DISCUSSION PAPER SERIES

No. 9382

DO INSTITUTIONS AND CULTURE MATTER FOR BUSINESS CYCLES?

Sumru Altug and Fabio Canova

INTERNATIONAL MACROECONOMICS

Centre for Economic Policy Research

www.cepr.org

Available online at: **www.cepr.org/pubs/dps/DP9382.asp**

ISSN 0265-8003

DO INSTITUTIONS AND CULTURE MATTER FOR BUSINESS CYCLES?

Sumru Altug, Koç University and CEPR
Fabio Canova, EUI and CEPR

Discussion Paper No. 9382
March 2013

Centre for Economic Policy Research
77 Bastwick Street, London EC1V 3PZ, UK
Tel: (44 20) 7183 8801, Fax: (44 20) 7183 8820
Email: cepr@cepr.org, Website: www.cepr.org

CEPR Discussion Paper No. 9382

March 2013

ABSTRACT

Do Institutions and Culture Matter for Business Cycles?*

We examine the relationship between macroeconomic, institutional, and cultural indicators and cyclical fluctuations for European, Middle Eastern and North African Mediterranean countries. Mediterranean cycles are different from EU cycles: the duration of expansions is shorter; the amplitude and the output costs of recessions are larger; and cyclical synchronization is smaller. Differences in macroeconomic and institutional indicators partly account for the relative differences in cyclical synchronization. By contrast, differences in cultural indicators account for relative differences in the persistence, the volatility and the synchronization of cyclical fluctuations. Theoretical and policy implications are discussed.

JEL Classification: C32 and E32
Keywords: business cycles, institutions and culture, Mediterranean countries and synchronization.

Sumru Altug
College of Administrative Sciences & Economics
Koç University
Rumelifeneri Yolu, Sariyer
Istanbul
TURKEY

Email: saltug@ku.edu.tr

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=132739

Fabio Canova
Department of Economics
European University Institute
Villa San Paolo
vial della Piazzuola 43
50133 Firenze
ITALY

Email: fabio.canova@eui.eu

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=114830

*We would like to thank Tullio Jappelli, Marco Manacorda, Johannes Spinnewijn, Matteo Ciccarelli, Evi Pappa and the participants of seminars at the University of Cyprus and CRETE 2012 for comments and suggestions. Part of the work was conducted while Canova was also associated with ICREA-UPF, the Barcelona GSE and the CREMED. Canova acknowledges the financial support of the CREMED, the Barcelona GSE and the Spanish Ministry of Science and Technology (grant ECO2009-08556).

Submitted 03 March 2013

> We can all conjure up images of a Mediterranean jeweled with islands, its coastlines indented by harbors, those schools for mariners, an invitation to travel and trade. In fact, the sea did not always in the past provide that 'natural link' between countries and peoples so often described. ... The Mediterranean world was long divided into autonomous areas, only precariously linked. ... These differences have often only been partly created by geography. ... It is the historical past, persistently creating differences and particularities, that has accentuated these peculiarities ... (p.23)
>
> F. Braudel, *The Mediterranean in the Ancient World*

1 Introduction

Understanding the nature of economic fluctuations and their regional interconnections has been gaining importance as the process of globalization continues unabated. By now, a number of papers have documented the cyclical features of different regions of the world (see e.g. Aguiar and Gopinath 2007; Kose, et al. 2010; Benczur and Ratfai 2010; Garcia Cicco et al. 2010; Altug and Bildirici, 2012). While south-east Asia and Latin America have been extensively studied, the Mediterranean region has received scant attention and little is known about the structure of cyclical fluctuations in the region and the cross-region transmission of cyclical shocks. But, why should one care about the Mediterranean?

Recent European Union (EU) initiatives, in particular, the Union for Mediterranean partnership (see www.eeas.europa.eu/euromed) are generating interest in the structure of cyclical fluctuations of the region and in the mechanisms that may generate cyclical convergence. In the mind of policymakers, the latter appears to be an important prerequisite to harmonize non-EU Mediterranean countries into the EU and efforts in this direction, such as liberalizing trade and promoting regional interdependencies, have been the pillars around which policy actions have been designed.

Two recent studies have looked at Mediterranean business cycles. Canova and Ciccarelli (2012) establish the existence of four regional factors, covering the major European countries, the Eastern, the Middle Eastern and the Southern Mediterranean countries. These factors possess disparate cyclical dynamics and fail to display the increased cross-region linkages characterizing other areas of the world. Canova and Schlaepfer (2011) find significant time variations in the cyclical fluctuations but fail to connect these changes with the changes in trade and financial linkages in countries which have signed preferential agreements with the EU.

This paper takes a comparative look at the determinants of cyclical fluctuations in the Mediterranean. We document that business cycles in the region are different from those of the EU and show that standard macroeconomic indicators, such as trade and financial links, credit and development measures, cannot account for the differences we observe. Our interest on institutional and cultural factors is motivated in part by current events, such as the Arab Spring uprising, and by the North-South divide, that is increasingly shaping the discourse on the European debt crisis. The Mediterranean is a unique region as it incorporates societies and economies organized along widely differing political systems and constitutions, regional alignments, cultural and religious faiths. Thus, it is natural to examine whether business cycles, institutions and culture are interconnected.

The idea that institutions, defined as formal rules and informal constraints, affect economic activity is well established, see e.g. North (1990), Knack and Keefer (1995), Hall and Jones (1999), Acemoglu et al (2001) or Easterly and Levine (2003), amongst others. Similarly, the idea that culture defined as "socially transmitted knowledge, values, and other factors that influence behavior" [1] is inextricably linked with economic performance dates back to Weber (1904) and has received attention in the work of Greif (1994), Guiso et al. (2006), Fernandez and Fogli (2009), and Tabellini (2010), among others. A number of authors have also stressed the importance of informal institutions and cultural traits for understanding labor market dynamics, see e.g. Blanchard and Summers (1986) or Bentotilla and Ichino (2008). A recent New York Times article[2] suggests that Spanish households have managed to lessen the impact of unemployment episodes of individual family members because they engage in intra-family transfers. Alesina and Giuliano (2010) study the impact of family ties on economic and social indicators. An earlier literature has also examined the effect of monetary and fiscal institutions on macroeconomic outcomes - see, for example, Grilli et al. (1991); Alesina and Summers (1993); Cukierman et al. (2002). However, there has been little work directly relating such factors with observed cyclical activity. Two exceptions are Canova et al. (2012), who examine whether the emergence of Euro area institutions affected European business cycles, and Altug et al. (2012b), who study how institutions shape business cycles of a large set of countries.

In this study we consider European, Middle Eastern and North African Mediterranean countries. A mixed sample of countries is needed to explicitly measure the differential impact of macroeconomic

[1] See North (1990, p. 37).

[2] "Spain's Jobless Rely on the Family, A Frail Crutch,"by Suzanne Daley, July 28, 2012.

conditions, institutional features and cultural values on the cyclical fluctuations of the region. We document the cyclical features of EU, non-EU, and Mediterranean countries as well as of three subgroups - non-EU Mediterranean, Middle East and North African - and ask whether differences with the EU in the average amplitude, duration, cumulative output changes (gain/loss), and in the bilateral synchronization of turning points can be associated with differences in macroeconomic, institutional and cultural indicators. We use rank correlation analysis to measure the strength of the relationship for three reasons: solid statistical statements can be made even in small samples; it is possible to condition on factors that may affect cyclical dynamics; and we can give a causal interpretation to the results.

Mediterranean cycles differ from those of EU in terms of duration, amplitude and synchronicity, but there is considerable regional heterogeneity. Cycles in Middle Eastern and North Africa countries are better correlated with those of the EU than those of their regional neighbors. Relative differences in macroeconomic indicators are, on the whole, incapable of explaining differences in durations, amplitudes and cumulative output changes across different phases of the business cycle. However, differences in the credit to GDP ratio, the saving to GDP ratio, and industry share of value added are related to differences in cyclical synchronization. Our institutional indicators explain another portion of differences in the synchronization relative to the EU. On the other hand, differences in some cultural values such as uncertainty avoidance and those related to family ties matter for differences in the amplitude and cumulative output loss in contractions, especially for the non-EU Mediterranean countries. In particular, the larger the difference in attitudes regarding the importance of family ties, the smaller is the relative difference in the severity of contractions. Differences in cultural attributes relative to the EU also matter for differences in cyclical synchronization, controlling for both macroeconomic and institutional factors. Here, the larger are the cultural differences with the EU, the weaker will be synchronization.

The rest of the paper is organized as follows. The next section presents the techniques used to recover business cycle features and discusses their properties for different groups of countries. Section 3 describes the macroeconomic, institutional and cultural measures. Section 4 relates differences in business cycle features with differences in a variety of indicators. Section 5 concludes.

2 Measuring business cycles

We compute turning points for "classical" cycles and construct cyclical features using the resulting turning points. It is well known that classical cycles do not control for trends. Nevertheless, the turning point dates the methodology delivers, reproduce quite well NBER and CEPR classifications, which are obtained using judgmental calls. For dating we use the quarterly version of the Bry-Boschan algorithm suggested by Harding and Pagan (2005): a peak is identified if $\{y_{t-1}-y_{t-2}>0, y_t-y_{t-1}>0, y_{t+1}-y_t<0, y_{t+2}-y_{t+1}<0\}$, where $y_t=\ln(Y_t)$ and Y_t is the quarterly reference series; and a trough is identified at time t if $\{y_{t-1}-y_{t-2}<0, y_t-y_{t-1}<0, y_{t+1}-y_t>0, y_{t+2}-y_{t+1}>0\}$. A *complete* cycle is defined as alternating peaks and troughs with a minimum duration of five quarters.

We choose a single aggregate indicator to date turning points because additional variables, such as the unemployment rate, are cyclically "de-coupled" in developing economies (see, Altug et al., 2012b) and, at least in the last decade, they also display different dynamics in advanced economies. In addition, measures of national wealth (such as real income) or of demand (such as sales), which could complement production information, are often unavailable and when they are present they start at different dates, making individual turning points aggregation problematic. Thus, while more reliable signals can be obtained using multiple indicators, data restrictions led us to employ a single indicator.

Individual country characteristics are summarized via average measures of *duration* (persistence) and *amplitude* (variability) of the fluctuations, and of *cumulated output changes* (the cost/gain of fluctuations). The latter measures the magnitude of the triangular area delimited, vertically, by the size of the changes and, horizontally, by the duration of the phase. To illustrate, let D be the duration, A the amplitude and C the cumulated output change during a business cycle phase. If, e.g., a peak occurs at t and a trough at $t+d$, then $D=d$, $A=y_{t+d}-y_t=\Delta_d y_t$ and $C=0.5\ A*D$.

Cross country co-movements are summarized with a *concordance index* and a *diffusion index*. The former measures the fraction of times two countries are in the same phase over the business cycle. Let S_{it} be an indicator where $S_{it}=0$, if country i is in a recessionary phase at t, and 1 otherwise. The concordance index for countries i and j over the samples $(t_i,\ldots,T_i)$ and $(t_j,\ldots,T_j)$ is

$$Conc_{ij}=\frac{1}{T}\left\{\sum_{t=1}^{T}S_{it}S_{jt}+\sum_{t=1}^{T}(1-S_{it})(1-S_{jt})\right\}, \tag{2.1}$$

where $\tau=\max(t_i,t_j), T_\tau=\min(T_i,T_j)$, $T=T_\tau-\tau+1$. Clearly, $Conc_{ij}$ has a maximum of one when $S_{it}=S_{jt}$ and minimum of zero when $S_{it}=(1-S_{jt})$. The diffusion index, instead, shows the fraction

of countries sharing the same phase at any t and it is given by (see Chang and Hwang, 2011):

$$D_t = \sum_{i=1}^{N_t} w_{it} S_{it}, \tag{2.2}$$

where $w_{it} = 1/N_t$, N_t denotes the number of countries for which we have business cycles dates at t. Homogeneity of cyclical turning points occurs if D_t is close to one at some dates and close to zero at the rest of the dates; cyclical heterogeneity would show up if D_t takes values close to 0.5 for many t.

Since we have large set of countries, it is impossible to report the cyclical characteristics for each of them separately. Thus, we opted to group countries according to three broad classifications:

- **EU countries**: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom, Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovenia, Slovakia, Malta, and Romania. Within this group we also distinguish countries belonging to the original EU-15 countries.

- **Non-EU countries**: Albania, Algeria, Bosnia, Croatia, Egypt, Iceland, Israel, Jordan, Lebanon, Macedonia, Montenegro, Morocco, Norway, Serbia, Switzerland, Syria, Tunisia, Turkey

- **Mediterranean countries**: Albania, Algeria, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Jordan, Lebanon, Malta, Montenegro, Morocco, Portugal, Syria, Spain, Tunisia, Turkey. Within this group we single out three subgroups:

- Non-EU Mediterranean: Albania, Algeria, Croatia, Egypt, Israel, Jordan, Lebanon, Montenegro, Morocco, Syria, Tunisia, Turkey.

- Middle East: Israel, Jordan, Lebanon, Syria, Turkey.

- North African: Algeria, Egypt, Malta, Morocco, Tunisia.

The rationale for our selection should be clear. We separate EU members and the rest; within the Mediterranean, we single out EU and non-EU countries and within the latter group, we pay special attention to the Middle East and North Africa. While other classifications are possible, Canova and Ciccarelli (2012) found that those based on the level of income, the level of development, or the monetary arrangement are ineffective to group cyclical fluctuations in the Mediterranean.

The sources of the data, the length of the sample, and the variables used to date turning points in each country are in Table 1.

2.1 Some business cycle facts

Table 2 displays the average and the standard deviation of each cyclical characteristic for each group of countries, separately for recessions and expansions. Averages are computed across the countries which display at least one complete cycle[3]. A star indicates that a t-test for the null hypothesis of equality of the average characteristics of the group with the EU average is rejected at the 5 percent level. Here, the EU15 is the reference, since cyclical features in the EU27 and EU15 are statistically similar

The duration of contractions is similar in the three subgroups but, surprisingly, Middle Eastern countries have significantly shorter contractions than the EU. The amplitude of contractions is significantly larger in non-EU and in Mediterranean countries, and the non-EU Mediterranean and North African groups experience very deep contractions. Expansions are generally shorter in the Mediterranean than elsewhere; countries in the Middle East and North Africa display expansions with short duration, and differences with the EU15 are significant. The amplitude of expansions is relatively homogenous in the three groups and within subgroups only North African countries differ, although not significantly so. The *cumulated* output change measure suggests that the non-EU Mediterranean and North African countries suffer most during contractions while the Middle East and North African countries experience the smallest output gain during expansions. Differences with the EU15 are generally significant.

One striking feature of Table 2 is the massive within groups heterogeneity observed in expansions. This heterogeneity is of an order of magnitude larger than the one displayed in contractions, and it is milder for countries in North-Africa or in the Middle East. Thus, while there is a certain degree of within group similarities in recessions, expansions have very idiosyncratic and country-specific features.

The concordance within the non-EU and the Mediterranean region is low relative to the one present in the EU15 and it is even lower within the non-EU Mediterranean, the Middle East or the North Africa subgroups. The synchronization of Mediterranean, non-EU Mediterranean, Middle East and North African countries with the EU15 is higher than within each group, making business cycles in Mediterranean countries more correlated with those of the EU than those of the neighbors.

Figure 1 reports the diffusion index for the full set of countries, the Mediterranean countries, the non-EU countries, and the non-EU Mediterranean countries. For the full set of countries, there are a number of recession spikes: the largest correspond to the oil shock recessions of the 1970's and 1980's and to the Exchange Rate Mechanism (ERM) crisis of 1992. The 2008-2009 recession is the most global of all, with

[3]Excluded countries are Bosnia, Egypt, Montenegro, Syria, Ireland, Latvia, Lithuania, Poland, and Slovenia

more than 80% of the countries being in that phase. For the Mediterranean group, the picture is less clear: there are generalized recessions in the 1970's, at the beginning of the 1990's and in 2008 but also a lot of noise and, e.g., in the middle of the sample about one-third of the countries were in a recession. As shown in Canova and Ciccarelli (2012), re-grouping cyclical dynamics using geographical proximity, level of wealth, development indicators, or the monetary regime, does not reduce the idiosyncrasies within this group. The incidence of recessions for the other two groups is also quite heterogeneous. There is evidence of generalized recessions in the early 1980's and the early 1990's, but for the rest of the dates, recessionary episodes tend to be common only to smaller groups of countries. Note that the non-EU Mediterranean group is only mildly affected by the 2008-2009 crisis, perhaps because of the lower level of integration with the world economy.

Table 3 confirms that the contraction phases of the countries in the Mediterranean group are heterogeneous. Even among EU members, which are also part of the Euro zone, significant differences are present. Aside from the recessions associated with the oil shocks of the 1970's and 1980's, France experiences recessions during the collapse of the European Exchange Rate Mechanism in 1992 and the global crisis in 2008. Spain, instead, displays five recessions, one more than France, while Greece and Italy feature nine and ten recessions, respectively but, in the former, the majority occur prior to 1993. Many non-EU Mediterranean countries display up to six complete cycles since the 1990's and the duration of recessions is, occasionally, long - see e.g. Algeria. Balkan countries also feature lengthy recessions in the transition to new political regimes. Small open economies appear to suffer the effects of external shocks. For example, Turkey's recession in 1998 is related to the Russian debt default, while Israel's recession in 2001 is partly due to the bursting of the dot.com bubble.

In sum, Mediterranean business cycles are different from those present in the EU15; recessions are deeper with larger output losses and expansions are shorter. Within the Mediterranean group, non-EU, Middle East and North African countries exhibit a boom-bust scenario where large output falls during contractions are followed by strong but short lived output increases in expansions. The concordance of turning points within the Mediterranean or within the non-EU Mediterranean group is low relative to what is observed in the EU and each subgroup is primarily connected with the EU15 rather than with other subgroups in a region. Thus, Mediterranean fluctuations are peculiar, heterogeneities are large, and different groups of countries display disparate cyclical dynamics.

3 Why are cyclical fluctuations different?

Why are business cycles in the Mediterranean and in the EU different? What factors explain these differences? While studies have related business cycle features to macroeconomic factors, much less is known about the impact of institutional and cultural characteristics on business cycles and, in general, about Mediterranean cycles, in particular. We measure the incremental contribution of these factors, after accounting for the macroeconomic indicators.

3.1 The indicators

The macroeconomic factors we use are somewhat standard. Data on the following variables are obtained from the World Bank World's Economic Indicators database. We consider pre-sample values of:

- openness, proxied by the sum of exports and imports as a percentage of GDP (denoted by *Open*);
- the composition of production, measured by the income share of industrial value added (denoted by *Industry VA*);
- the level of development, measured the log of GDP per-capita, measured in 2000 US$ (denoted by *GDP per-capita*);
- the level of financial development, measured by the credit extended to the private sector as a ratio to GDP (denoted by *Credit to GDP*);
- the composition of demand, proxied by gross saving rate (denoted by *Savings to GDP*);.
- the distance from the EU - proxied here by average distance from Germany (denoted by *Distance*);
- a dummy variable capturing whether the country practices inflation targeting or not (denoted by *Inflation target*).

In theory, all of these variables could be important determinants of business cycle fluctuations. For example, greater openness may reduce the severity of domestic cycles by providing more risk sharing opportunities, but it may also expose the country to international fluctuations. Countries with a larger industrial base may also be able to mitigate the cyclical impact of shocks since some sectors may be more resilient to shocks than others. On the other hand, countries with higher levels of economic and financial

development or high saving rates may be able to take better advantage of business opportunities, making expansions more persistent or more sustained.

Our institutional indicator variables measure the overall quality of political and economic institutions in a country. We consider pre-sample values of:

- an aggregate index of the Worldwide Governance indicators (denoted by *Gov*). The World Bank (see Kaufman et al., 2009) has constructed six indicators (bi-annually for 1996, 1998, 2000 and annually for 2002-2010) measuring different dimensions of governance such as voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption. We aggregate these indicators by taking the average of the normalized indices such that a number close to one indicates good governance.

- The Civil Liberties Index prepared by the Freedom House (denoted by FH), which measures freedom of expression, assembly, association, and religion. Freedom House rates civil liberties on a scale of 1 to 7, with 1 representing the most free and 7 representing the least free; data for this index is available annually from 1972 to 2008.

- An index of central bank independence (denoted by CBI) originally due to Cukierman et al. (2002) and Arnone *et al.* (2007). This is a legal index that aggregates 16 characteristics of central bank (CB) charters, such as the allocation of authority over monetary authority, the procedures for resolution of conflicts between the CB and the government, the relative importance of price stability in the charter, the nature of limitations on lending by the CB to the government, and procedures for the appointment and dismissal of the governor.

We have also considered the index of employment laws, due to Botero et al. (2004). Unfortunately, its coverage for our set of countries is very limited making it meaningless for our exercises.

The recent literature measures cultural factors in a number of ways. One set of indicators comes from the study of organizational motivation across countries run by Hofstede (http://geert-hofstede.com), who considers four separate dimensions – *power distance*, *individualism*, *masculinity/femininity*, and *uncertainty avoidance*. Power distance measures "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally" and the individualism indicator the degree of interdependencies a society maintains among its members.

A masculine motivational attitude in a society represents wanting to be the best and a feminine attitude denotes liking what one is doing. Finally, the uncertainty avoidance indicator measures "the extent to which members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid these situations". These indicators are recorded in 1980.

A second source of indicators of cultural traits is the World Values Survey (WVS), (see Inglehart et. al, 2000) which includes four waves of responses conducted in 1981, 1990, 1995-1998, and 1999-2000 for up to 82 countries; Tabellini (2010) uses indicators of mutual trust and respect for others (labelled *trust)* and of individualism (labelled *control* and *obedience*) from this data set; Alesina and Guiliano (2010) employ the family indicators from the WVS, labelled *family important*, *parental duties*, and *respect and love for family.* These variables are defined as follows:

- *control*: Percentage of respondents who give a 10: "Some people feel they have completely free choice and control over their lives, others feel that what we do has no real effect on what happens to them. Please use this scale (1-10) where 1 means "none at all" and 10 means "a great deal" to indicate how much freedom and control you have over the way your life turns out."

- *obedience*: Percentage of respondents that mention "obedience"as being important (the other qualities in the list being: "good manners; independence; hard work; feeling of responsibility; imagination; thrift, saving and things; determination and perseverance; religious faith; unselfishness") to the question: "Here is a list of qualities that children are encouraged to learn at home. Which, if any, do you consider to be important? Please choose up to five."

- *trust*: Percentage of respondents who respond that "Most people can be trusted" (the other possible answers being "Can't be too careful" and "Don't know") to: "Generally speaking, would you say that most can be trusted or that you can't be too careful in dealing with people?"

- *family important*: Percentage of respondents who give a 4 to the question that family is important is in one's life. The variable takes values from 4 (very important) to 1 (not important at all).

- *parental duties*: The respondent agrees with one of the two statements: "It is the parents' duty to do their best for their children even at the expense of their well-being" (taking the value of 2) and "Parents have a life of their own and should not be asked to sacrifice their own well being for the sake of their children" (taking a value of 1).

- *respect and love for parents*: The respondent agrees with one of the two statements: "Regardless of what the qualities and faults of one's parents are, one must always love and respect them" (taking on a value of 2) or "One does not have the duty to respect and love parents who have not earned it" (taking on a value of 1).

Since time variations are small, the analysis uses the time averages of various waves.

3.2 The methodology

In contrast with other studies, which seek to explain global or regional differences in per-capita income, we wish to explain differences in the average persistence, volatility, and co-movement in real activity across countries. Let the average duration and the average amplitude of a business cycle phase of country i be $Edur_i$, $Eampl_i$, $Cdur_i$, $Campl_i$, where E and C stand for expansion and contraction, and *dur* and *ampl* for duration and amplitude; let the cumulated change during contractions and expansions be denoted by $Ccum_i$ and $Ecum_i$ and let $w_i = (Edur_i, Eampl_i, Cdur_i, Campl_i, Ccum_i, Ecum_i)$. Define the bilateral concordance between countries i and j by $Conc_{ij}$, let the macroeconomic indicators for country i be denoted $Macro_i$, the institutional indicators be $Inst_i$, and the cultural indicators be $Cult_i$.

We first compute the Spearman rank correlation between $(w_i - w_{EU})$ and $(Macro_i - Macro_{EU})$, component by component. Afterward, we compute the Spearman rank correlation between $(w_i - w_{EU})$ and $(Inst_i - Inst_{EU})$, conditional on $(Macro_i - Macro_{EU})$. Finally, we compute the Spearman rank correlation between $(w_i - w_{EU})$ and $(Cult_i - Cult_{EU})$, conditional on $(Inst_i - Inst_{EU})$ and $(Macro_i - Macro_{EU})$. For the concordance index, we compute the rank correlation between $(Conc_{ij} - Conc_{EU})$ and $|Macro_i - Macro_{EU}|$, and the rank correlations of $(Conc_{ij} - Conc_{EU})$ and $|Inst_i - Inst_{EU}|$, conditional on $|Macro_i - Macro_{EU}|$, and of $(Conc_{ij} - Conc_{EU})$ and $|Cult_i - Cult_{EU}|$, conditional on and $|Inst_i - Inst_{EU}|$ and on $|Macro_i - Macro_{EU}|$, scaling the variables so that small absolute differences in the indicators correspond to small differences in business cycle characteristics (see also Baxter and Kouparitsas, 2005; or Altug et al., 2012 for a similar approach). Variables with the EU subscript correspond to the average entries of Table 2 for the EU15. In all cases, we test the hypothesis that the (conditional) rank correlation is zero using a (small sample) U-Mann test.

In the group of macroeconomic indicators that we consider, there are variables which are highly correlated with each other. Hence, we also compute the (conditional) rank correlations using the first principal component of the differences in macroeconomic indicators - which explain over 60% of the

variability of the macroeconomic indicators. Thus, for example, we compute the rank correlations between each element of $(w_i - w_{EU})$ and the first principal component of all of the macroeconomic indicators $(Macro_i - Macro_{EU})$; the rank correlations between each element of $(w_i - w_{EU})$ and $(Inst_i - Inst_{EU})$, conditional on the first principal component of the macroeconomic indicators $(Macro_i - Macro_{EU})$, and so on. Reducing the dimensionality in this way allows us to make general claims on the behavior of the macroeconomic indicators using all available information.

Since we are using average business cycle statistics, the analysis only employs cross sectional variations to measure the strength of the association. While we could consider individual contraction and expansion spells for each country, one should remember that in many countries only a small number of full cycles is identified and that the number of cycles differ across countries, making the panel short and unbalanced. Moreover the institutional indicators are available at much more limited frequencies than the business cycle indicators, making a panel analysis impossible.

The Spearman correlation measures non-parametrically the strength of the association between the ranks of two sets of observations. It differs from the standard Pearson correlations, which measure the strength of the linear association, because it allows for a general functional relationship. A value of -1 indicates perfect disagreement in the rankings of the two samples; a value of 0 that the rankings are independent; and a value of +1 that the rankings perfectly agree.

Because we are interested in the incremental value of institutional and cultural indicators, we compute conditional rank correlations. These quantities are akin to two-step regressions where in the first-step difference between average business cycle statistics of each country relative to an EU15 average are regressed on the relevant differences in macroeconomic indicators and then the residuals are related to the differences in each institutional indicator relative to an EU15 average. In the case of cultural indicators, the first-step regression includes the relative differences in both the macroeconomic and institutional indicators. Because the available samples are small, the regression coefficients are likely to be poorly estimated, making (asymptotic) t-statistics a very imprecise summary of the strength of the association. In addition, two-step regressions disregard the uncertainty present in the first stage estimates, making us overconfident about the strength of the association, even in large samples. Finally, a two-step regression captures only a linear relationship. Our analysis leads to exact small sample statements; by conditioning, it accounts for the uncertainty existing in the joint distribution of all indicators; by using ranks, it allows for the association to be potentially nonlinear.

While rank correlations are valid even when the two sets of observations are endogenous, we would like to interpret differences in cyclical characteristics in an economically meaningful way. The issue of how institutions are formed and whether they affect economic performance is controversial. Some have argued for the primacy of human capital over institutions (see Glaeser et al., 2004); Acemoglu et al. (2006) describe how institutions and economic outcomes may jointly evolve. Thus, a key problem in interpreting the results is that there may be feedback from cyclical performance to macroeconomic, institutional, and cultural indicators. The recent wave of labor market reforms in Greece, Spain and Italy is, in part, due to poor cyclical performance, and cyclical dynamics may affect macroeconomic factors, for example, by making one monetary regime preferable to another. Tabellini (2010) controls for the impact of development on culture by instrumenting current measures of culture with past political institutions and past regional human capital levels. Alesina and Giuliano (2010) control for reverse effects using within-country data and the impact of different forms of family ties in the country of origin of second generation US immigrants'. We do not have the luxury of having such instruments in our study. Furthermore, it is not clear how to use instruments in our non-parametric analysis.

To break the reverse link that may potentially affect inference, we use pre-sample values of the indicators. Thus, we relate relative differences in cyclical features with relative differences in the macroeconomic indicators measured prior to the sample period used to construct cyclical features. Similarly, since the World Bank governance indicator is available as early as 1996 and the Freedom House indicator is available as early as 1972, we use the relative differences in these initial values when computing rank correlations with institutional features. Since using relative differences of pre-sample or average values of the indicators is immaterial for the conclusions, reverse causality seems to be a minor problem for macroeconomic and institutional variables.

Of the three types of indicators we consider, a country's culture is probably the most durable and unlikely to be affected by current cyclical conditions. In addition, since the Hofstede survey proceeds the start of the sample in many countries, and differences over time in the WSV data are very small, reverse causality is probably even less of a concern here.

4 What drives Mediterranean business cycles?

The analysis of Section 2 has shown that cyclical dynamics in the Mediterranean differ from those of the EU and, within the region, national idiosyncrasies are important. Canova and Ciccarelli (2012) and Canova and Schlaepfer (2011) showed that standard development, wealth, monetary, trade and financial indicators are unable to explain these differences. Thus, a more complex set of factors may be driving differences in cyclical activity. This section discusses the role of three set of indicators.

4.1 Macroeconomic factors

Table 4 presents the rank correlation between relative differences in the various cyclical features and in the seven macroeconomic indicators. We restrict attention to the groups whose cyclical characteristics are statistically different from the EU15. A star in a entry indicates that the hypothesis of zero correlation is rejected at the 5 percent significance level.

Overall, differences in macroeconomic indicators are weakly related to differences in cyclical features. For the Mediterranean as a whole, distance matters but only for differences in the duration of expansions - the larger is the distance, the smaller is the duration of expansions relative to the EU15. Differences in the amplitude and the cumulated loss of contractions are unrelated to the seven macro indicators we consider. However, once we aggregate the information using the first principal component of macroeconomic indicators, we find that indicators that differ from those of the EU imply deeper contractions and larger output losses in recessions.

The picture is more encouraging when we look at differences in the synchronicity of turning points. Here differences in the composition of value added, in the credit to GDP ratio, in the saving to GDP ratio, and in whether a country practices inflation targeting account for some of the differences in the concordance of turning points relative to the EU15 average. Differences in the industry component of value added have the highest rank correlations. Thus, as in Imbs (2004), the sectoral composition of output explains why the timing of Mediterranean and EU cyclical phases are different.

The evidence is similar for the other two subgroups. For non-EU Mediterranean countries, distance matters for differences in the duration of expansions and the cumulative loss in recessions relative to the EU. The sign of the correlation is a bit puzzling - the further away a country is from the EU, the smaller is the cumulative loss in recessions - but can be explained if we consider that countries far away

from the EU are less exposed to EU fluctuations. For this group, the first principal component of the difference in the seven macroeconomic indicators is insignificant for all cyclical features. As for the full sample, differences in the industry share of the value added, in the credit to GDP ratio, and in the saving rate are important in explaining differences in the synchronicity of turning points relative to the EU, but the latter has the strongest association. Hence, the fact that macroeconomic factors do not seem to matter is not due to the fact that the Mediterranean sample includes some EU members.

For the Middle Eastern group, the evidence is even less supportive of the idea that differences in macroeconomic factors are related to differences in business cycle statistics. Differences in the monetary regime and in the saving rate are related to differences in the duration and amplitude of contractions - countries which do not practice inflation targeting or have smaller saving rates relative to the EU tend to have contractions that are longer and deeper relative to the EU - but no other variable matters. In terms of synchronicity, distance and differences in GDP per capita, financial markets development, and the propensity to save seem important.

In sum, in agreement with Canova and Ciccarelli (2012), it is hard to relate differences in the cyclical features between the Mediterranean and the EU with differences in macroeconomic indicators. Differences in the share of industry in value added, the saving rate and the credit to GDP matter for the synchronization of turning points but, also in this case, the strength of the association for the Mediterranean and non-EU Mediterranean countries is modest.

4.2 Institutional factors

Given the poor performance of macroeconomic indicators, it is legitimate to ask what other factors may explain differences in duration, amplitudes and cumulative losses present in Section 2. This subsection examines whether three institutional indicators explain the portion of the difference in cyclical statistics left unaccounted by differences in macroeconomic indicators. Table 5 reports conditional rank correlations between the differences in each business cycle statistics and the differences in three institutional indicators. A star in one entry indicates that the correlation is significant at the 5 percent level.

Overall, the results are quite disappointing. The majority of the rank correlations are not significantly different from zero - for the full Mediterranean group they are all equal to zero - and only differences in the Freedom House index and in the CB index seem to occasionally matter. However, the signs of these correlations are puzzling. For example, in the Middle east group, the smaller is central

bank independence relative to the EU, the longer the durations of expansions - probably because of the heavier weight outliers have in this subsample.

After macroeconomic indicators have been accounted for, differences in the three institutional indicators correlate well with differences in the synchronicity of cyclical fluctuations, and this is true for all three groups we consider. Interestingly, countries whose governance and civil liberties indicators are similar to the those of the EU, have cyclical fluctuations that are more in phase with those of the EU.

Altug et al. (2012) also considered the relationship between business cycle features and institutional indicators but for a larger set of countries and find that composite indices of governance and cyclical synchronization are related. Thus, the role of institutional factors should be considered more carefully when seeking to understand the determinants of business cycle synchronization across countries. However, they also find that better governance is associated with stronger expansions while central bank independence mitigates the severity of contractions, which we do not have. Hence, the Mediterranean is peculiar and this makes it worthwhile to investigate whether other factors may matter in the basin.

Next, we examine the time profile of the institutional indicators of non-EU Mediterranean countries as these may give us hints of the evolution of the comovements in the region. While the institutional features of EU Mediterranean countries are well documented, much less is known about the governance and civil society indicators of these countries and their evolution over time.

Figure 2, which plots the time profile of the various components of the governance indicator, and Figure 3, which plots the time series of the Freedom House indicator, suggest a rationale for the disparate cyclical dynamics the region displays. For example, a relatively developed country such as Israel, scores the highest on the majority of governance indicators, except for the Political Stability and Absence of Violence/Terrorism item, where it ranks close to Turkey. It also shows low values of the Freedom House indicator, indicating the presence of relatively high levels of civil liberties.

At the opposite end, some North African countries, such as Tunisia, display relatively high scores on dimensions as such as Political Stability and Absence of Violence/Terrorism and Government Effectiveness but are at the bottom of the scale as far as Voice and Accountability, explaining why they were candidates for the Arab Spring movements. In general, North African and Middle Eastern countries do not display any tendency for improvement in their governance scores, and in some cases, such as Syria or Tunisia, show a marked deterioration. Likewise, their Freedom House scores are consistently high and practically time invariant, indicating persistently poor civil liberties. Albania, a potential candidate

for EU membership and Croatia, an acceding country, instead show improvements in both indicators; Turkey, another candidate country, improved its Government Effectiveness and Control of Corruption indicators, but the performance on other indicators is flat or occasionally regressing.

4.3 Cultural factors

Table 6 presents rank correlations between differences in each business cycle characteristics and differences in the cultural indicators, conditional on differences in macroeconomic and institutional indicators. We do not report the results for the Middle East group since cultural indicators are available only for Turkey and Israel.

Differences in cultural indicators are somewhat more important in explaining differences in business cycle characteristics. For the Mediterranean group the evidence is weak: only relative differences in the Uncertainty Avoidance Index (Respect and Love for Parents) have significant rank correlations with relative differences in the cumulative output loss in recessions (the durations of expansions) and relative differences in the perception of uncertainty are associated with larger cumulative output losses relative to the EU. For the non-EU Mediterranean group, however, differences in several cultural indicators matter. For example, the rank correlations between differences in Respect and Love for Parents and Parental Duties and differences in the duration of expansions are significant - the larger are these indices relative to the EU, the smaller will be the relative difference in the durations of expansions. Similarly, the rank correlations between differences in values attached to the importance of the family and differences in the amplitude and the cumulative output loss in recessions are significant.

Relative differences in many cultural indicators are also useful for explaining differences in business cycle synchronization. In fact, of the ten cultural indicators we have, six matter for the non-EU Mediterranean countries. Differences in Trust, Individualism, and Uncertainty Avoidance are those which have the largest rank correlations with differences in turning point synchronization. Given the cultural polarization of the Mediterranean along these dimensions, it is comforting to see that they are related to the synchronicity of business cycle fluctuations in the region. As Guiso et al. (2006) have pointed out, cultural factors may affect real activity through the enhanced trade and mutually advantageous relationships that they engender. Clearly, the greater the differences in the perceptions of trust one has of one's business partners, in the resolution of uncertainty, or in the individual gains that an exchange may produce, the greater the divergence that we would expect in the ensuing trading

relationships and economic activity.

Notice that the rank correlations for the Mediterranean concordance index are smaller than those for the non-EU Mediterranean concordance index. Although cultural factors affect cyclical synchronicity for the whole region, it is striking that these correlations more than double in certain instances for the restricted non-EU sample. Thus, while EU Mediterranean countries have gone through an (unfinished) process of cultural homogenization with the EU, non-EU Mediterranean countries have still very different cultural characteristics. As a result, while EU Mediterranean countries have business cycles mimicking those of the EU, this is much less the case for non-EU Mediterranean countries.

The importance of the variables measuring family ties is also worth a brief discussion. It appears that in societies where the farther away is the perceived role of the family unit from the one of the EU, the shallower are contractions and the smaller the output loss during them. Since non-EU Mediterranean countries tend to attach greater importance to family ties, closer family arrangements are associated with greater risk sharing in society, which tends to mitigate the severity of contractions. Thus, the organization of a society may affect on how business cycles develop. After all, history tells us that cyclical fluctuations were minor in traditional pre-industrial revolution societies. It is only when societies began to be organized along the lines of market economies, that cyclical fluctuations became relevant.

5 Discussion

The types of shocks driving business cycles and the factors leading to business co-movement have been the topic of much debate in the literature (see Kose et al., 2010, for a review). The determinants of cyclical synchronization have also been extensively studied but, in general, the conclusions depend on whether the shocks are sector or country-specific and on the degree of trade and financial integration linking the different economies [4]. As we have shown in the paper, these factors seem minor for the Mediterranean and thus we have proposed an alternative explanation that involves how societies are organized, whether this is measured in terms of overall governance or in individualism, mutual trust, and the importance of family ties.

Cultural factors have been extensively employed to explain long-run growth trajectories. However, they may also influence the extent countries can insulate against political risk as well as regional and

[4] An added factor for oil-producing countries is the Dutch disease-type effects deriving from changes in commodity prices. Because in our sample includes only Algeria as a major oil producer, this factor is probably minor.

global shocks. The cultural environment may determine the types of activities the population undertakes, whether these will be long-term, productive activities, or whether they will be short-term and lacking in innovation. Caselli and Gennaioli (2011) suggest that when dynastic firms dominate production markets, economic activity may lack innovations, making cyclical fluctuations shallower and expansions less vigorous. As Guiso et al. (2006) note, bilateral trust across different societies may determine the extent of trade that they undertake, which in turn may affect cyclical synchronization. Family ties may affect the cyclical dynamics through their impact on labor market participation and labor mobility and through the informal insurance mechanisms that they foster. As an example, Bentolila and Ichino (2008) find that the consumption costs of unemployment shocks tend to be lower in Mediterranean countries, suggesting a role for family insurance mechanisms.

The Mediterranean has often been pictured as a region where family relations and the attachment one feels towards to parents are strong, and influential research has attempted to relate these features to a variety of economic and social indicators. This paper shows that a significant relationship exists between such cultural traits, business cycles features and cross country business cycle synchronization. Even after controlling for the role of the macroeconomic and institutional indicators, cultural attitudes such as the importance of family ties reduce significantly the amplitude and output cost of contractions, attesting to the role of family insurance in mitigating the effect of adverse shocks.

Our findings have important ramifications for the policy measures that are being discussed as the events of the so-called Arab Spring unfold across the Mediterranean. In a recent analysis, Razzaz and Razzaz (2012) claim that many Arab countries had succeeded in delivering decent standards of living compared to other regions of the world. Where Arab countries lagged are precisely in the areas that we have emphasized, namely, in governance indicators such as voice and accountability and what precipitated the revolts was the existence of a rentier state where decisions regarding resource allocation were taken without transparency, accountability, and citizen participation. In their opinion, the most desirable outcome of the Arab Spring movements would occur if the newly heard "voice" of the Arab revolts can be institutionalized within a pluralistic democratic framework that gives different stakeholders a say in the future of their societies.

These policy recommendations are quite different than those that have constituted the mainstay of many EU initiative towards the Mediterranean. Perhaps that is the reason for why advanced countries were caught off guard when the Arab revolts exploded. Even within the European Union, salient

characteristics of Mediterranean EU countries were ignored in many EU-wide projects, not the least the adoption of the euro. It was assumed - erroneously, as it seems now - that facilitating trade in goods and financial assets would lead the way towards a true integration, without taking into account that societies were organized in such different ways. EU Mediterranean countries have experienced some convergence to the EU average, but there still remain relevant differences and certain cultural values affect cyclical features and comovements. What we are now observing in the EU is a very painful adjustment in such societies as blanket fiscal sustainability measures are put into effect without fully investigating the process which led to the divergence in outcomes within the EU in the first place.

6 Conclusions

This paper describes the cyclical characteristics of Mediterranean basin comparing amplitude, durations and co-movements with those of the EU and relates cyclical differences to differences in the macroeconomic, institutional and cultural environment.

In the Mediterranean, recessions are generally deeper, with larger output losses and expansions are shorter than in the EU, and in the Middle East and North African countries these tendencies are exacerbated. The concordance of turning points within the Mediterranean or within subgroups is low and each group is primarily connected with the EU, rather than with other subgroups within a region. Furthermore, the cyclical features of the Mediterranean are heterogeneous, even within relatively compact geographical regions.

Some macroeconomic indicators explain differences in the amplitude and in the output losses in contractions relative to the EU average, but it is hard to relate differences in the institutional environment with differences in persistence and volatility of cyclical fluctuations. Both sets of indicators account for some of the differences in cyclical synchronization; institutional indicators seems more important, and they matter for non-EU Mediterranean countries more than the region as a whole.

Cultural indicators have the ability to explain differences in durations of expansions, and the amplitude and cumulative loss of contractions for non-EU Mediterranean countries and they matter for business cycle synchronization, over and above what macroeconomic and institutional factors contribute. We believe we are the first to document that cultural features may shape how business cycles develop. The cultural environment of a society may facilitate or hamper business and trade relationships, labor

mobility, and risk taking, thus making fluctuations dependent on the characteristics of societies.

Our study indicates the need for macroeconomists and policy-makers to concern themselves with the institutional environment that different countries face as well as more intangible aspects of individual interactions, including those involving mutual trust, perceptions of inequality, individualism, or family ties. While much has been achieved in understanding the impact of alternative monetary and labor market institutional arrangements on economic outcomes, our results highlight the need to study the design and evolution of formal institutions and informal norms across societies, as this offers a promising avenue to jointly appraise differences in growth and cyclical performance.

In our mind, the recent Arab Spring movements together with the North-South divide that is increasingly characterizing the discourse on the ongoing EU debt crisis provide a potent environment to discuss these issues. While many EU initiatives are concerned with enhancing trade and financial integration with North Africa and the Middle East, what turned out to trigger the mass movements associated with the Arab Spring was the overall organization of society as much as the lack of economic opportunities that it offered to its members. Our emphasis on the role of family ties in affecting Mediterranean business cycles also suggests caution to European policy-makers in their attempt to find immediate solutions to what appears to be problems deeply imbedded in the cultural values and norms of the different societies.

References

Acemoglu, D., S. Johnson and J. Robinson (2001). "The Colonial Origins of Comparative Development: An Empirical Investigation," *American Economic Review* 91, 1369-1401.

Acemoglu, D., S. Johnson and J. Robinson (2006). "Institutions as a Fundamental Cause of Long-run Growth," In P. Aghion and S. Durlauf (eds.) *Handbook of Economic Growth*, Amsterdam: North-Holland.

Aguiar, M. and G. Gopinath (2007) "Emerging Market Business Cycles: The Cycle is the trend, " *Journal of Political Economy*, 115, 69-102

Alesina, A. and P. Giuliano (2010). "The Power of the Family," *Journal of Economic Growth* 15, 93-125

Alesina, A. and L. Summers (1993). "Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence," *Journal of Money, Credit and Banking* 25, 151-162.

Altug, S. and M. Bildirici (2012). "Business Cycles in Developed and Emerging Economies: Evidence from a Univariate Regime Switching Approach," *Emerging Markets Finance and Trade*, 48(6), 73-106.

Altug, S., M. Emin and B. Neyapti (2012a). "Institutions and Business Cycles," forthcoming, *International Finance*

Altug, S., B. Tan and G. Gencer (2012b). "Cyclical Dynamics of Industrial Production and Employment: Markov Chain-based Estimates and Tests," *Journal of Economic Dynamics and Control* 36, 1534-1550.

Arnone, M., B. Laurens, J-F. Segalotto and M. Sommer (2007). "Central Bank Autonomy: Lessons From Global Trends," IMF Working Paper 07/88.

Baxter, M. and M. Kouparitsas (2005). "Determinants of Business Cycle Co-movement: A Robust Analysis," *Journal of Monetary Economics* 52, 113–157.

Bentolila, S. and A. Ichino (2008). "Unemployment and Consumption Near and Far Away from the Mediterranean?" *Journal of Population Economics* 21, 255-280.

Benzcur, P. and A. Ratfai (2010). "Business Cycles around the Globe," Central European University, manuscript.

Blanchard, O. and L. Summers (1986). "Hysteresis and the European Unemployment Problem," *NBER Macroeconomics Annual*, Cambridge, MA, 15-78.

Botero, J., S, Djankov, R. La Porta, F. Lopez-de-Silanes, and A, Schleifer (2004). "The Regulation of Labor," *Quarterly Journal of Economics* 119, 1339-1382.

Braudel, F. (1998). *The Mediterranean in the Ancient World*, London: Penguin Books.

Canova, F. and M. Ciccarelli (2012). "ClubMed? Business Cycles in the Mediterranean Basin," *Journal of International Economics*, 88, 162-175.

Canova, F., M. Ciccarelli, and E. Ortega (2012). "Do Institutional Changes Affect Business Cycles? Evidence from Europe," *Journal of Economic Dynamics and Control*, 36, 1520-1533.

Canova, F. and A. Schlaepfer (2011). "Mediterranean Business Cycles: Structure and Characteristics," manuscript.

Caselli, F. and N.Gennaioli (2011). "Dynastic Management, forthcoming, *Economic Inquiry*.

Chang, Y. and S. Hwang (2011). "Asymmetric Phase Shifts in the U.S. Industrial Production Cycles," manuscript.

Cukierman, A., G. Miller, and B. Neyapti (2002). "Central Bank Reform, Liberalization and Inflation in Transition Economies – An International Perspective," *Journal of Monetary Economics*, 49, 237-264.

Easterly, W. and R. Levine (2003). "Tropics, Germs, and Crops: How Endowments Influence Economic Development," *Journal of Monetary Economics*, 50, 3-39.

Fernandez, R. and A. Fogli (2009). "Culture: An Empirical Investigation of Beliefs, Work, and Fertility," *American Economic Journal: Macroeconomics* 1, 146-177.

Garcia Cicco, J. R. Pancrazi and M. Uribe (2010) "Real Business Cycles in Emerging Markets," *American Economic Review*, 100, 2510-2535.

Glaeser, E., R. La Porta, F. Lopez-de-Silanes, and A. Schleifer (2004). "Do Institutions Cause Growth?" *Journal of Economic Growth* 9, 271–303.

Greif, A. (1994). "Cultural Beliefs and the Organization of Society: A Historical and Theoretical Reflection on Collectivist and Individualistic Societies," *Journal of Political Economy* 102, 912-950.

Grilli, V., D. Masciandro and G. Tabellini (1991). "Political and Monetary Institutions and Public Financial Policies in the Industrial Countries," *Economic Policy* 13, 341-392.

Guiso, L., Sapienza, P., Zingales, L., (2006). "Does Culture Affect Economic Outcomes?" *Journal of Economic Perspectives* 20, 23-48.

Hall, R., and C. Jones (1999). "Why Do Some Countries Produce So Much More Output per Worker than Others?" *Quarterly Journal of Economics* 114, 83-116.

Harding, D. and A. Pagan (2005). "A Suggested Framework for Classifying the Modes of Cycle Research," *Journal of Applied Econometrics* 20, 151-159.

Hofstede, G. (1980). *Culture's Consequences: International Differences in Work-related Values*, Beverly Hills, CA: Sage Publications.

Imbs (2004) "Trade, Finance, Specialization, Synchronization" *Review of Economics and Statistics*, 86, 723-734.

Inglehart, R., et al. (2000). "World Values Surveys and European Values Surveys, 1981-1984, 1990-1993, and 1995-1997," Ann-Arbor, Michigan, Institute for Social Research, ICPSR version.

Kaufmann, D., A. Kraay and M. Mastruzzi (2009). "Governance Matters VIII: Aggregate and Individual Governance Indicators, 1996-2008," World Bank Policy Research Working Papers, No.4978.

Knack, S. and P. Keefer (1995). "Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures," *Economics and Politics*, 7, 207-27.

Kose,A., C. Otrok, and E. Prasad (2010). "Global Business Cycles: Convergence or De-coupling?" forthcoming *International Economic Review*

North, D. (1990). *Institutions, Institutional Change and Economic Performance*, Cambridge: Cambridge University Press

Razzaz, O. and S. Razzaz (2012). "What has Changed? The Political Economy of the Arab Spring and Implications for the Research Community," paper presented at the International Research Development Center (IDRC) Conference, Tunisia, 29-30 October, 2012

Tabellini, G. (2010). "Culture and Institutions: Economic Development in the Regions of Europe," *Journal of the European Economic Association* 8, 677-716.

Weber, M. (1904). *The Protestant Ethic and the Spirit of Capitalism.* 1976 ed. London: George Allen and Unwin.

Country	Sample Period	Measure	Source	Country	Sample Period	Measure	Source
EU							
Austria	1988:1-2009:1	Real GDP	Eurostat	Slovenia	1993:1-2009:1	Real GDP	SO
Belgium	1980:1-2009:2	Real GDP	Eurostat	Spain	1960:1-2009:2	Real GDP	Eurostat
Bulgaria	1994:1-2009:1	Real GDP	SO	Sweden	1960:1-2009:2	Real GDP	Eurostat
Cyprus	1980:1-2010:1	IP Index	CB	UK	1960:1-2009:2	Real GDP	Eurostat
Czech Rep.	1994:1-2009:2	Real GDP	SO	**Non-EU**			
Denmark	1990:1-2009:2	Real GDP	Eurostat	Albania	1990:1-2011:2	Real GDP	CB
Estonia	1993:1-2009:1	Real GDP	SO	Algeria	1992:1-2009:4	IP Index	CB
Finland	1960:1-2009:2	Real GDP	Eurostat	Bosnia	1998:1-2011:2	Real GDP	IFS
France	1970:1-2009:2	Real GDP	Eurostat	Croatia	1994:1-2008:4	Real GDP	SO
Germany	1960:1-2009:2	Real GDP	Eurostat	Egypt	2000:1-2009:1	Real GDP	AMF
Greece	1970:1-2009:1	Real GDP	Eurostat	Iceland	1997:1-2009:1	Real GDP	OECD
Hungary	1995:1-2009:1	Real GDP	SO	Israel	1980:2-2009:2	Real GDP	SO
Ireland	1997:1-2008:4	Real GDP	Eurostat	Jordan	1991:1-2009:1	Real GDP	IFS
Italy	1960:1-2009:2	Real GDP	Eurostat	Lebanon	1992:1-2009:1	IP Index	*
Latvia	1993:1-2009:1	Real GDP	SO	Macedonia	1998:1-2011:2	Real GDP	IFS
Lithuania	1995:1-2009:1	Real GDP	SO	Montenegro	2001:1-2011:2	Real GDP	IFS
Luxembourg	1995:1-2008:4	Real GDP	Eurostat	Morocco	1988:1-2009:1	Real GDP	IFS
Malta	1997:1-2009:1	Real GDP	SO	Norway	1978:1-2009:1	Real GDP	OECD
Netherlands	1960:1-2009:2	Real GDP	Eurostat	Serbia	1997:1-2011:1	Real GDP	IFS
Poland	1995:1-2009:1	Real GDP	SO	Switzerland	1980:1-2009:2	Real GDP	OECD
Portugal	1995:1-2008:4	Real GDP	Eurostat	Syria	2000:1-2011:1	Real GDP	AMF
Romania	1994:1-2009:1	Real GDP	SO	Tunisia	1992:1-2009:1	IP Index	CB
Slovakia	1993:1-2009:1	Real GDP	SO	Turkey	1987:1-2009:2	Real GDP	CB

Notes: The GDP data for Canada, France, Germany, Italy, Japan, the US, the Netherlands, Finland, Sweden, and Morocco are available in de-seasonalized form. The rest were filtered using the X11 linear de-seasonalization method. SO stands for Statistical Office; CB for Central Bank; IFS for International Financial Statistics, AMF for Arab Monetary Fund; * for reconstructed using electricity consumption and utilization indices.

Table 1: Sample of Countries and Data Sources.

	Contraction			Expansion		
	duration†	amplitude‡	cumulated‡	duration†	amplitude‡	cumulated‡
EU	3.73	4.18	14.88	25.45	27.02	518.84
	(1.25)	(3.30)	(14.06)	(11.60)	(11.72)	(326.53)
EU15	3.61	2.71	7.83	28.26	22.20	494.85
	(0.95)	(1.36)	(6.56)	(11.82)	(7.77)	(255.16)
Non-EU	3.92	6.42*	19.59*	18.63*	27.34	418.70
	(1.49)	(4.09)	(20.55)	(10.34)	(15.80)	(417.25)
Mediterranean	3.76	5.90*	17.44*	18.21*	23.15	366.35
	(1.16)	(3.87)	(19.10)	(11.18)	(14.73)	(394.12)
Non-EU Med.	4.04	7.96*	24.33*	16.68*	28.82	438.11
	(1.43)	(3.81)	(22.97)	(11.16)	(16.73)	(477.37)
Middle East	2.94*	5.27*	10.82	12.34*	21.32	198.87*
	(0.27)	(2.83)	(5.21)	(5.73)	(8.73)	(122.54)
N. African	4.92	8.37*	33.82	9.65*	15.85	130.38*
	(1.52)	(3.77)	(29.75)	(3.51)	(6.95)	(115.04)
Concordances						
	EU15	Non-EU	Med.	Non-EU Med.	M. East	N. Afr.
EU15	0.855	0.759*				
	(0.058)	(0.098)				
Non-EU		0.696*				
		(0.109)				
Mediterranean	0.784*		0.717*			
	(0.103)		(0.116)			
Non-EU Med.	0.746*			0.667*		
	(0.108)			(0.113)		
Middle East	0.771*				0.664*	
	(0.078)				(0.088)	
N. African	0.682*					0.554*
	(0.096)					(0.065)

Notes: † in quarters; ‡ in percent. EU: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, UK, Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Malta, Romania, and Slovakia.EU15: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, UK. Non-EU: Albania, Algeria, Croatia, Iceland, Israel, Jordan, Lebanon, Macedonia, Morocco, Norway, Serbia, Switzerland, Tunisia, Turkey. Mediterranean: Albania, Algeria, Croatia, Cyprus, France, Greece, Israel, Italy, Jordan, Lebanon, Malta, Morocco, Portugal, Spain, Tunisia, Turkey. Non-EU Mediterranean: Albania, Algeria, Croatia, Israel, Jordan, Lebanon, Morocco, Tunisia, Turkey. Middle East: Cyprus, Israel, Jordan, Lebanon, Turkey. North African: Algeria, Malta, Morocco, Tunisia. A * indicates that the statistic is different from the statistic for the EU15 at 5% level.

Table 2: Business Cycle Statistics

Albania	1990Q1-1992Q1 1996Q2-1997Q1 2010Q1-2010Q4	Jordan	1994Q3-1995Q1 1997Q2-1997Q3
Algeria	1992Q1-1992Q4 1993Q4-1997Q4 2000Q4-2001Q2 2004Q2-2004Q3 2006Q4-2007Q2 2006Q4-2007Q2	Lebanon	1992Q1-1993Q3 1997Q4-1998Q2 1999Q2-2000Q1 2002Q3-2003Q1 2004Q1-2004Q2 2005Q3-2005Q4
Croatia	1998Q1-1999Q1 2008Q3-2008Q4	Malta	1998Q1-1998Q4 2002Q2-2003Q2 2004Q1-2004Q3 2008Q3-2009Q1
Cyprus	1984Q3-1985Q3 1990Q3-1991Q1 1992Q4-1993Q2 1996Q1-1996Q3 2000Q2-2000Q4 2004Q2-2004Q3 2005Q4-2005Q1 2008Q3-2010Q1	Morocco	1989Q1-1989Q4 1991Q1-1993Q2 1994Q1-1994Q2 1996Q1-1996Q2
France	1974Q4-1975Q2 1980Q2-1980Q4 1992Q4-1993Q1 2008Q2-2009Q2	Portugal	2002Q3-2003Q2 2008Q1-2008Q4
Greece	1973Q4-1974Q3 1977Q1-1977Q2 1980Q3-1981Q1 1981Q4-1983Q2 1984Q4-1985Q1 1986Q1-1987Q1 1990Q2-1990Q3 1992Q2-1993Q4 2008Q4-2009Q1	Spain	1974Q4-1975Q1 1978Q2-1978Q4 1980Q4-1981Q1 1991Q4-1993Q2 2008Q3-2009Q2
Israel	1982Q2-1982Q3 1988Q2-1989Q1 1992Q3-1993Q2 2001Q1-2001Q4	Tunisia	1992Q1-1993Q1 2000Q3-2002Q1 2003Q2-2004Q1 2007Q2-2008Q1
Italy	1964Q2-1964Q4 1974Q4-1975Q2 1977Q2-1977Q3 1982Q1-1982Q4 1992Q2-1993Q3 1996Q2-1996Q4 2001Q2-2001Q4 2003Q1-2003Q2 2004Q4-2005Q1 2008Q2-2009Q2	Turkey	1988Q1-1989Q2 1994Q1-1994Q2 1998Q2-1999Q1 2001Q1-2001Q2 2003Q1-2003Q2 2008Q1-2009Q2

Table 3: Contraction Phases: Mediterranean Countries

	Open	Industry VA	GDP per-capita	Credit to GDP	Saving to GDP	Distance	Inflation target	PC1
	Mediterranean countries							
Edur	0.00	0.41	0.01	-0.19	0.17	-0.59*	0.19	-0.33
Campl	-0.18	0.16	-0.49	-0.48	-0.11	0.04	-0.49	0.58*
Ccum	-0.18	0.18	-0.46	-0.39	-0.08	-0.02	-0.49	0.52*
Conc	0.01	0.42*	0.07	0.16*	0.16*	0.05	0.19*	
	Non-EU Mediterranean countries							
Edur	0.28	0.42	-0.30	-0.33	0.21	-0.60*	0.21	0.43
Campl	-0.20	0.48	-0.53	-0.28	0.28	-0.58	-0.41	0.53
Ccum	-0.11	0.53	-0.53	-0.13	0.23	-0.73*	-0.41	0.58
Conc	0.00	0.50*	0.17	0.25*	0.53*	0.18	0.07	
	Middle East countries							
Cdur	0.21	0.22	0.63	-0.74	-0.32	-0.63	0.94*	0.94*
Edur	0.80	0.80	0.01	-0.80	0.40	0.01	0.90	0.60
Campl	-0.80	-0.80	0.80	0.20	-1.00*	-0.80	0.01	0.40
Ecum	0.20	0.20	0.20	0.01	-0.40	-0.20	0.44	0.40
Conc	0.37	0.45	0.57*	0.78*	0.90*	0.64*	0.43	

Notes: Cdur and Edur stand for the duration of contractions and expansions, measured as quarters; Campl and Eampl for the amplitude of contractions and expansions, and Ccum and Ecum for cumulative output changes of contractions and expansions, measured in percentages. Conc denotes the bilateral concordance measure between countries. *Open* is a measure of openness, *Industry VA* the share of Value added due to industry, *GDP per-capita* is a log measure of the standards of living, *Credit to GDP* measure the importance of the financial sector, *Savings to GDP* the share of national savings; all of these variables are in deviations from the EU15 average. *Distance* is a measure of distance for Europe, *Inflation target* is a dummy for inflation targeting countries, and *PC1* is the first principal component of all available indicators. The table reports rank correlation between business cycle statistics of a region and their macroeconomic indicators, both relative to the EU15. A * indicates a rank correlation significantly different from zero at the 5% level

Table 4: Spearman Rank Correlations: BC Statistics and Macroeconomic Indicators

	CBI	Gov	FH
	Mediterranean countries		
Edur	0.11	0.15	0.03
Campl	0.42	-0.27	0.35
Ccum	0.42	-0.13	0.35
Conc	0.15*	0.48*	0.21*
	Non-EU Mediterranean countries		
Edur	0.32	0.52	-0.75*
Campl	-0.16	-0.29	0.11
Ccum	0.18	-0.16	-0.13
Conc	0.39*	0.44*	0.22*
	Middle East countries		
Cdur	-0.67	-0.11	-1.00*
Edur	-1.00*	0.67	-0.67
Campl	0.87	-0.95	0.21
Ecum	-0.22	-0.58	-0.87
Conc	0.65*	0.75*	0.42*

Notes: Cdur and Edur stand for the duration of contractions and expansions, measured as quarters; Campl and Eampl for the amplitude of contractions and expansions, and Ccum and Ecum for cumulative output changes of contractions and expansions, measured in percentages. Conc denotes the bilateral concordance measure between countries. *CBI* is the index of central bank independence; *Gov* is the governance index and *FH* the freedom house index. The table reports the rank correlation between business cycle statistics of a region and the corresponding institutional indicators, both relative to the EU15, conditional on the first principal component of the differences in the macroeconomic indicators relative to the EU15. A * indicates a rank correlation significantly different from zero at the 5% level

Table 5: Spearman Conditional Rank Correlations: BC Statistics and Institutions

	PDI	IND	MAS	UAI	Control	Obedience	Trust	Family Important	Parental Duties	Respect and Love for Parents
	Mediterranean countries									
Edur	0.63	-0.04	-0.55	0.14	-0.29	-0.19	0.29	-0.45	-0.32	-0.66*
Campl	-0.03	-0.20	0.42	0.56	-0.21	-0.18	-0.47	-0.16	-0.04	-0.16
Ccum	0.02	-0.08	0.26	0.60*	-0.14	-0.45	-0.51	-0.32	-0.04	0.40
Conc	0.44*	0.43*	0.33*	0.25*	0.48*	0.24*	0.33*	0.12	0.24*	0.30*
	Non-EU Mediterranean countries									
Edur	0.94	0.02	0.45	0.59	-0.47	0.59	-0.03	0.61	-0.98*	-0.99*
Campl	-0.69	0.00	0.64	0.51	-0.62	0.51	-0.90	-0.97*	0.21	0.26
Ccum	-0.80	0.00	0.50	0.34	-0.47	0.34	-0.81	-0.99*	0.38	0.43
Conc	0.49*	0.66*	0.47*	0.71*	0.29	0.35	0.70*	0.29	0.32	0.40*

Notes: Cdur and Edur stand for the duration of contractions and expansions, measured as quarters; Campl and Eampl for the amplitude of contractions and expansions, and Ccum and Ecum for cumulative output changes of contractions and expansions, measured in percentages. Conc denotes the bilateral concordance measure between countries. *PDI* stands for power distance index, *IND* for the index of individualism, *MAS* for the index of masculinity/femininity and *UAI* for the uncertainty avoidance index. The variables *control*, *obedience*, and *trust* represent the responses to questions from the World Values Survey on the relevant cultural attitudes while *family important*, *parental duties*, and *respect and love for parents* represent responses regarding role of family ties, all measured in percentages. The table reports rank correlation between the business cycle statistics of a region and the relevant cultural indicators, both relative to the EU15 average, conditional on the first principal components of the difference of macroeconomic and institutional indicators from the EU15 average. A * indicates a rank correlation significantly different from zero at the 5% level

Table 6: Spearman Conditional Rank Correlations: BC Statistics and Cultural Indicators

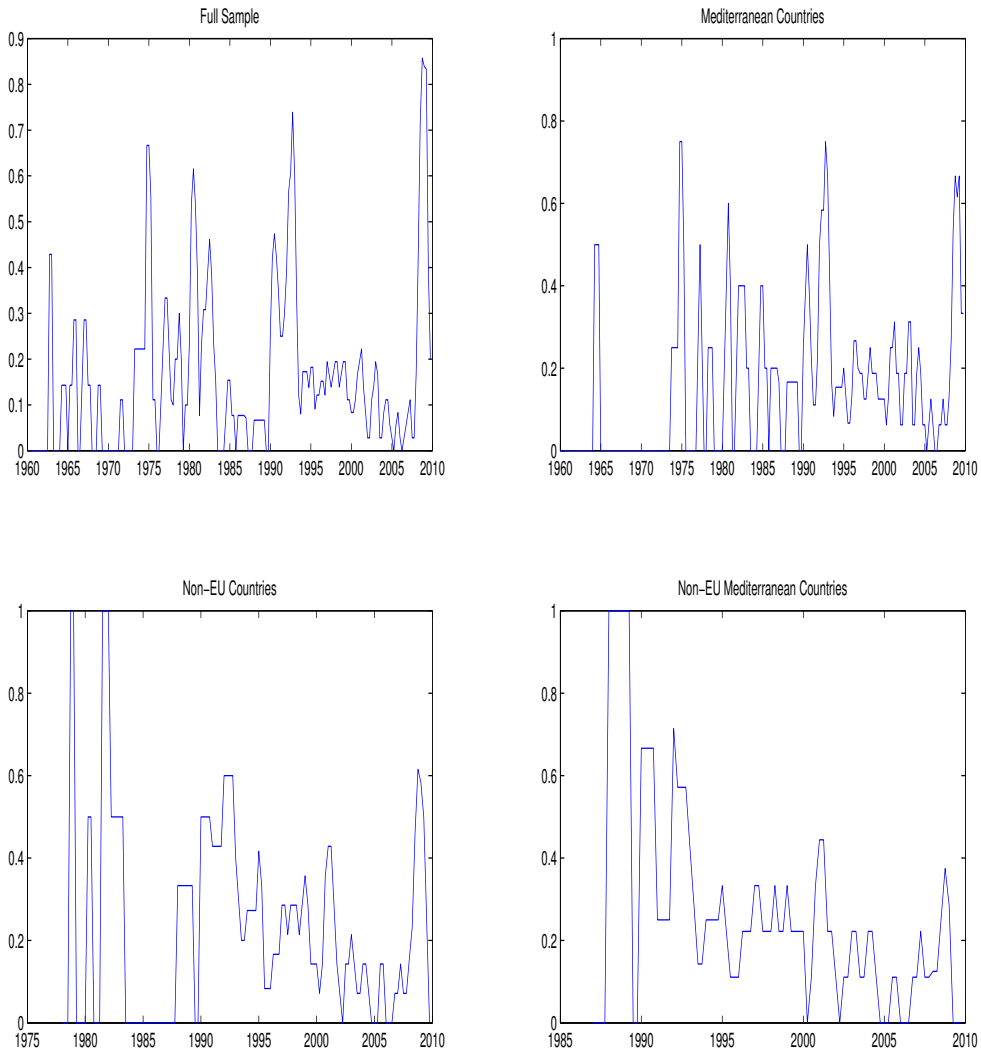

Figure 1: Diffusion Index in Recessions, 1975-2009.

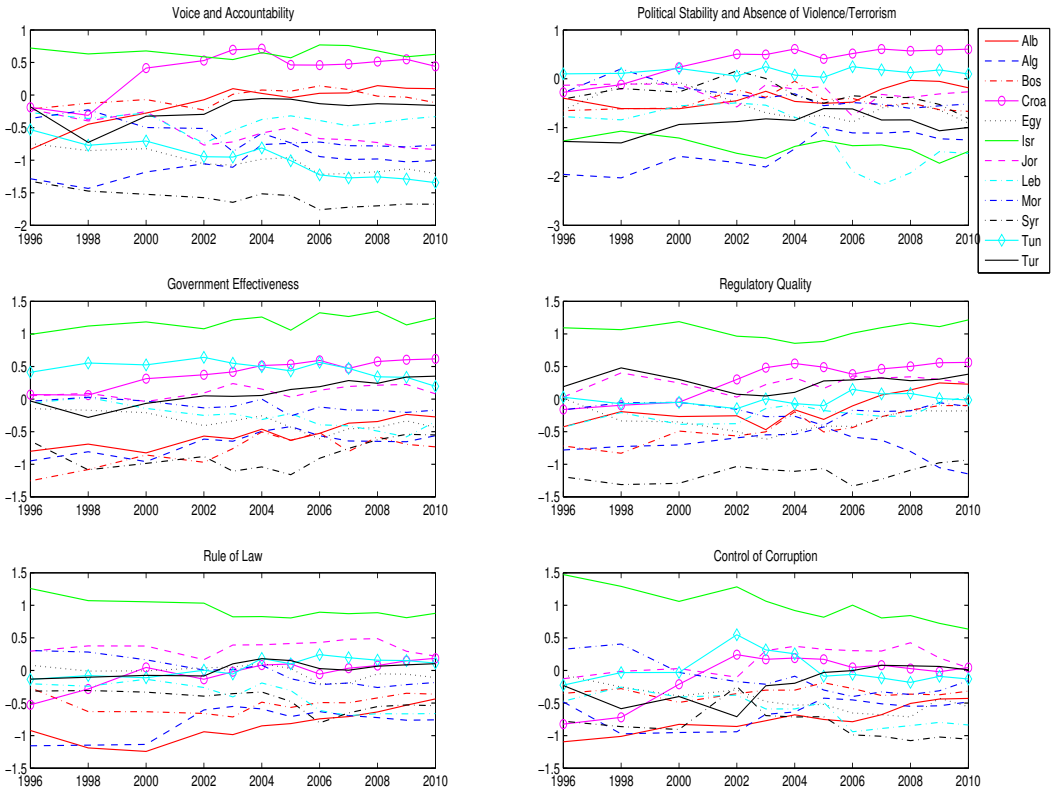

Figure 2: World Bank Governance Indicators, 1996-2010.

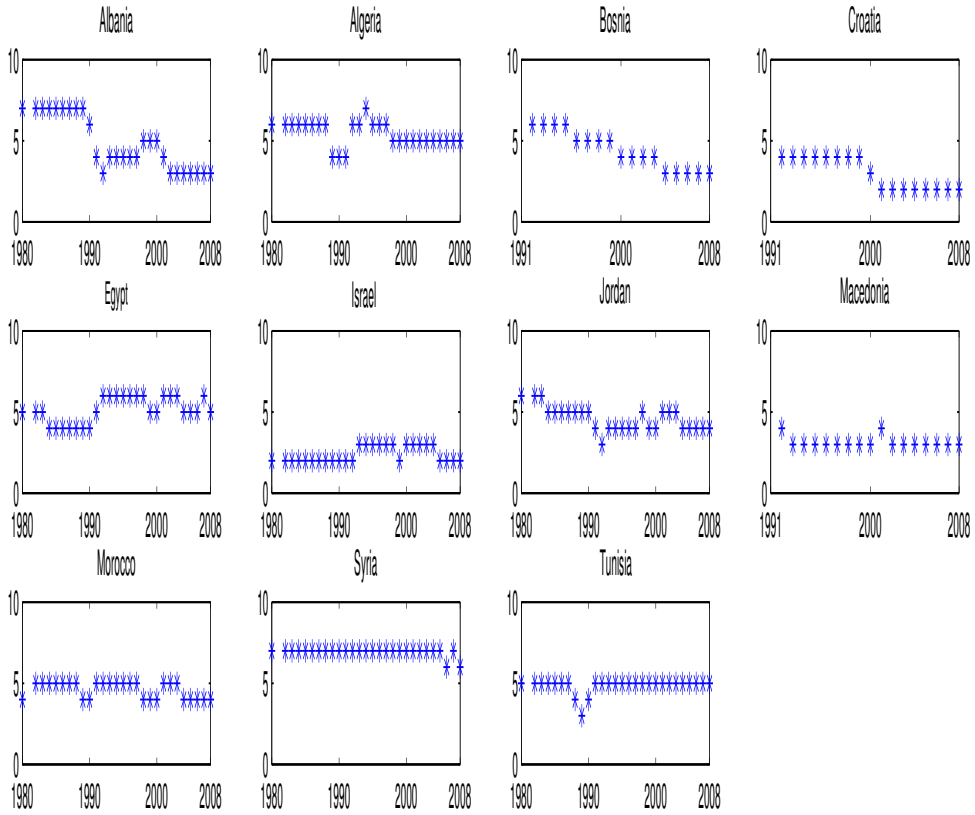

Figure 3: Freedom House Indicator, 1972-2008.