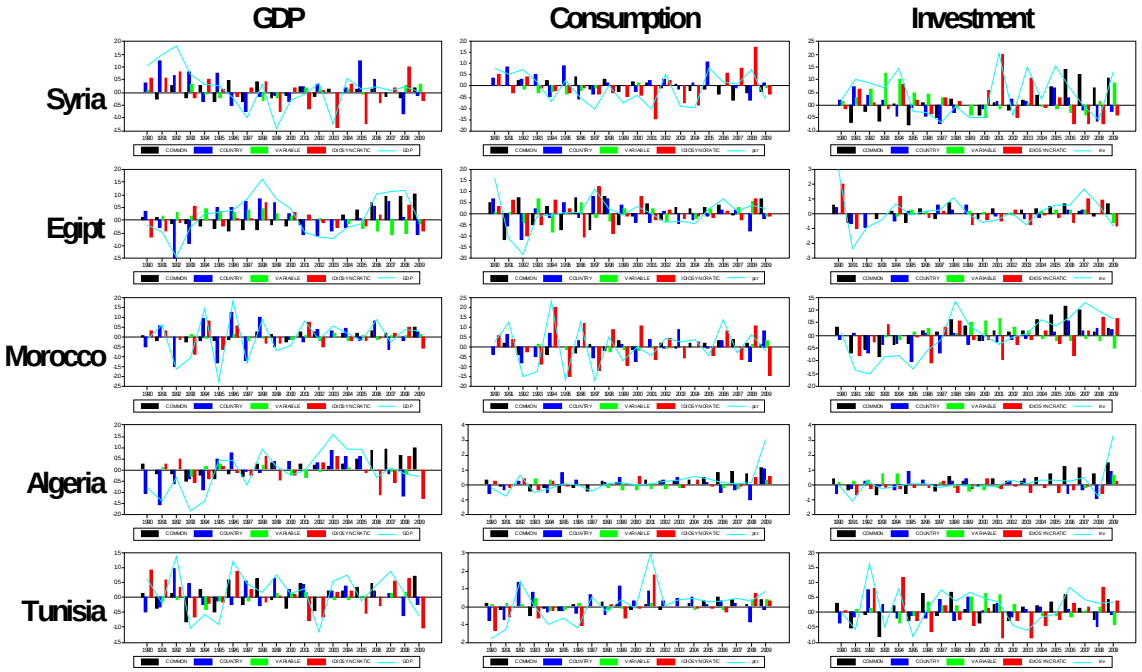


Figure 5. Historical decomposition. Arab-North Africa



Conclusions 2

- Regional factors present but their importance in explaining cyclical fluctuations in GDP, consumption and investment growth varies with the country and the period.

- National influences important for many countries. They tend to counteract the common regional patterns.

- The relative importance of country specific influences is not consistently declining over time.

The dynamics of business cycles in the Mediterranean are heterogeneous and show little evidence of convergence, even at a regional level.

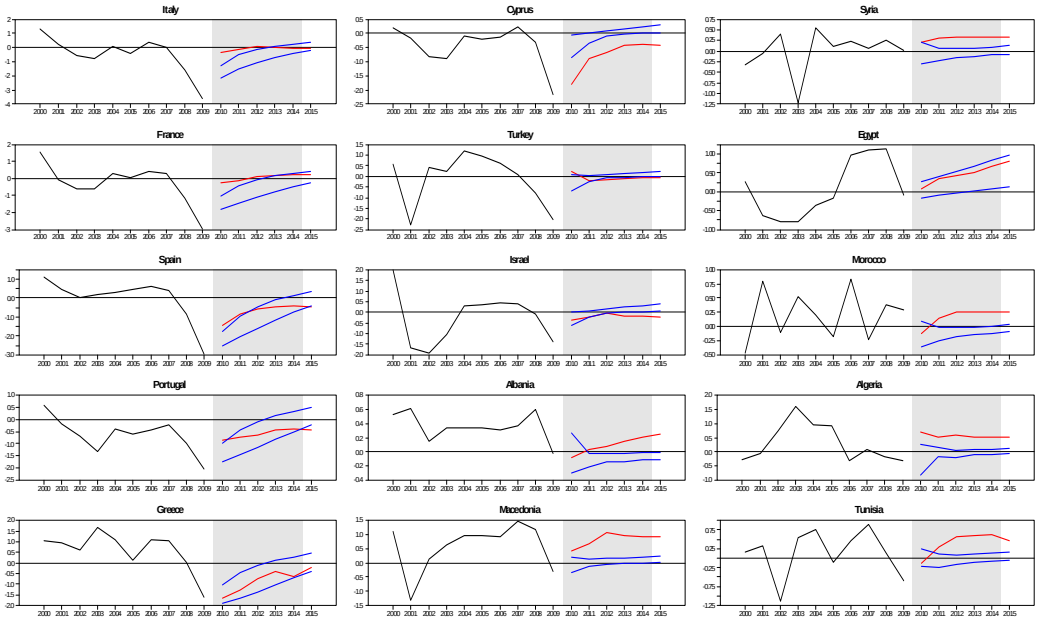
What should we expect to happen next?

- Will these tendencies continue?

- What do we expect to happen following the current recession?

- Condition on 2009 information, use world GDP growth projections.

Figure 6. Forecasting GDP: comparison with the WEO



red line = WEO; blue line = 95% bayesian credible interval

Conclusions 3

- The West will suffer longer from the current downturn.

- The East will quickly recover and have above average growth

- Expansion phase of the Arab-North African blocks will come to an end.

Sensitivity analysis

- Use a larger cross section (23 countries) for a shorter period 1998-2009.

- Are conclusions robust?

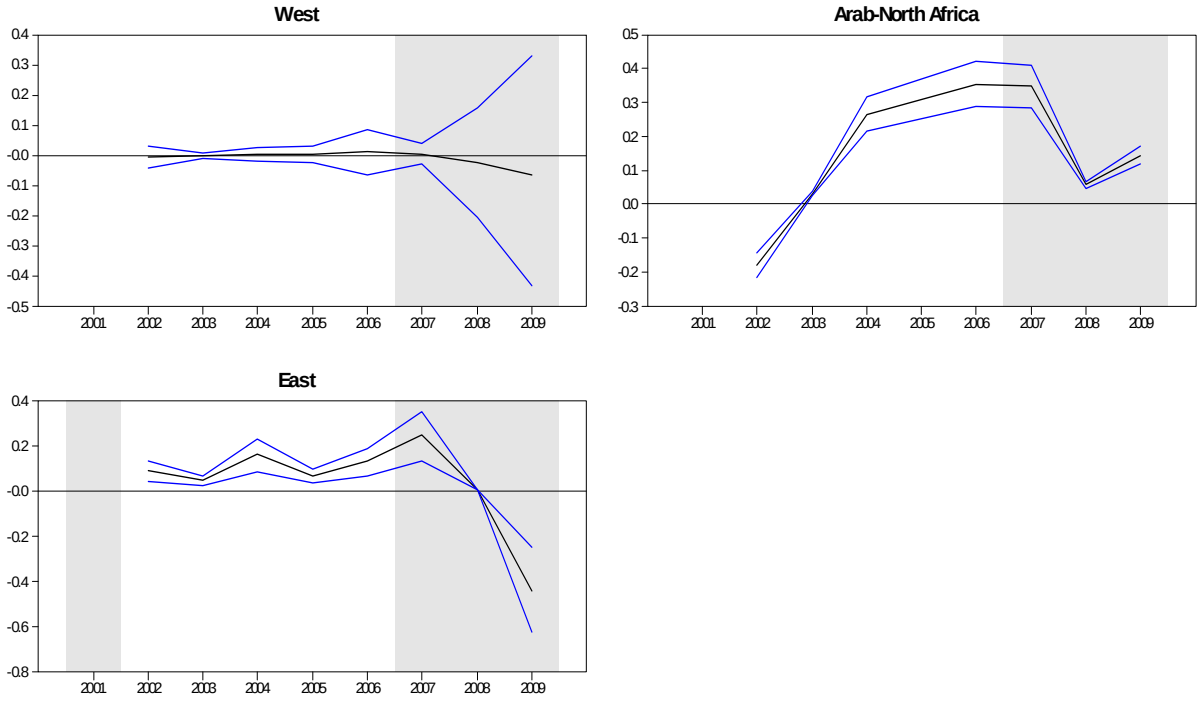
i) Model with three regional factors still preferable.

ii) Time path of regional indicators similar (West bands larger).

iii) National factors still very important.

Figure 7. COMMON FACTORS

posterior median and 68% Bayesian credible interval



Summary

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- The time variations in the regional indicators are inconsistent with a pure convergence or a pure decoupling view. Both phenomena are present, are local in nature, temporary and revertible.

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- If the current trends persist, GDP growth will be not show any tendency to converge.

Policy Implications

- Heterogeneities in business cycle dynamics consistent with the existence of important structural differences. None of the mechanisms emphasized by the literature (TFP differences, differences in the sensitivity to interest rate shocks, financial market frictions) is likely to be responsible for the heterogeneities.

- Convergence (or decoupling) is far from being linear process. Combination of factors other than trade could matter (remittances, tourism). [Trade interdependences have not increase much over the last 10 years. Remittances and tourism very important in some countries (remittances 10 percent of GDP in Morocco, Tourism industry 35 percent of employment in Tunisia)].

- Country specific features matter: good or a bad news? It depends if one has in mind regional insurance mechanisms (in which case cyclical heterogeneities are good) or currency area mechanisms (in which cyclical heterogeneities are bad).

- Process of integration and shared prosperity, envisioned by the Euro-Mediterranean partnership, has still a long way to go to materialize.