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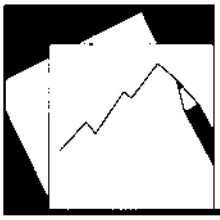

IMF Working Paper

Recoveries in the Middle East, North Africa, and Pakistan: Have Macroeconomic Policies Been Effective?

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Recoveries in the Middle East, North Africa, and Pakistan: Have Macroeconomic Policies Been Effective?

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Abstract

This paper identifies and documents the properties of output gap recessions and recoveries in the Middle East, North Africa, and Pakistan (MENAP) during the 1980 to 2008 period. It goes on to investigate the key determinants of the recoveries. The duration of MENAP countries' recessions and recoveries has increased from the 1990s to the 2000s. MENAP hydrocarbon exporting countries' recessions were on average more pronounced in the 2000s, and hydrocarbon importing countries' recessions milder. Fiscal policy is found to have played a key role during the recoveries to potential output, although with weaker effects for MENAP countries that are more open to trade. Monetary policy is found to have been less effective. This is likely to be related to the fact that many of the MENAP countries have fixed exchange rate regimes and hence have limited room for active monetary policy.

JEL Classification Numbers: E32, E62, E63, F43, H30, O43

Keywords: Recessions, recoveries, Middle East, North Africa, Pakistan, fiscal policy, monetary policy, investments, hydrocarbon exporting countries, trade openness

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I. INTRODUCTION

The 2008-09 global economic and financial crisis also affected countries in the Middle East, North Africa, and Pakistan (MENAP). The growth slowdown in MENAP countries has been somewhat less severe than in many other regions, as a result of limited integration with global capital markets and positive spillovers from the region's oil exporters. While growth in the MENAP countries is expected to improve as the world economy begins to recover, it is an open question what role countries' policies can play to strengthen the extent to which they recover in line with the rest of the world.

This paper examines the factors that have helped stimulate recoveries in MENAP countries. In particular, it investigates the role of countercyclical fiscal and monetary policies. Earlier research on recessions and recoveries has focused on the determinants of recoveries from recessions caused by specific events such as currency crises or banking crises (e.g. Kim, 2001 and Barro, 2001), or examined recoveries in other groups of countries (see IMF, 2008a, and IMF, 2008b, which studied recoveries in advanced and emerging market countries, respectively) and regions, such as East Asia (Park and Lee, 2001). Cerra et al. (2009) undertakes a comprehensive examination of recoveries in a sample of 197 countries but does not analyze the effects of macroeconomic policies in MENAP countries *per se*.

This paper makes two contributions. First, it documents the properties of output gap recessions and recoveries in MENAP countries which were not covered in earlier studies. In particular, the analysis of hydrocarbon-exporting MENAP countries is tailored to properly take into account the effect of hydrocarbon prices and production on economic activity and fiscal space. Recessions and recoveries in the hydrocarbon and non-hydrocarbon exporting MENAP countries are examined because their economic cycles have been shown to be closely linked. For instance, Ilahi and Shendy (2008) show that remittance outflows and the accumulation of financial surpluses during oil booms in the GCC oil-exporting countries are positively associated with private consumption and investments in other countries in the Middle East. Second, the paper analyzes the effectiveness of macroeconomic policies, namely countercyclical fiscal and monetary policies, in the MENAP countries in stimulating recoveries. In order to do this, the paper adopts a specific methodology to identify recessions in the MENAP, namely a negative output gap relative to potential. The focus of the analysis is on understanding the determinants of recoveries from negative output gaps. The analysis in the paper complements the analysis in Abdih et al. (2010) which documents the cyclical properties of fiscal policy in MENAP countries and shows that several MENAP countries pursued countercyclical discretionary fiscal policies in the current global crisis.

The paper identifies 59 episodes of recessions across a panel of 20 MENAP countries over the 1980-2008 period. Recessions are defined as periods where output is below potential, which is proxied by long-term trend output. For the 10 hydrocarbon-exporting countries in the panel, the empirical analysis focuses on non-hydrocarbon output growth, instead of the overall one. Production of oil and gas is mainly driven by changes in OPEC production

quotas (oil) and production capacity (natural gas) and does not necessarily react to countercyclical macroeconomic policies.[2] The paper then identifies factors that are associated with recoveries of output back to its potential. Specifically, it examines the role of countercyclical monetary and fiscal policies, trade openness, export growth, and pre-recovery levels of investment, and public debt.

The statistical analysis of the paper suggests that:

- Episodes of negative non-oil output growth are quite rare in MENAP countries.

- Non-hydrocarbon output growth in oil-exporting MENAP countries has on average been higher than output growth in the other MENAP countries but also more volatile.

- The MENAP's hydrocarbon exporters experienced more severe recessions in the 2000s than in the 1990s. This likely reflects the downturn in the industrial countries in the aftermath of the bursting of the high-technology stock market bubble in the early 2000s and the delayed effect of the low oil prices in 1998-1999. By contrast, the other MENAP countries' slowdowns were milder in the 2000s reflecting improvements in their policy frameworks made since the mid-1990s. The other MENAP countries' slowdowns in the 2000s were mostly caused by spillover effects from hydrocarbon exporters in the region.

- The duration of output gap recessions increased for all MENAP countries from the 1990s to the 2000s. The duration of recoveries also increased somewhat over the two decades.

- Fiscal stimulus is associated with stronger recoveries in both groups of MENAP countries. There is also evidence that the impact of fiscal policy is weaker in countries with a higher openness to trade in line with leakage effects.

- Monetary policy *per se* does not appear to have played a significant role in stimulating recoveries. Its limited effectiveness is likely to be related to the stabilized and pegged exchange rate regimes operated by the countries in the sample which limit the scope for independent monetary policy and renders changes in money endogenous rather than a variable that policymakers can control.

[2] It should also be noted that fiscal space is only loosely related to current oil prices. Most oil-exporting countries implement a fiscal rule whereby the budget is based on a conservative oil price. As a result, oil price windfalls are initially saved. Higher oil prices lead to higher spending in later years to the extent that the rise in the oil price persists. In case of an economic downturn or a fall in oil prices, previous savings can be used to sustain higher spending than would otherwise be the case.

- Other main determinants of the strength of recoveries are the pre-recovery non-oil trade openness to GDP ratio and the public debt to GDP ratio, as well as the growth of real exports.

The paper is organized as follows. Section 2 discusses the factors that can help spur growth after a growth recession and reviews the evidence in the literature. Section 3 explains the methodology that is used to identify episodes of growth recessions and recoveries and presents the empirical strategy that is used to examine the determinants of the recoveries. It also presents the stylized facts on the growth recession and recovery episodes, describes the data, and presents the results of the empirical estimations. Section 4 concludes.

II. Determinants Of The Strength Of Recoveries

Previous studies have related the strength of recoveries to a broad array of factors, including:

- Proxies for fiscal and monetary policy measures taken in response to the output gap recession.

- Indicators of initial conditions, i.e. the level of key macroeconomic variables in the year prior to the recovery such as the degree of trade openness, real domestic credit growth, the investment to GDP ratio, the public debt to GDP ratio, and real export growth.

- Characteristics of the output gap recession such as the amplitude and duration of the recession.

Expansionary monetary policy can be expected to stimulate recoveries. However, many MENAP countries operate stabilized or pegged exchange rates. To the extent that (full or partial) capital controls allow a degree of independent monetary policy, an increase in the supply of money is likely to be associated with lower interest rates thereby providing support to the recovery.

On balance, fiscal policy can be expected to have a positive effect on recoveries. A fiscal impulse is likely to increase output through higher consumption and investment. However, there may be adverse effects on output from an associated increase in interest rates. And a substantial part of the impulse may be diverted to increased demand for imported goods depending on the degree of trade openness, thereby limiting the effect of the fiscal impulse on the recovery. Moreover, reduced public savings associated with the fiscal impulse may be interpreted by tax payers as a signal of higher taxes in the future, thus inducing an increase in private savings, particularly if the level of government debt is high, and eventually reducing the positive effect of the fiscal impulse on private demand. Ilzetzki et al. (2009) show how countries with relatively high public debt (higher than 50 percent of GDP) and more open

economies (export plus imports higher than 60 percent of GDP) have lower fiscal multipliers. The same study finds that multipliers are higher in economies with fixed exchange rate regimes, as in the Mundell-Fleming model monetary policy needs to accommodate fiscal policy, thus reinforcing the initial output effect of a fiscal expansion. The above argument would, therefore, suggest that there could be an important interaction effect between fiscal policy and the degree of trade openness. The empirical evidence on the effects of fiscal policy on recoveries is mixed. For instance, Park and Lee (2001) find a positive significant effect of public consumption on the pace of recovery from currency crises in East-Asian countries over the 1960 to 1995 period. By contrast, Barro (2001) finds expansionary fiscal policy to have negatively affected post-crisis recoveries in the same region.

As regards indicators of initial conditions, pre-recovery export growth, a proxy for lagged world growth, is expected to have a positive effect on the strength of recoveries by increasing total demand in the economy. This effect is likely to be more muted in the event of a recession that is highly synchronized across countries, such as the current one.

Higher trade openness, proxied by the sum of non-hydrocarbon imports and exports to non-hydrocarbon GDP, can be expected to be associated with stronger recoveries. Economies that are more integrated into the world economy stand to benefit more from an acceleration of the growth of global trade which has typically grown substantially faster than global output during the past decades. Milesi-Feretti and Razin (1998) find a positive association between trade openness and output recoveries using a panel dataset of 105 developing countries from 1970 to 1996. Hong and Tornell (2005) corroborate this finding, as they detect a positive effect of higher pre-crisis openness to trade on output recoveries one year after a crisis.

A higher investment to GDP ratio in the year before the recovery can be expected to have ambiguous effects on the recovery. On the one hand, a high investment to GDP ratio in the year before the recovery can be expected to positively affect the recovery. On the other hand, a crisis associated with an investment boom can weaken the recovery by giving rise to inefficiencies in investment decisions, by raising the debt burden of the corporate sector, and by being a prelude to higher nonperforming loans. In addition, a pre-recovery investment boom may cause a contraction of investment (from positive to zero) in the next period, i.e. during the recovery phase since there may be no need for additional investment once the desired stock of capital is obtained, thereby slowing the recovery. Indeed, for a group of 100 developing countries, Hong and Tornell (2005) find a negative effect of pre-crisis investments on output for up to three years after a crisis. However, the “sudden stops” in investment that this study finds may be less prevalent in the MENAP countries which did not experience absolute declines in real output. Higher growth of real domestic credit can be expected to have an ambiguous effect on the strength of recovery along the same lines as a higher investment to GDP ratio.

In addition to reducing the effectiveness of fiscal stimulus as discussed above, a high public debt to GDP ratio in the year before the recovery can be expected to have an independent negative effect on the strength of recovery. A heavy debt burden may act as an implicit tax on the resources generated by a country, and therefore reduce the size of domestic and foreign investments as well as their quality, raise creditors' concerns about the country's solvency, and create negative incentives for policy reforms (Corden, 1989).

The magnitude of the recession (amplitude) as well as the length of the recession (duration) can influence the growth rate during the recovery. The lower a country's level of output relative to its trend, the greater the scope for a higher subsequent growth rate as the economy rebounds to its potential growth. At the same time, the larger the output gap, the more difficult it would be for the country to close the gap in the first year. Therefore, the impact of amplitude on the recovery is ambiguous and likely to depend on the nature of the shock that caused the recession. It could be expected that longer (more persistent) recessions, for a given amplitude, would be associated with a slower recovery.

III. Empirical Analysis

A. Identifying Turning Points in Economic Activity

For the purposes of the empirical analysis, it is necessary to identify episodes of economic recessions and recoveries. This paper follows the "growth cycle" approach (periods of above-trend and below-trend rates of economic growth) to dating turning points rather than the "classical" approach which relies on movements in the actual level of economic activity (real GDP, see for example, Cashin and Ouliaris, 2004, and IMF, 2008a). This is done because several countries in the sample did not experience many observable declines in the level of non-hydrocarbon GDP (see Figure 1).

In order to describe the methodology to define turning points and periods between turning points, the taxonomy of Mintz (1972) is adopted as a starting point. More specifically, turning points are described as downturns and upturns, with periods between downturns and upturns (upturns and downturns) denoted as low-rate (high-rate) growth phases.[3] However, the procedure used in this paper deviates from Mintz (1972) by defining the recession phases as the portion of the low-rate phase in which non-hydrocarbon output is below potential — measured using the Hodrick-Prescott (HP) filter (PO in Figure 2)—by more than 0.5 percent (i.e. the output gap is less than -0.5 percent). The latter restriction is needed so as to focus the analysis only on meaningful growth slowdowns. Upturns (U) are defined as the maximum negative output gap (represented by the largest deviation of the cycle—the solid line in Figure 2—from PO) because they represent the points after which recoveries commence. The

[3] In a growing economy high-rate phases must coincide with expansions in the classical cycle, yet low-rate phases may be associated with either phase of the classical cycle.

recovery phase is then defined as the portion of the high-rate phase over which the economy moves from U+1 to non-oil potential output, within plus or minus 0.5 percent.[4]

We could have defined the recovery phase as the period over which the economy reaches the next peak (D in Figure 2) from U+1--in line with classical procedures to date business cycles. However, this would capture periods where non-oil output is above potential output (positive output gaps) which could encompass other economic issues (e.g. overheating and inflation problems) that could warrant different macroeconomic policies. The amplitude of the recession is, therefore, defined as the distance between U and potential output, and its duration is the number of years of negative output gaps ending at U.

B. Empirical Strategy and Data

The paper studies the determinants of the strength of recoveries in MENAP countries. To this end, an empirical model which relates economic performance in the recovery phase to measures of countercyclical macroeconomic policies, initial conditions, and variables that control for the magnitude and length of the economic recession is estimated:

$$\begin{aligned} \mathrm{Re}cStrength_{i,recov} = \alpha + \beta Amplitude_{recess} + \delta Duration_{recess} + \gamma MacroeconomicPolicy_{i,recess} \\ + \lambda InitialConditions_{i,recess} + \varepsilon_i \end{aligned} \quad (1)$$

There is no common definition of the strength of recoveries. Some studies have used the growth rate in the year after a trough or the average over a few years after a trough (e.g. Milesi-Feretti and Razin, 1998, and Cerra et al., 2009). Other studies measure it as the change in output growth following a crisis (Gupta et al., 2003, and Hong and Tornell, 2005) and as the deviation of output growth from the tranquil period average (Hong and Tornell, 2005). In this paper, the strength of recovery is defined as the real non-oil GDP growth in the first year of the recovery phase (U+1) or the average growth over the whole recovery phase.

It was mentioned previously that countries' hydrocarbon output is constrained by capacity and/or Organization of Petroleum Exporting Countries (OPEC) production targets. Therefore, the relevant measure of the recoveries to potential output in hydrocarbon-exporting countries relates to non-hydrocarbon output.

[4] For the cases in which the ±0.5 percent band is not instrumental to define the end date of the recovery, the last year of the recovery is the one that minimizes the distance from the observation in the last recovery year before the lower band is reached compared with the distance from the upper band to the first year's observation that exceeds the band.

A brief description of the construction of each of the explanatory variables in the regressions is given below. Data sources and variable definitions are discussed in Appendix. The key focus of the analysis is on the impact that countercyclical fiscal and monetary policies have on the recovery of growth. An important issue that needs to be tackled in this regard is the problem of endogeneity of the macroeconomic policy variables. For instance, an increase in the fiscal deficit can contribute to higher growth. But an exogenous increase in growth could contribute to a fiscal surplus, due to the functioning of automatic stabilizers (e.g. with higher growth causing higher tax revenues and lower social safety net outlays) and discretionary countercyclical policy actions by the government. The latter effect would make it difficult to find evidence of the former effect, incorrectly leading to the conclusion that fiscal stimulus (from higher deficits) does not raise growth.

Toward this end, the pre-recovery (or lagged) values of the macroeconomic policy variables are used in the estimations. In addition to dealing with the issue of endogeneity, these variables capture that there can be a delay in the effect of a fiscal or monetary stimulus on the economy. The paper relates the growth in the first year of recovery (U+1, or the average growth in the entire recovery phase) to the lagged fiscal impulse (i.e. at U). The fiscal impulse (imp) is defined as the difference in the non-hydrocarbon fiscal balance to non-hydrocarbon potential output ratio between U and U-1.

$$imp_{1,U} = -(fb_U^{NO} - fb_{U-1}^{NO}) \quad (2)$$

where a positive fiscal impulse corresponds to a decline in the non-hydrocarbon balance. In addition, the non-hydrocarbon fiscal balance is calculated as a ratio to potential output instead of actual output at U to reduce endogeneity with the growth of output in the first year of the recovery ($\left(\left(\frac{Y_{U+1}}{Y_U}\right)-1\right)$). The non-hydrocarbon fiscal balance to potential output ratio is calculated as:

$$fb_t^{NO} = \frac{R_t^{NO}}{GDP_t^{NO}}\frac{Y_t^{NO}}{Y_t^{NO,P}} - \frac{G_t}{GDP_t^{NO}}\frac{Y_t^{NO}}{Y_t^{NO,P}} \quad (3)$$

where $\frac{R_t^{NO}}{GDP_t^{NO}}$ and $\frac{G_t}{GDP_t^{NO}}$ are, respectively, the ratios of central government non-hydrocarbon revenues and spending to non-hydrocarbon GDP (GDP^{NO}), and Y^{NO} and $Y^{NO,P}$ are the actual and potential real non-oil output.[5] In line with Cerra et al. (2009), this approach does not distinguish between a fiscal impulse resulting from discretionary fiscal policy changes and automatic stabilizers as there is no reason to assume that the latter factor would be less effective than the former to stimulate the recovery.

The growth rate of money (either nominal or real) at the upturn is used as the indicator of monetary policy.[6] However, since the majority of the countries in the sample have *de facto* currency board arrangements, conventional pegs to a single currency or composite basket of currencies, they have limited room for active monetary policy. Nonetheless, some national central banks could still have some autonomy in determining the spread between domestic and foreign interest rates and, therefore, in operating monetary policy in the short run, as shown in Maziad (2009) for the case of Jordan.

The initial conditions included in the baseline regression estimations are: real exports growth in the year before the recovery (U),[7] the ratio of non-oil trade to non-oil potential GDP at U, the ratio of fixed capital formation to potential GDP at U-1,[8] and the ratio of public debt to potential GDP at U. Using the lagged values of these variable (i.e. at U) and dividing the non-oil trade by potential non-oil GDP and the fixed capital formation and public debt variables by potential overall GDP should help minimize possible endogeneity of these variables with the growth of non-oil output at U+1.

C. Data and Descriptive Statistics

The sample is composed of 10 hydrocarbon exporting countries and 10 other countries in the MENAP. The hydrocarbon exporters included in the sample are the six Gulf Cooperation Council (GCC) countries--Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates (UAE)--and Algeria, Iran, Libya, and Yemen. The hydrocarbon importers comprise Djibouti, Egypt, Jordan, Lebanon, Mauritania, Morocco, Pakistan, Syria, Sudan and Tunisia. The countries are divided into hydrocarbon-exporting and hydrocarbon-importing following the IMF's Middle East and Central Asia Departments May 2008 Regional Economic Outlook

[5] Potential non-oil output was calculated by applying the HP filter.
[6] Because of the limited availability of interest rate data for MENAP countries, monetary policy as deviations from a policy rule could not be measured.
[7] Real exports growth rather than real non-oil exports growth has been included because data on the volume of non-oil exports in many of the oil-exporting countries is unreliable.
[8] Information on non-oil investments is not available. The investment to GDP ratio at U-1 is used to capture the pre-recession trough level of investments.

publication which groups the countries based on the share of oil in total exports,[9] with the exception of Sudan that has been labeled as a hydrocarbon importer because of its low levels of hydrocarbon exports over all the considered period. The sample period is from 1980 to 2008. However, data for the hydrocarbon exporting countries in the sample is only available from 1990 onward (with the exception of Algeria, for which data are available from 1991).

The properties of real non-hydrocarbon output growth rates (first differences of logarithms of real output) for each of the 20 countries in the sample are reported in Table 1. Average growth rates of other MENAP countries (excluding Lebanon) and volatility (as measured by the standard deviation of real non-oil output) are similar to those of non-hydrocarbon exporting countries in Africa and Latin America. The hydrocarbon exporting MENAP countries, on the other hand, have had higher average non-hydrocarbon growth rates and slightly higher volatility over the 1990-2008 period compared with the hydrocarbon-importers and hydrocarbon exporting countries in other regions. Table 1 also reports the autocorrelation coefficients of the first two lags of the output growth series. The first lags are generally positive, but the second lag is negative for the MENAP hydrocarbon exporters and positive for the other countries. This suggests that shocks to the MENAP hydrocarbon exporters cycles are mean reverting while shocks to MENAP hydrocarbon importers cycles are relatively more persistent.

The standard deviation, skewness, and kurtosis of the growth cycles for the MENAP countries (filtered non-oil output series) extracted by the Hodrick-Prescott (HP), Baxter-King (BK) and Christiano-Fitzgerald (CF) filters respectively are shown in Table 2.[10] On average, filtered non-hydrocarbon GDP exhibits higher volatility in the hydrocarbon-exporting countries than in the other countries, excluding Lebanon (which suffered from extensive conflicts over the sample period), irrespective of the filtering method used. The hydrocarbon importing MENA countries show negative skewness of real non-oil GDP implying larger downward spikes than upward spikes, but this disappears in the case of the BK and CF filters once Lebanon is excluded. The average skewness of hydrocarbon exporters', on the other hand, is very close to the normal distribution. The HP-filtered data suggests that average skewness for the GCC countries was also negative. The real non-oil GDP displays on average excess Kurtosis (leptokurtic distribution—with tails thicker than the normal distribution) for all the country groups, suggesting that large movements in MENAP (filtered) output are relatively common.

[9] Countries are classified as hydrocarbon exporters if the share of hydrocarbon exports in total exports exceeds 50 percent. Some countries that are classified as hydrocarbon importers also export hydrocarbons (e.g. Egypt and Syria). Because data on real non-hydrocarbon GDP is not available for a sufficiently long period for these countries, total GDP is used in the analysis.

[10] For the HP filter the smoothing parameter, λ, has been set to 100. For the BK filter, Burns-Mitchell recommendations for annual data have been adopted, setting plo and phi to 2 and 8, respectively. Finally, for the CF filter, plo and phi are set again to 2 and 8.

The HP-filtered data is used to identify the turning points in economic activity. Table 3 shows the start and end dates of the recoveries by country. Because the data for the hydrocarbon-exporting countries in the sample is limited to the period from 1990 onward, the number of turning points identified is 22 compared with 37 for the hydrocarbon-importing countries in the regions.[11] Figure 1 presents the HP-based output gaps and the non-oil GDP growth rates. The recovery phases are denoted by shading and the recession phases denoted by no shading in this figure.

D. Basic Facts on Episodes of Recessions and Recoveries in the MENAP Region

Table 4 reports the average duration (in years) of the recession and recovery phases of the 59 episodes identified and the average amplitude of the aggregate phase movement in output (in percent change), and the steepness (amplitude divided by duration or the average annual amplitude) by decade (1980-1989, 1990-1999, and 2000-2008).[12] The data on the median duration of recessions in real non-hydrocarbon GDP suggest that recession phases were equally as long as recovery phases for hydrocarbon importing MENAP countries in the 2000s while recovery phases tended to be shorter than recession phases in the 1990s. A typical recession and recovery in the 2000s persisted for about 2 years. The data also show that there has been a trend increase in the length of recessions and recoveries of MENAP hydrocarbon-importers. The median recession lasted 2 years for the MENAP hydrocarbon importers in the 2000s compared with 1 year in the 1980s. The median amplitude measure shows that non-oil output during recessions ranged between 3 to 4 percent below potential output for the hydrocarbon importing MENAP countries across the three decades. Interestingly, recoveries to potential output are found to have been less steep on average than recessions for the hydrocarbon-importing MENAP countries in all three decades.

The median duration of recessions in MENAP hydrocarbon-exporting countries was equal to the median duration of recoveries in the 1990s and 2000s respectively. But the duration of recessions and recoveries has increased over time for the hydrocarbon-exporting MENAP countries. The median duration of a recession was 2 years in the 2000s compared with 1 year in the 1990s. The median amplitude of the recessions was also larger for these countries in the 2000s (nearly 6 percent negative output gap) than in the 1990s (about 2 percent negative output gap). The speed with which real non-oil GDP changed in the recessions (about 2.3 percent per year) was slightly faster than in the recoveries in the 1990s (1.9 percent per year) while the opposite was true in the 2000s.

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[11] It should be noted that since annual data is used, the analysis in the paper does not take into account recessions and recoveries that are completed in the same year.

[12] Only four episodes are dropped if the criterion to identify a recession phase is changed to having a negative output gap that exceeds 1 percent instead of 0.5 percent. This does not alter the results on the average duration and amplitude of the recession and recovery phases.

E. Estimation Results

Basic descriptive statistics for the data used in the regression estimations are reported in Table 5 for the 57 episodes included in the regressions for the MENAP.[13] The results for the strength of recovery equations are presented in Table 6. The dependent variable in Table 6 is growth of real non-oil output in the first year of the recovery (U+1). Another set of equations are also estimated that use the growth of real non-oil output in the entire recovery phase as the dependent variable. The results are broadly the same as the results in Table 6 and are not shown here. The equations are estimated with ordinary least squares including fixed effects. The basic conditioning variables in the equations are: recession amplitude, recession duration, a measure of the fiscal impulse, real export growth, the ratio of fixed capital formation to GDP, d non-oil trade openness, and the interaction of the fiscal impulse with non-oil trade openness. A proxy for monetary policy (either real or nominal money growth) is included as a conditioning variable in the regressions in columns 1 and 2. The results of estimating the regressions including the ratio of public debt to GDP as an additional conditioning variable are reported in column 3.

The results confirm a strong and positive contribution of fiscal policy to growth during the first year of the recovery. At the same time, the interactive term between the non-oil trade openness and fiscal impulse variable is negative giving some credence to the hypothesis that a higher degree of trade openness can lead to fiscal leakage. Taking into account the interactive term and assuming the sample average degree of non-oil trade openness of 48 percent, the estimated coefficient in the column 2 regression specification implies that a 1 percent of non-oil GDP reduction in the non-hydrocarbon fiscal balance leads to a 0.25 percent increase in non-oil GDP growth. The regression results suggest that there is an independent positive effect of trade openness on the strength of recovery. The estimated coefficient for the ratio of non-oil trade openness is significant in most of the regression specifications.

Monetary policy is found to be less important for post-crisis recovery. The coefficients on the growth of the nominal and real money supply are insignificant. A measure of the pre-recovery rate of real domestic credit growth which may be related to monetary easing is also found to be statistically insignificant (this result is not shown in the table).[14]

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[13] Qatar 1995 is excluded from the sample because without it the results are substantially more robust to dropping one country at a time. Lebanon 1982 is also excluded because of fiscal data inconsistencies related to the war in that year.

[14] Estimation of regressions that use the fraction of recovery completed in the first year (defined as $\text{Compl\_rec}_{U+1} = \frac{\text{AmplitudeU} - \text{AmplitudeU+1}}{\text{AmplitudeU}}$) as the dependent variable also confirm the results shown here that fiscal policy has been effective in speeding up recoveries in the MENAP countries while monetary policy has not. These estimations suggest that a one percent increase in the fiscal impulse causes a 5 percent reduction in the output gap or a 5 percent increase in the fraction of the recovery that is completed in the first year.

As regards the indicators of initial conditions, pre-recovery real export growth has a positive and significant impact on the post-recovery growth, in all the regression specifications excluding column 1 in Table 6. A 10 percentage point increase in the growth of real exports leads to a roughly 1 percentage point increase in growth in the first year of recovery. The sign of the estimated coefficient for the ratio of gross fixed capital formation to GDP depends on the regression specification but is always insignificant. The coefficient on the ratio of public debt to GDP in column 3 is negative as expected and significant. However, its effect is not significant in the regression with average growth over the entire recovery phase (not shown here).

The results suggest a statistically significant positive relationship between the recession amplitude and growth in the first year of recovery. For example, the estimated coefficients imply that a 5 percent negative output gap is associated with a 2-3.4 percentage point increase in non-oil GDP growth in the first year of recovery. This is in line with the notion that there is more scope for a growth rebound after a sharp fall of output below potential. On the other hand, the duration of the recession always shows a negative coefficient, but this is significant in only one regression, confirming that longer recessions are associated with longer recoveries.

The results are fairly robust to changes in the list of the conditioning variables and the number of observations. In particular, the results are robust to excluding the four recession episodes for which the output gap at U is between -0.5 and -1 percent and to restricting the sample period to the period from 1990 onward. The results are also robust to defining the recession (recovery) phase according to the Mintz (1972) taxonomy so that it covers the entire period from a peak (trough) in the filtered real GDP series to its trough (U, peak), instead of the period from potential output to U (from U to potential output). This only affects the construction of the recession duration and amplitude variables that are included in the regressions. The results remain broadly the same as before. Identifying recoveries based on overall output and using the growth rate of overall output in the first year of recovery instead of non-oil output for the oil-exporting MENAP countries yields weaker results on the effects of macroeconomic policies and other key determinants. This is in line with the notion that oil and gas production are determined by other factors, including production quotas and capacity.

IV. CONCLUSIONS

This paper is the first to analyze the statistical properties of output gap recessions and recoveries in the MENAP countries. It is also the first to analyze the determinants of recoveries for these countries. The paper finds that episodes of negative real growth rates (negative real non-hydrocarbon growth rates for hydrocarbon-exporting countries) have been rare for the 20 MENAP countries in the sample. However, the MENAP countries are found to have experienced periods of meaningful growth slowdowns, including in the context of the

current global financial crisis. In particular, the paper establishes 59 episodes during which output in the MENAP countries was significantly below potential output during the period 1980-2008.

An examination of these episodes suggests that the features of recessions and recoveries in the MENAP countries appear to be changing. In particular, the duration of recessions and recoveries increased from the 1990s to the 2000s. This could be related to the changing nature of recessions in MENAP countries; however, its investigation is outside the scope of this paper and could be an interesting topic for future research. Hydrocarbon-exporting MENAP countries had more pronounced recessions in the 2000s than in the 1990s, but the other MENAP countries' recessions were shallower. At the same time, recoveries to potential output have typically taken longer than the time it took for growth to reach a trough in the 2000s while the opposite was true in the 1990s.

This paper investigates the factors that could help strengthen the MENAP countries' recoveries to potential output. According to our findings, countercyclical fiscal policy has helped strengthen recoveries in the MENAP countries. However, the MENAP countries that were open to trade benefited less from a fiscal expansion owing to leakage effects. At the same time, the effectiveness of monetary policy seems to have been limited, probably because of limited exchange rate flexibility. Of the other indicators of initial conditions, pre-recovery real export growth and the non-oil trade to GDP ratio appear to have had important positive effects in speeding up the recoveries, while high pre-recovery public debt had a negative effect. The pre-recession investment to GDP ratio does not appear to have been a key factor influencing recoveries in the MENAP countries.

The implication of these findings would be that MENAP countries should maintain a certain level of fiscal space to pursue expansionary fiscal policy in the event of a recession as fiscal policy has proven to be an effective driver of recoveries. In view of the evidence that higher trade openness weakens the effectiveness of fiscal policy, optimization of the impact of fiscal stimulus would seem to call for targeting additional spending at items and projects with a limited import content. However, given that increased trade integration supports long-term growth, this is not in any one country's long-term interest. In fact, the importance of leakage effects underscores the need for coordination in fiscal stimulus across countries. A coordinated fiscal stimulus as called for by the IMF at the onset of the 2008-09 global financial crisis would make sure that the "leakage" in the form of enhanced demand for foreign goods and services is offset by an equivalent increase in foreign demand for domestic goods and services.

Figure 1. Real Non-oil GDP Growth Rates and HP-Based Output Gaps

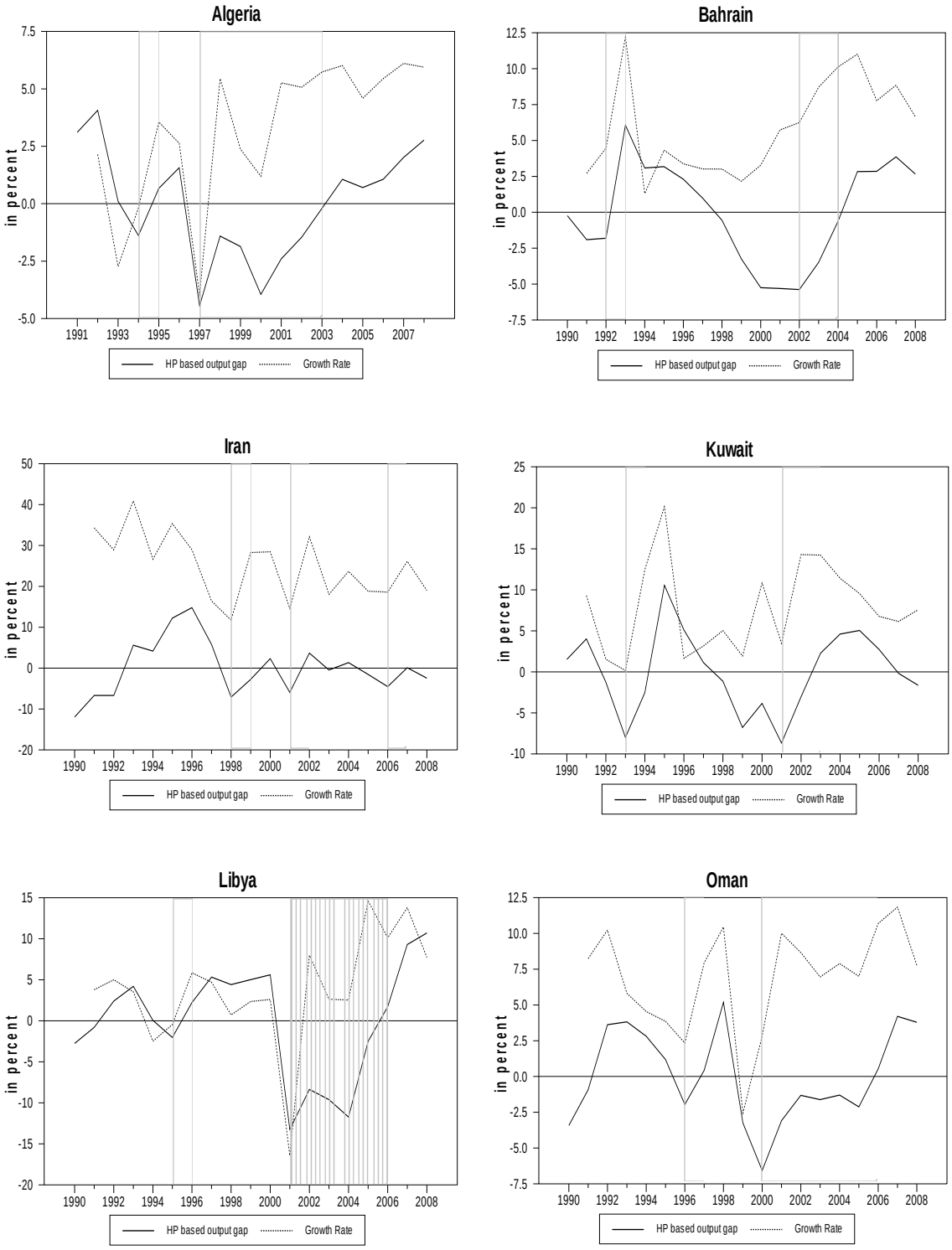


Figure 1. Real Non-oil GDP Growth Rates and HP-Based Output Gaps (continued)

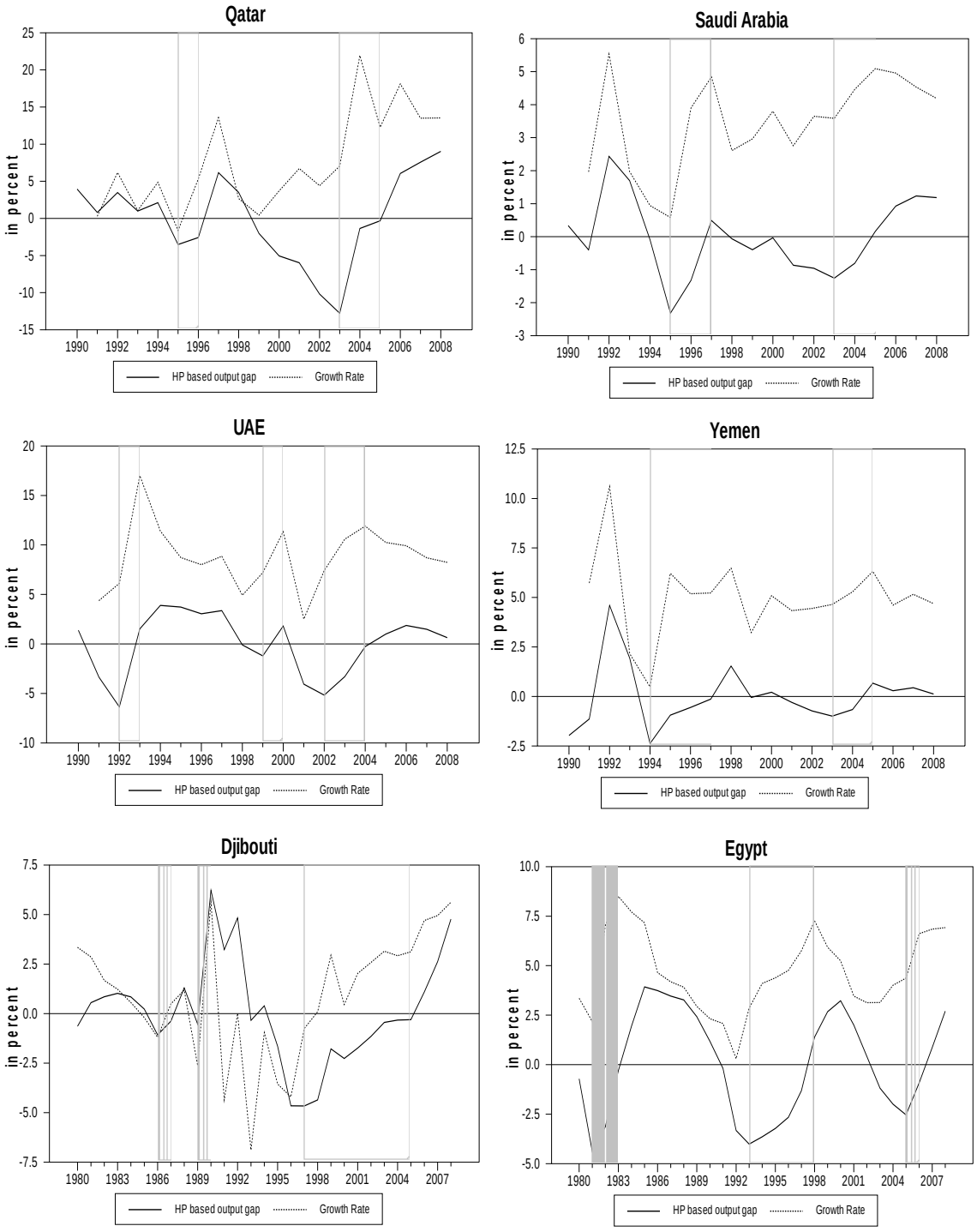


Figure 1. Real Non-oil GDP Growth Rates and HP-Based Output Gaps (continued)

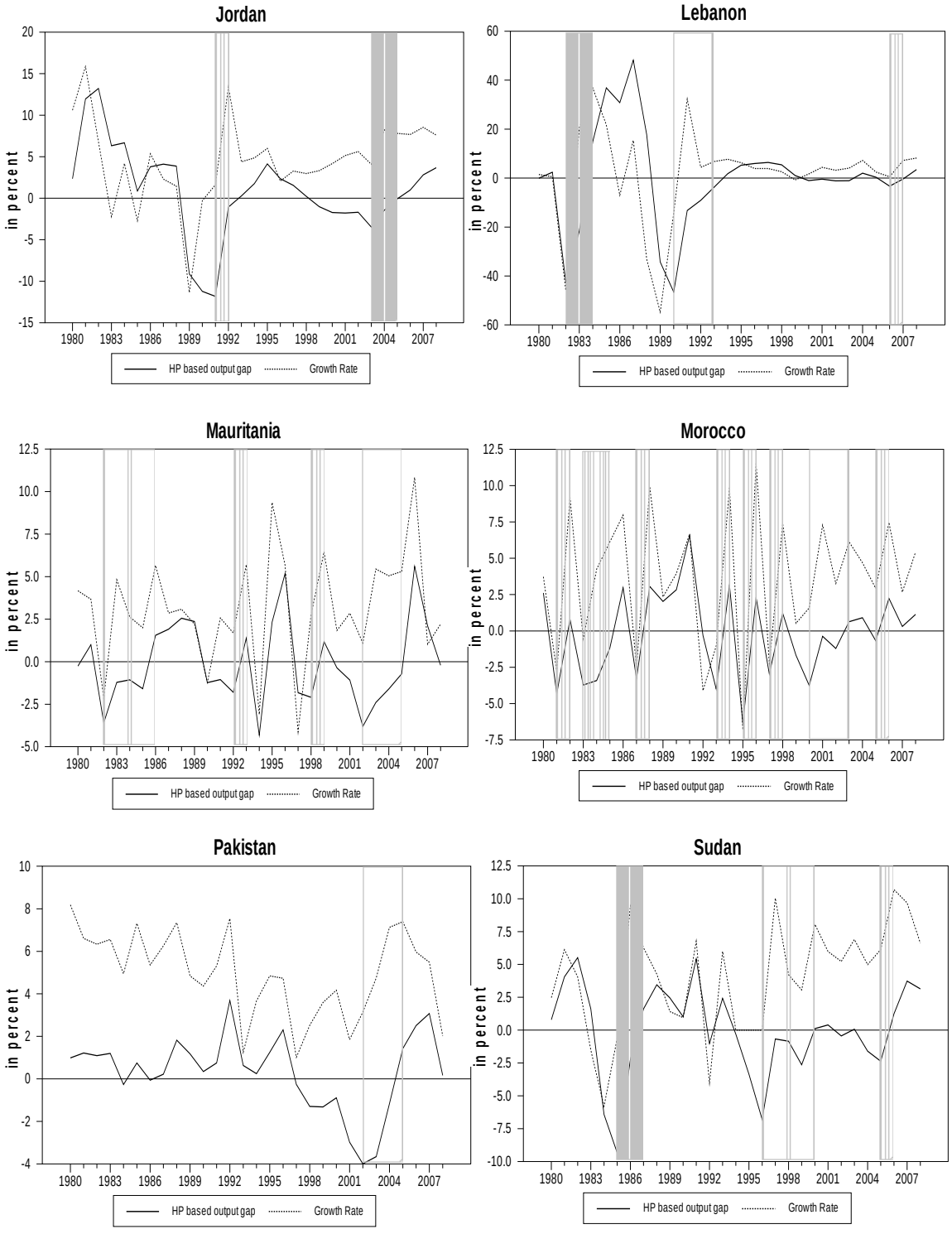
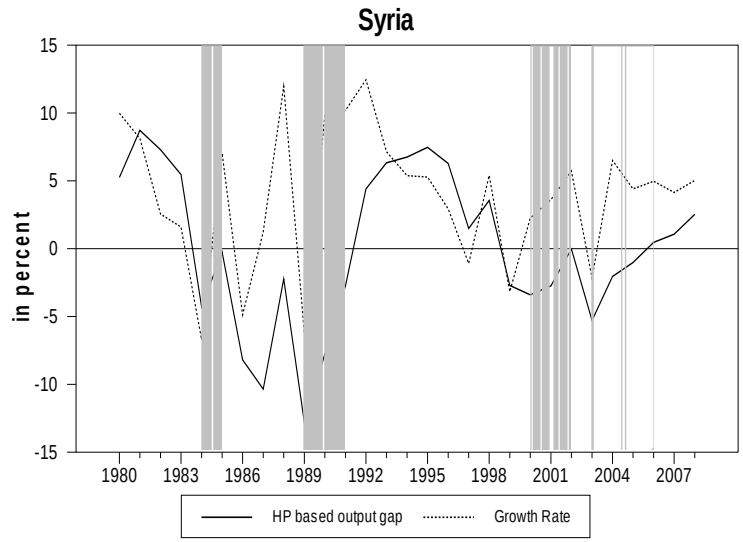


Figure 1. Real Non-oil GDP Growth Rates and HP-Based Output Gaps (continued)



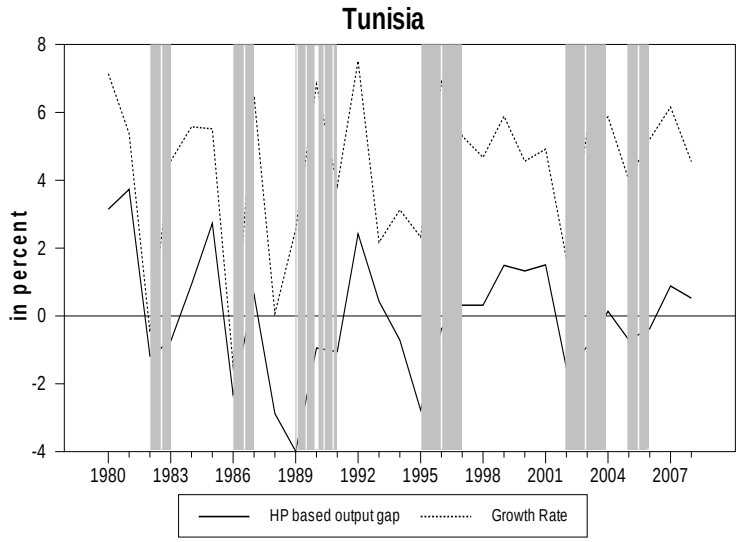
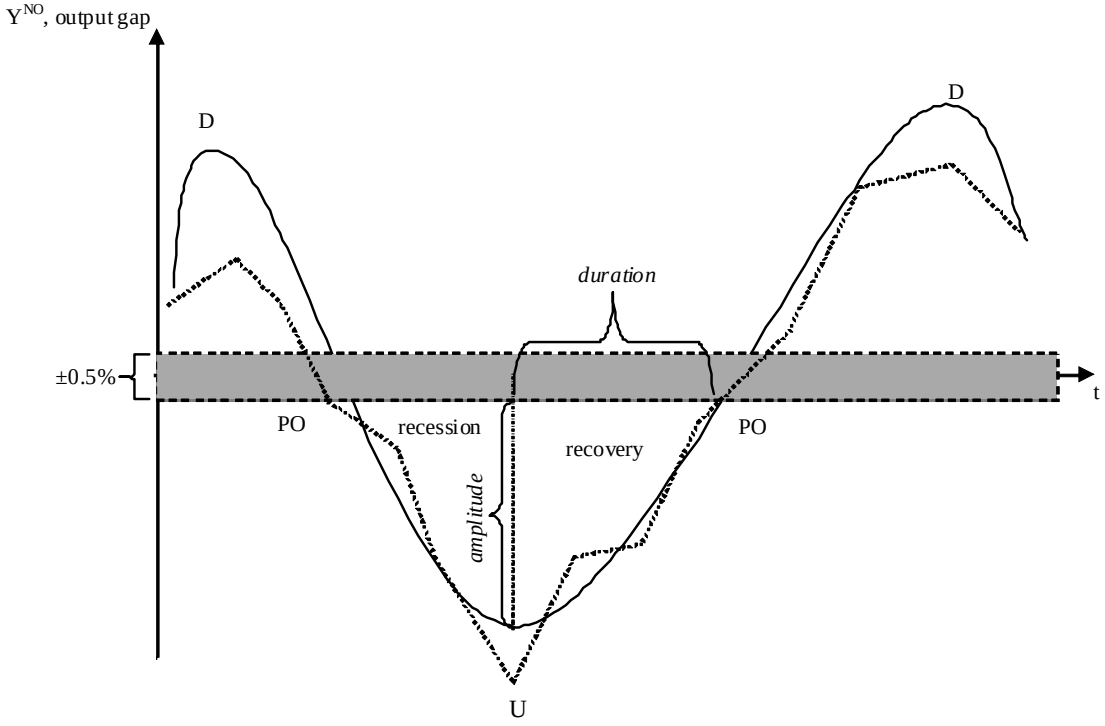


Figure 2. Recessions and Recoveries



Notes: Non-oil real GDP growth rate Y^{NO} is denoted by the dashed line, the HP output gap is denoted by the solid line and the potential output is the zero line. The vertical axis shows the growth rates in percentages and the percentage deviations from potential output. The horizontal axis represents the time t. D stands for downturn, U stands for upturn and PO stands for potential output. The ±0.5 percent band of the potential output is denoted by shading.

Table 1. Properties of Non-Oil Output Growth Rates

	Mean	Median	SD	Coeff of variation	Autocorr	
					1 y	2 y
1980-2008						
Nonhydrocarbon exporters in						
MENAP	3.57	4.09	5.09	1.43	0.11	0.14
Sub-Saharan Africa	3.71	4.34	5.07	1.58	0.17	0.08
Asia	5.3	5.82	3.41	0.69	0.39	0.07
Latin America	3.42	3.91	4.3	1.37	0.42	0.07
1990-2008						
Nonhydrocarbon exporters in						
MENAP	4.07	4.26	3.70	1.17	0.05	0.23
Sub-Saharan Africa	3.77	4.55	4.99	1.43	0.23	0.12
Asia	5.23	5.56	3.32	0.65	0.31	0.00
Latin America	4.11	4.45	3.3	0.88	0.4	0.1
Hydrocarbon exporters in						
MENAP	7.73	7.81	4.36	0.69	0.20	-0.02
GCC	6.70	6.38	3.95	0.58	0.25	-0.04
Other	9.27	9.95	4.97	0.87	0.12	0.02
Sub-Saharan Africa	4.96	6.61	11.40	2.88	0.46	0.20
Asia	4.91	7.07	5.71	1.17	0.45	0.13
Latin America	4.85	4.52	1.8	0.37	-0.03	-0.16

Notes: Sample moments were computed from log-differences of real output. Coefficient of variation is the ratio of the standard deviation to the arithmetic mean. Autocorrelations of one and two years are the first and second autocorrelation coefficients, respectively. Non-hydrocarbon exporters in sub-Saharan Africa include Botswana, Ghana, Kenya, Malawi, Rwanda, Senegal and South Africa. Non-hydrocarbon exporters in Asia include India, Korea, Malaysia, Philippines and Thailand. Non-hydrocarbon exporters in Latin American include Chile, Colombia, Costa Rica, Peru and Uruguay. African hydrocarbon exporters include Angola and Nigeria. Asian hydrocarbon exporters include Indonesia and Kazakhstan. Latin American hydrocarbon exporters include Ecuador and Venezuela.

Table 2. Descriptive Statistics on Filtered Non-Oil Output

Country	Standard Deviation			Skewness			Kurosis		
	HP	BK	CF	HP	BK	CF	HP	BK	CF
1980-2008									
MENAP hydrocarbon importers									
Total	4.9	3.2	3.21	-0.16	-0.13	-0.07	0.31	0.29	0.57
Excl. Lebanon	3.21	2.04	1.92	-0.16	-0.04	0.01	0.17	0.09	0.54
1990-2008									
MENAP hydrocarbon exporters									
Total	3.92	2.63	2.22	-0.01	-0.07	0.07	0.06	0.89	1.5
GCC	3.62	2.47	2.08	-0.21	0.21	0.07	-0.4	0.91	1.69
Other	4.17	2.77	2.34	0.16	-0.3	0.07	0.45	0.87	1.35
MENAP hydrocarbon importers									
Total	3.77	2.41	2.31	-0.42	-0.37	-0.11	1.41	1.97	0.78
Excl. Lebanon	2.88	1.82	1.58	-0.11	0.02	0.09	0.25	0.37	0.17

Notes: HP denotes the Hodrick-Prescott (1980) filtered data, BK denotes the Baxter-King (1999) filtered data and CF denotes the Christiano-Fitzgerald (2003) filtered data. Standard deviation is expressed as a percentage. The skewness measure is $\mu_3/(\mu_2)^{1.5}$ and the (excess) Kurtosis measure is $\mu_4/(\mu_2)^2 - 3$, where μ_τ is the r^{th} (central) moment.

Table 3. Recovery Years
(from trough (U) to potential output (PO))

MENAP hydrocarbon exporters									
Algeria	Bahrain	Iran	Kuwait	Libya	Oman	Qatar	S.Arabia	UAE	Yemen
94-95	92-93	98-99	93-94	95-96	96-97	95-96	95-97	92-93	94-97
97-03	02-04	01-02	01-03	01-06	00-06	03-05	03-05	99-00	03-05
	06-07						02-04		
MENAP hydrocarbon importers									
Djibouti	Egypt	Jordan	Leb.	Mauritania	Morocco	Pakistan	Sudan	Syria	Tunisia
-80	81-83	91-92	-80	-80	81-82	02-05	85-87	84-85	82-83
86-87	93-98	03-05	82-84	82-86	83-85		96-00	89-91	86-87
89-90	05-06		90-93	92-93	87-88		05-06	00-02	89-91
97-05			06-07	98-99	93-94			03-06	95-97
			02-05	95-96				02-04	
			00-03	97-98				05-06	

Notes: Upturns (U) and last years of recoveries (PO) of HP filtered data are reported.

Table 4. Average Duration, Amplitude, and Steepness of the Phases for Non-Oil Real GDP by Decade and Group of Countries

	1980-1989						1990-1999						2000-2008					
	Obs	Dur.	Dur.	Ampl.	Steep.	Steep.	Obs	Dur.	Dur.	Ampl.	Steep.	Steep.	Obs	Dur.	Dur.	Ampl.	Steep.	Steep.
Country		PO-U	U-PO	PO-U	PO-U	U-PO		PO-U	U-PO	PO-U	PO-U	U-PO		PO-U	U-PO	PO-U	PO-U	U-PO
MENAP hydrocarbon exporters																		
Mean	-	-	-	-	-	-	12	1.17	1.67	3.54	3.13	3.01	10	2.70	2.50	6.45	3.40	3.13
Median		-	-	-	-	-		1.00	1.00	2.34	2.34	1.93		2.00	2.00	5.67	2.40	2.67
SD		-	-	-	-	-		0.39	1.50	2.36	2.00	2.62		1.49	1.65	4.15	3.81	2.1
Coeff. of variation		-	-	-	-	-		0.33	0.90	0.67	0.64	0.87		0.55	0.66	0.64	1.12	0.67
MENAP hydrocarbon importers																		
Mean	14	1.43	1.64	6.95	5.63	4.02	11	2.00	2.54	8.54	4.60	4.46	12	2.17	2.00	2.88	1.71	1.58
Median		1.00	1.50	3.86	3.25	2.26		2.00	1.00	4.01	2.97	2.10		2.00	2.00	3.20	1.35	1.45
SD		0.85	0.84	10.71	10.66	5.23		0.77	2.30	12.92	6.41	4.91		1.47	1.04	1.38	1.36	0.81
Coeff. of variation		0.59	0.51	1.54	1.89	1.30		0.39	0.91	1.51	1.39	1.10		0.68	0.52	0.48	0.80	0.51
All MENAP countries																		
Mean	14	1.43	1.64	6.95	5.63	4.02	23	1.56	2.09	5.93	3.83	3.70	22	2.41	2.23	4.50	2.48	2.28
Median		1.00	1.50	3.86	3.25	2.26		1.00	1.00	3.51	2.37	1.96		2.00	2.00	3.78	1.79	1.73
SD		0.85	0.84	10.71	10.66	5.23		0.73	1.93	9.23	4.61	3.86		1.47	1.34	3.42	2.82	1.69
Coeff. of variation		0.59	0.51	1.54	1.89	1.30		0.47	0.92	1.56	1.20	1.04		0.61	0.60	0.76	1.14	0.74

Notes: Calculations on HP filtered data are reported. Duration, amplitude and steepness of HP filtered data are reported. The steepness is defined as the amplitude divided by the duration, and is measured as percent change. U stands for upturn and PO stands for potential output. Phases not completed at the beginning and/or end of the sample have been excluded from the calculations.

Table 5. Summary Statistics of all the Variables

Variable	Obs	Mean	SD	Min	Max
All MENAP countries					
Non-oil output growth (first year of recovery)	57	9.97	8.02	0.10	38.20
Recession amplitude	57	5.03	6.39	0.54	46.55
Recession duration	57	1.88	1.17	1.00	5.00
Fiscal impulse	57	0.21	6.23	-33.87	17.37
Real export growth	57	2.54	13.69	-26.61	52.55
Non-oil trade openness	57	47.52	28.24	5.14	130.78
Fixed capital formation/Pot. GDP at U-1	57	20.85	6.99	2.49	42.37
Nominal broad money growth	57	17.41	17.17	-7.37	87.91
Real broad money growth	45	8.13	14.09	-29.05	70.34
Real domestic credit growth	35	8.75	27.80	-68.84	136.48
Public debt/Pot. GDP	41	73.27	54.05	0.00	205.91
MENAP hydrocarbon importers					
Non-oil output growth (first year of recovery)	36	7.99	5.96	0.10	38.20
Recession amplitude	36	5.09	7.61	0.54	46.55
Recession duration	36	1.86	1.10	1.00	5.00
Fiscal impulse	36	0.56	2.95	-7.40	7.25
Real export growth	36	0.55	10.30	-26.61	18.80
Non-oil trade openness	36	41.60	21.11	5.14	99.21
Fixed capital formation/Pot. GDP at U-1	36	21.37	7.49	2.49	42.36
Nominal broad money growth	36	19.18	19.89	-7.37	87.91
Real broad money growth	31	8.63	15.67	-29.05	70.34
Real domestic credit growth	25	3.32	19.01	-68.84	47.05
Public debt/Pot. GDP	20	108.07	51.16	56.79	205.91
MENAP hydrocarbon exporters					
Non-oil output growth (first year of recovery)	21	13.35	9.94	3.62	37.92
Recession amplitude	21	4.93	3.61	0.99	13.26
Recession duration	21	1.90	1.30	1.00	5.00
Fiscal impulse	21	-0.38	9.63	-33.87	17.37
Real export growth	21	5.96	17.87	-25.62	52.55
Non-oil trade openness	21	57.65	35.82	9.69	130.78
Fixed capital formation/Pot. GDP at U-1	21	19.96	6.11	9.39	10.41
Nominal broad money growth	21	14.37	10.86	1.46	39.18
Real broad money growth	14	7.01	10.15	-10.56	24.34
Real domestic credit growth	10	22.33	40.86	0.64	136.48
Public debt/Pot. GDP	21	40.13	31.49	0.00	94.04

Variable	Obs	Mean	SD	Min	Max
All MENAP countries					
Non-oil output growth (first year of recovery)	57	9.97	8.02	0.10	38.20
Recession amplitude	57	5.03	6.39	0.54	46.55
Recession duration	57	1.88	1.17	1.00	5.00
Fiscal impulse	57	0.21	6.23	-33.87	17.37
Real export growth	57	2.54	13.69	-26.61	52.55
Non-oil trade openness	57	47.52	28.24	5.14	130.78
Fixed capital formation/Pot. GDP at U-1	57	20.85	6.99	2.49	42.37
Nominal broad money growth	57	17.41	17.17	-7.37	87.91
Real broad money growth	45	8.13	14.09	-29.05	70.34
Real domestic credit growth	35	8.75	27.80	-68.84	136.48
Public debt/Pot. GDP	41	73.27	54.05	0.00	205.91
MENAP hydrocarbon importers					
Non-oil output growth (first year of recovery)	36	7.99	5.96	0.10	38.20
Recession amplitude	36	5.09	7.61	0.54	46.55
Recession duration	36	1.86	1.10	1.00	5.00
Fiscal impulse	36	0.56	2.95	-7.40	7.25
Real export growth	36	0.55	10.30	-26.61	18.80
Non-oil trade openness	36	41.60	21.11	5.14	99.21
Fixed capital formation/Pot. GDP at U-1	36	21.37	7.49	2.49	42.36
Nominal broad money growth	36	19.18	19.89	-7.37	87.91
Real broad money growth	31	8.63	15.67	-29.05	70.34
Real domestic credit growth	25	3.32	19.01	-68.84	47.05
Public debt/Pot. GDP	20	108.07	51.16	56.79	205.91
MENAP hydrocarbon exporters					
Non-oil output growth (first year of recovery)	21	13.35	9.94	3.62	37.92
Recession amplitude	21	4.93	3.61	0.99	13.26
Recession duration	21	1.90	1.30	1.00	5.00
Fiscal impulse	21	-0.38	9.63	-33.87	17.37
Real export growth	21	5.96	17.87	-25.62	52.55
Non-oil trade openness	21	57.65	35.82	9.69	130.78
Fixed capital formation/Pot. GDP at U-1	21	19.96	6.11	9.39	10.41
Nominal broad money growth	21	14.37	10.86	1.46	39.18
Real broad money growth	14	7.01	10.15	-10.56	24.34
Real domestic credit growth	10	22.33	40.86	0.64	136.48
Public debt/Pot. GDP	21	40.13	31.49	0.00	94.04

Notes: Mauritania 2002 observation has been excluded in the domestic credit related calculations since it is an outlier.

Table 6. Regressions of Non-Oil Output Growth in the First Year of Recovery, 1980–2008

	(1)		(2)		(3)	
Recession amplitude	0.671	***	0.365	***	0.661	***
	(9.53)		(3.85)		(17.17)	
Recession duration	-0.577		-0.680		-1.289	***
	(-1.27)		(-1.50)		(-2.88)	
Fiscal impulse	0.650	***	0.637	***	0.798	***
	(4.29)		(3.50)		(3.24)	
Real export growth	0.046		0.084	***	0.107	**
	(1.13)		(3.55)		(2.03)	
Non-oil trade openness	0.081	***	0.032		0.071	**
	(4.84)		(1.37)		(2.17)	
Fisc. Imp. * non-oil trade open.	-0.011	***	-0.008	***	-0.011	***
	(-5.50)		(-3.21)		(-3.05)	
Fixed capital formation/Pot. GDP	-0.017		-0.064		0.045	
	(-0.17)		(-0.63)		(0.40)	
Nominal broad money growth	-0.0004					
	(-0.17)					
Real broad money growth			-0.005			
			(0.32)			
Public debt/Pot. GDP					-0.037	***
					(-3.49)	
Constant	4.124		9.699	***	8.223	**
	(1.54)		(4.41)		(2.19)	
Obs.	57		45		41	
R-squared	0.829		0.520		0.928	

Notes: See Appendix I for definitions of the variables. The numbers in parenthesis report robust t-statistics. Estimations performed using ordinary least squares including fixed effects. ***, **, and * denote significance at 1 percent, 5 percent, and 10 percent, respectively. All explanatory variables are values at U, except the fixed capital formation variable which is at U-1.

Appendix: Variable Definitions and Data Sources

Variable	Source	Definition
Non-oil output growth	WEO and IMF country desk data	Growth rate of non-oil real GDP at U+1
Recession amplitude	Authors' calculations	Absolute value of the distance between the potential output and the cyclical component at U, calculated on the HP filtered logged non-oil real GDP
Recession duration	Authors' calculations	Number of years spent in the recession phase [PO,U], calculated on the HP filtered non-oil real GDP
Recovery duration	Authors' calculations	Number of years spent in the recovery phase [U+1,PO], calculated on the HP filtered non-oil real GDP
Recovery steepness	Authors' calculations	Amplitude at U divided by the duration of the recovery phase [U+1,PO]
Fiscal Impulse	WEO and IMF country desk data	The fiscal impulse at U is defined as the difference between the ratio of the non-oil fiscal balance to potential GDP at U and its value at U-1.
Real exports growth	WEO	Real exports growth rate at U.
Non-oil trade openness	WEO	Trade openness measured as the ratio of non-oil trade to non-oil potential GDP at U
Fixed capital formation/pot. GDP	WEO	Fixed capital formation to potential GDP at U-1
Nominal broad money growth	WEO	Growth of nominal broad money at U
Real broad money growth	WEO	Growth rate of real broad money at U. Real broad money divided by the CPI (from the WDI).
Real domestic credit growth	IFS	Growth rate of real domestic credit (domestic credit/CPI) at U. Domestic credit is line 32 from the IFS.
Public debt/pot. GDP	WEO	Central government debt to potential GDP at U.

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