Macroeconomic Instability and Economic Growth The Case of Algeria over the Period 1970-00

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Résumé :

L'objectif de ce travail est d'analyser l'impact de l'instabilité macroéconomique sur la croissance économique. Cette analyse est faite par le biais d'un modèle de Solow augmenté de deux indicateurs d'instabilité macroéconomiques, la volatilité des termes d'échange et la prime du marché noir. Les résultats de l'estimation de ce modèle sur la période 1970-00 montrent que ces indicateurs sont négativement liés à la croissance. Leur contribution à la croissance du PIB par tête de l'Algérie durant la période considérée est négative.

Le reste de ce travail est organisé comme suit. Le lien entre l'instabilité macroéconomique et la croissance économique est brièvement discuté dans l'introduction. Le positionnement de l'Algérie, en termes de croissance et d'instabilité macroéconomique, par rapport à un certain nombre de pays et de groupes de pays, est décrit à la section 2. Le modèle économétrique utilisé ici est introduit à la section 3, alors que les résultats obtenus de l'estimation sont analysés à la section 4. Les implications pour l'Algérie constituent la section 5. La dernière section est consacrée aux conclusions.

1. Introduction

In his paper about the role of macroeconomic factors in growth, Fischer (1993) concludes that a stable macroeconomic framework, which he defines as a macroeconomic policy environment that is conducive to growth, is necessary though not sufficient for sustainable economic growth. He presents cross-sectional evidence which supports the view that growth is negatively associated with inflation and positively associated with good fiscal performance and undistorted foreign markets.

He further argues that the main reason macroeconomic instability matters for growth is through uncertainty which could affect growth through in two ways. First, policy-induced macroeconomic uncertainty reduces the efficiency of the price mechanism and can adversely affect productivity and its growth if it is associated with high inflation or

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instability of the budget or the current account. Second, temporary uncertainty about the macroeconomy tends to reduce the rate of investment, as potential investors wait for the resolution of uncertainty before committing themselves.

Empirically, indicators such as the rate of inflation, the terms of trade and the black market premium have been extensively used to measure macroeconomic stability. The argument for the link between these indicators and economic growth is again given by Fischer (1993). Concerning inflation, he believes that its variability might serve as a more direct indicator of the uncertainty of the macroeconomic environment, and is expected to be negatively associated with growth.

On the other hand, an increase in the black market premium is an indicator of expectations of depreciation of the exchange rate and foreign exchange rationing. This suggests that capital accumulation and the black market premium are likely to be negatively related. Therefore, a negative link between growth and the black market premium can be established through the mechanisms of endogenous growth theory. Sala-i-Martin (1996, 1997), among others, finds the standard deviation of the black market premium to be negatively linked to growth. Our results show that the black market premium is significantly and negatively linked to average per capita GDP growth over the period of study.

Concerning the terms of trade, Fischer (1993) argues that improvements in the average terms of trade may be associated with higher levels of growth. However, empirical evidence, suggests that higher volatility in the terms of trade hampers the long-run growth process. The results we obtain in this study, along with others, suggest that average growth is negatively related to the volatility in the changes of terms of trade[1].

The rest of this work is organized in the following way. A descriptive analysis is conducted in section 2 in the aim to benchmark Algeria's position, in terms of growth and macroeconomic instability, against that of other countries and groups. In section 3, we present the econometric model being used to conduct the analysis. The results are analyzed in

[1] For more details see Aizenman and Marion (1995), Ramey and Ramey (1995), and Serven (1998).

section 4, whereas the implications for Algeria are presented in section 5. Section 6 concludes.

2. Benchmarking Algeria in Terms of Growth and Macroeconomic Instability

Table 1 presents per capita GDP growth and macroeconomic instability indicators over the period 1970-00 for Algeria, five comparator countries and four groups of which Algeria is part. The number of countries used in the calculation of each indicator is also given. As we can see, Algeria is outperformed, in average terms, by the MENA region and the sample of countries we are using here. In the first case, for example, Algeria has the lowest per capita GDP growth rate among the five countries for which data are available. In particular, it lags behind Egypt and Tunisia for which per capita GDP growth is the same over the period (+2.50%).

The worst performance, in terms of growth, is the one recorded by the group of oil exporters. The average per capita GDP growth over the entire period in this group is less than half a point. This very small value as opposed to other groups is the result of the negative performance of Venezuela (=-1.59%) and Nigeria (=-1.46%). The record for Algeria is better and higher than the average for this group. Algeria also performs slightly better than the average of the 70 developing countries in the sample, but remains below the level of the sample mean.

We also present four indicators of macroeconomic instability in Table 1. The standard deviation of the inflation rate (SDINF) calculated over the period 1970-00 using consumer price index[2]. The second is the average black market premium measured as an average over the period 1970-99. Higher values of either SDINF or BMP7099 are associated with higher levels of macroeconomic instability, and thus with low growth[3].

The third indicator is related to the terms of trade which is defined as the ratio of export price index to import price index. Empirically, this indicator is usually used in a standard deviation form to measure volatility.

[2] This indicator is not used in our growth regressions because it happens to be insignificant in all the regressions we run. The estimation results from these regressions are not presented here.

[3] The black market premium is defined here as (Parallel Xrate/Official Xrate -1)x100.

We present here two forms of this measure (i) the standard deviation of the natural logarithm of the terms of trade (SDLTT) and, (ii) the standard deviation of the growth rate of the terms of trade (SDGTT). The former measures the volatility of the logarithm of the terms of trade, while the latter measures the volatility of the rate of growth of the terms of trade. Thus, each indicator conveys a different information, but both are often interpreted as a sign of economic uncertainty which should tend to discourage investment.

External volatility in the case of Algeria and other oil exporters arise mainly from sharp movements in hydrocarbon revenues. It is well known that these countries rely heavily on hydrocarbon exports in their development strategies. In the case of Algeria, hydrocarbon revenues, during some periods, account for more than 95% of the country's total exports, 30% of GDP, and 75% of fiscal revenues[4]. The effects of the large swings that characterize the hydrocarbon revenues are, therefore, easily transmitted to the rest of the economy given its hydrocarbon-based structure.

Table 1 indicates that Algeria's exposure to volatility is comparatively stronger than that for the MENA region, for instance. Algeria lags well behind Tunisia and Egypt, in terms of all macroeconomic instability indicators. The values of BMP7099 (+202%), SDINF (8.41), and SDLTT (0.42) or SDGTT (0.24) are extremely higher for Algeria as compared to Tunisia, for example. Furthermore, the black market premium value is exceptionally high (+202%) that Algeria compares unfavourably not only with Tunisia, but with all the comparator countries and groups' averages over the period of study.

Finally, the same argument applies to the group of oil-exporters as seen in Table 1. This group is outperformed in terms of all indicators as compared to the entire sample. In particular, the black market premium recorded by the group is almost twice as the sample average, while the terms of trade volatility is more than twice as the sample average whatever measure is used. The conclusion that one can draw from this evidence is that the group as a whole is comparatively more exposed, on average, to external shocks. This may have negative consequences on growth.

[4] See the World Bank Report (2003) on sustaining faster growth with economic and social stability in Algeria for more details and statistics about Algeria.

3. The Econometric Model

The relationship between growth and macroeconomic instability depends to a great extent on the conditioning variables used in the regression equation. There are many variables, outside the Solow variables, that can be used to control such a relationship. For the purpose of this study, we use the following generic representation, due to Durlauf et al (2004), as our growth regression

$$\gamma_i = \lambda \log y_i(0) + \psi X_i + \Pi Z_i + \varepsilon_i ,$$

where γ_i is per capita GDP growth, $y_i(0)$ is initial per capita income, X_i contains a constant, an indicator of physical capital, another for human capital, and effective capital depreciation. The variables contained in $\log y_i(0)$ and X_i represent those growth determinants that are suggested by the Solow growth model, whereas Z_i represents those growth determinants that lie outside Solow's original theory.

In general, the specification given above is the baseline for much of what is known as growth econometrics. This type of regression is sometime named after Barro (1991) because of the extensive use that he made of these regressions to study alternative growth determinants. Many other growth writers have also used it for the same purpose[5].

Assuming away possible endogeneity of regressors, the specification introduced in this section is estimated by ordinary least squares (OLS) over the period 1970-00. The set of countries comprises 107 countries in total[6], among which 81 are classified as developing countries, 9 belong to the MENA region, and 8 are oil exporting as per the World Bank classification of 2004. In addition, 31 countries are classified as non open according to criteria set in Sachs and Warner (1995), among which Algeria is part.

[5] We present here results in which only macroeconomic instability indicators are used with the Solow variables. As a matter of fact, we run other regressions in which other controlling variables, such openness, reliance on primary goods, and institutions, were used. The findings about the link between growth and macroeconomic instability remain unchanged. For more details about this matter see Raad Ali (2006).

[6] The sample of countries used in each model is less than 107 depending on data availability. The whole set of countries used in this study is presented in the appendix.

When heteroscedasticity is present, we simply use the White Hetroscedasticity Covariance Matrix Estimator (White) without any further investigation of its form. The decision whether to use this estimator or not is based on the White statistic (= nr^2) included in the results of Table 2. The other statistic (W), which also appears in Table 2, is used to perform an asymptotic Wald test for parameter stability. The purpose of this test is to see whether the estimated model can be used to draw conclusions about Algeria. The other statistics included in Table 2 are the usual t, F, and $\overline{R}^2$.

4. Regression Results for Growth Rates

4.1 Terms of Trade Volatility

The regression results are presented in Table 2 where the volatility of the terms of trade is introduced in two forms: the standard deviation of the log of the terms of trade (SDLTT) and the standard deviation of the growth rate of the terms of trade (SDGTT). As these two variables are more or less the same and are strongly correlated, with the simple correlation rate attaining 0.79, they cannot be used in the same regression. Instead, their effect on per capita GDP growth is tested separately.

In a first stage, each of the two macroeconomic instability measures is added to the Solow variables and its effect on growth is tested by the means of the simple t statistic. SDGTT is always highly significant in Table 2, while SDLTT is significant only at the 5% significance level when we control for the black market premium (LBMP), as shown in equations 9 and 10. Both variables have the predicted negative sign and appear to add to the explanation of growth as shown by the increase in the coefficient $\overline{R}^2$. These results contrast with those obtained in Sachs and Warner (1995) who find strong evidence against the standard deviation of the log of the terms of trade in affecting growth[7].

[7] It is worthwhile mentioning the fact that except Eq.2, for which the value of nr^2 is significant at the 5% level, all the other estimated equations have values of nr^2 that are not significant at conventional levels. There is therefore no need to correct for heteroscedasticity.

The importance of the terms of trade volatility in terms of significance and magnitude is reduced when controlling for the black market premium or/and population growth (GPOP) in our growth regressions. This fact is evident in all equations in which SDGTT or SDLTT is used as an additive regressor. For instance, the estimated coefficient on SDGTT falls in absolute value from 0.1 in Eq. 7 to about 0.07 in Eq. 8 when we hold constant both LBMP and GPOP.

The interpretation of the coefficients on SDGTT and SDLTT is as follows. A one-standard-deviation increase in SDGTT, which is equivalent to 0.08 percentage points, is expected to lower growth by 0.8 percentage points in Eq. 3. On the other hand, a one-standard-deviation rise in SDLTT, that is a rise by 0.11 percentage points, causes per capita GDP growth to fall in Eq. 6 by 0.6 percentage points[8].

4.2. The Black Market Premium

This variable is used as log(1+BMP/100) where BMP was introduced earlier. Its effect on growth is tested both separately and in the presence of SDGTT or SDLTT in Table 2. As this indicator is usually used to measure the extent to which markets are distorted by governments, we expect it to be negatively associated with per capita GDP growth assuming initial per capita GDP, initial human capital, investment, population growth, and another measure of macroeconomic instability are fixed. This prediction is confirmed by our findings at least with respect to the sign of the coefficient on LBMP.

As usual, the effect of LBMP on growth is quite high when the volatility measure is dropped from the regression equation. In Eq. 4, for instance, the estimated coefficient is -0.02 and is highly significant, whereas in Eq. 7 the coefficient becomes insignificant at the 5% significance level as a result of controlling for SDGTT in addition to the Solow variables.

[8] Since we are dealing with cross-section data, the partial effect of an explanatory variable is calculated using the notion of standard deviation. The latter is calculated for the variable under consideration using the sample data. It is then multiplied by the estimated value of the attached coefficient to find the required partial effect.

The estimated effect in Eq. 4, for instance, implies that a one standard deviation increase in the variable LBMP, which is equivalent to 0.26 over the period 1970-99 in our sample, is estimated to reduce the growth rate of per capita GDP by 0.5 percentage points. This effect drops to just 0.3 percentage points only in Eq. 7 when we control for SDGTT and GPOP in addition to the other variables in Eq. 4. This drop is explained by the fact that part of the negative effect of high black market premium on growth is undertaken by the terms of trade volatility and population growth.

Empirically, the black market premium has been used in numerous growth studies and a negative association with growth has been established. Examples are Fischer (1993) and Barro and Sala-iMartin (1995) who use it in the same log form as we do and conclude that the black market premium is strongly and negatively related to growth. Sala-i-Martin (1997) includes it in a standard deviation form to account for the effect of its variability on growth. He too concludes that the black market premium adversely affects growth. More recently, Easterly (2001) finds a negative partial association between the black market premium as a measure of price distortions and growth.

5. The Implications for Algeria

Macroeconomic stability is a goal that each economy wants to achieve. It is so because once uncertainty about the macroeconomic environment is removed or at least reduced, visibility into the future is increased, more accurate predictions can be made, and an increase in the incentive to invest follows. However, if the economy depends heavily on hydrocarbon exports, as in the case of Algeria and other oil exporters, removing uncertainty is not so simple. In the case of Algeria, a large part of fiscal revenues are drawn from oil resources and are then used to finance investment projects. Given that oil resources depend on external factors that are completely exogenous to the domestic economy, we expect decisions to invest to be highly dependant on these same external factors too.

We argued earlier that external volatility in the case of Algeria and other oil exporters arise mainly from sharp movements in hydrocarbon revenues. In the particular case of Algeria, the effects of the large swings that characterize these revenues are transmitted to the rest of the economy given its hydrocarbon-based structure which is reflected by the high proportion of fiscal revenues that originate in the oil sector. These effects were long exacerbated during the fixed exchange rate regime, but weakened later on as Algeria started to liberalize its economy and succeeded, through successive devaluations and a move to a more flexible exchange rate regime, to attenuate the effects associated with the terms of trade shocks.

In any case, external volatility and price distortions as reflected, respectively, by the terms of trade volatility and the black market premium cost Algeria very much in terms of growth over the three-decade period we are considering here. In Eq. 7, for instance, where both SDGTT and LBMP are included along with all the other Solow variables, the impact on Algeria's per capita GDP growth from the terms of trade volatility is -0.96 percentage points, whereas that from the black market premium is slightly higher and stands at -0.99 percentage points[9].

The effects from these macroeconomic stability indicators are, however, stronger when they are included separately, as shown by equations 1 to 6 in Table 2. For example, when population growth is excluded from the estimated equation, as in eqs 2 and 4, the contribution from volatility, as measured by SDGTT, to Algeria's fitted growth is -1.33 percentage points, whereas that from the black market premium is -1.81 percentage points.

As in the case of many of growth determinants, the role of the macroeconomic instability factors is reduced by the inclusion of other explanatory variables. For instance, controlling for openness, reliance on primary exports, government effectiveness, and the Solow variables, except population growth, reduces the effect of SDGTT to only -0.70 percentage points. Nevertheless, external volatility in the models we

[9] The contribution of each factor to Algeria's fitted growth is calculated relative to the sample mean.

estimate remains by far the biggest negative contributor to Algeria's growth[10].

Our findings concerning macroeconomic stability and its effect on Algeria's growth are consistent with those in the World Bank study (2003). In that study, the contribution from the terms of trade is the largest among negative contributions (= -0.7 percentage points), while that from the black market premium is only -0.1 percentage points. Our results in terms of the black market premium show, however, a much larger effect of this indicator. The difference can be explained by the different variables we control for and the different data sets we use. In our study, per capita GDP growth is based on the Summers-Heston (SH) data base, whereas in the World Bank study this variable is based on the World Development Indicators (WDI).

6. Conclusions

Using a Solow model and data on a set of countries over the period 1970-00 we showed that macroeconomic instability as measured by the terms of trade volatility and/or the black market premium is negatively correlated with per capita GDP growth. Our estimation results which are based on a cross section methodology are consistent with other empirical findings, usually based on a panel approach to deal with parameter heterogeneity.

The conclusions we draw about Algeria's growth performance are in accordance with the findings in the World Bank study (2003) on Algeria during the same period. In both cases external volatility and price distortions, as reflected by the black market premium, are shown to have contributed negatively to Algeria's per capita GDP Growth. As a matter of fact, macroeconomic instability turns out, in some estimated equations, to be the biggest negative contributor to Algeria's growth when compared to other factors such as institutions, openness, and reliance on primary goods exports.

This work can be improved in many ways. First, the data sample can be extended to include more recent observations and other countries.

[10] We run other regression equations in which we examine the effect of openness, institutions, reliance on the exports of primary goods on per GDP growth. Again, the results are not reported here. For more details see Raad A. (2006).

Second, the cross-section approach can be modified in order to deal more appropriately with the heterogeneity problem as usually done when using panel data. In both cases, the aim is to see whether the findings are robust.

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Appendix

Variables Definition and Data Sources

PCGR: Real per capita GDP growth rate calculated as the difference between the natural logarithm of per capita real GDP in 2000 and the natural logarithm of per capita GDP in 1970 divided by 30. Source: PWT 6.1. The real per capita series corresponds to the series named rgdpl in the PWT 6.1 data base which stands for the Laspeyres real GDP per capita in 1996 international prices.

LPCGDP70: The logarithm of real per capita GDP in 1970 in 1996 international prices. Source: the PWT 6.1.

LSEC70: Natural logarithm of the gross secondary school enrolment in 1970. Source: WDI (2004)

LINV7000: The logarithm of average investment ratio at current local prices over the period 1970-00. Source: WDI (2004).

GPOP: The average growth rate of total population over the period 1970-00, calculated in the same way as PCGR. Source: WDI (2004).

SDINF: The standard deviation of the consumer price index (CPI) inflation rate over the period 1970-00. Consumer price index reflects changes in the cost to the average consumer of acquiring a fixed basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used. Source: WDI (2004).

SDGTT: The standard deviation of the growth rate of the terms of trade over the period 1971-99. The terms of trade are defined as the ratio of the export price index to the import price index. Source: Global Development Network Growth Database (Easterly June 01).

SDLTT: Standard deviation of the natural logarithm of the terms of trade. Source: Global Development Network Growth Database (Easterly June 01).

LBMP: The natural logarithm of the quantity (1+BMP/100) where BMP is the black market premium. The variable BMP is measured as (Parallel Xrate/Official Xrate -1)x100 where Xrate stands for exchange rate. Source: Global Development Network Growth Database (Easterly June 01).

Tables

Table 1: Per Capita GDP Growth and Macroeconomic Stability Indicators in Algeria and Comparators 0ver the period 1970-00

County/Group	Nb	PCGR	Nb	SDINF[1]	Nb	BMP7099	Nb	SDLTT	Nb	SDGTT
Algeria	1	1.19	1	8.41	1	202.10	1	0.42	1	0.24
Tunisia	1	2.50	1	2.07	1	9.79	1	0.09	1	0.06
Egypt	1	2.50	1	6.24	1	20.73	1	0.29	1	0.11
Venezuela	1	-1.59	1	24.32	1	36.42	1	0.21	1	0.20
Nigeria	1	-1.48	1	18.73	1	127.56	1	0.47	1	0.31
Korea	1	5.81	1	7.56	1	12.45	1	0.07	1	0.05
MENA	5	2.44	8	16.54	9	48.59	6	0.20	6	0.11
Oil-Exporters	6	0.46	7	12.50	8	49.85	6	0.35	6	0.23
Developing Countries	70	1.11	69	13.02	78	33.24	71	0.19	71	0.14
Sample	95	1.47	94	11.80	104	25.26	96	0.16	96	0.11

Source: Calculations by the author using data described in the Appendix.

1: Nb is the number of countries used in the calculations.

2: PCGR, SDINF and BMP7099 are measured in percentage points.

3: SDLTT and SDGTT are measured in fractions.

Table 2: Regression Results

Vble / Eq.	1	2	3	4	5
C	-0.01 (-0.61)	-0.03 (-1.22)	-0.03 (-1.33)	-0.05 (-2.15)	-0.02 (-0.79)
LPCGDP70	-0.010 (-4.43)	-0.010 (-4.10)	-0.010 (-4.22)	-0.010 (-3.98)	-0.010 (-4.41)
LSEC70	0.0060 (2.34)*	0.0067 (2.49)*	0.0090 (3.64)	0.010 (4.51)	0.0075 (2.98)
LINV7000	0.040 (6.97)	0.036 (5.21)	0.037 (6.70)	0.037 (6.59)	0.040 (6.77)
GPOP	-0.33 (-1.55)**		-0.29 (-1.37)***		-0.39 (-1.73)**
SDGTT	-0.096 (-4.86)	-0.10 (-4.70)			
SDLTT					-0.050 (-3.30)
LBMP			-0.020 (-3.71)	-0.020 (-3.75)	
N	89	89	90	90	89
$\overline{R}^2$	0.65	0.64	0.59	0.59	0.60
F	33.16	40.18	27.11	33.07	27.23

	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
nr²	26.12 (0.16)	23.72 (0.05)	26.31 (0.15)	17.55 (0.23)	16.64 (0.67)
W	8.51 (0.20)	7.20 (0.20)	4.57 (0.60)	3.88 (0.56)	3.89 (0.69)
$\hat{PCGR}$	1.31	1.39	0.66	0.75	1.19
$\hat{\beta}$	0.012	0.010	0.012	0.011	0.013
H.T	55.77	64.88	55.56	62.25	51.76

Table 2: Regression Results (Continued)

Vble / Eq.	6	7	8	9	10
C	-0.04 (-1.76)	-0.02 (-0.76)	-0.04 (-1.45)	-0.03 (-1.08)	-0.04 (-1.81)
LPCGDP70	-0.011 (-4.02)	-0.010 (-4.44)	-0.010 (-4.25)	-0.010 (-4.37)	-0.010 (-4.17)
LSEC70	0.0090 (3.71)	0.0065 (2.65)	0.0074 (3.18)	0.0081 (3.26)	0.0091 (3.90)
LINV7000	0.037 (6.60)	0.037 (6.99)	0.037 (6.90)	0.040 (6. 93)	0.040 (6.83)
GPOP		-0.26 (-1.25)***		-0.28 (-1.25)***	
SDGTT		-0.073 (-3.33)	-0.076 (-3.45)		
SDLTT	-0.054 (-3.62)			-0.032 (-2.02)*	-0.034 (-2.14)*
LBMP		-0.010 (-1.89)**	-0.011 (-2.02)*	-0.012 (-2.02)*	-0.013 (-2.15)*
N	89	87	87	87	87
$\overline{R}^2$	0.59	0.64	0.64	0.61	0.61
F	32.52 (0.000)	27.01 (0.000)	31.87 (0.000)	24.00 (0.000)	28.29 (0.000)
nr²	10.79 (0.70)	31.36 (0.25)	27.17 (0.13)	26.44 (0.49)	20.30 (0.44)
W	3.21 (0.66)	6.77 (0.45)	4.30 (0.64)	5.74 (0.57)	4.03 (0.67)
$\hat{PCGR}$	1.26	0.65	0.68	0.61	0.62
$\hat{\beta}$	0.011	0.012	0.011	0.013	0.011
H.T	60.94	54.49	61.01	53.11	59.36

Notes :

The variables used in the regression equations are described in this appendix.

Annual per capita GDP growth (PCGR) is the dependant variable.

Figures between brackets under the estimated coefficients are t-ratios, whereas those below F, nr², and W are p-values.

$P\hat{C}GR$ is fitted growth for Algeria calculated using the values for Algeria.

$\hat{\beta}$ is the implied speed of convergence in each estimated model.

H.T. is the implied number of years necessary for an average economy to close the gap between its initial and steady-state position.

* The variable is not significant at 1 % level. ** The variable is not significant at 5 % level. *** The variable is not significant at the 10 % level.

Table 3 : Contributions to Fitted Growth for Algeria

Equ.	LPCGDP70	LSEC70	LINV7000	GPOP	SDGTT	SDLTT	LBMP	FG
1	0.40	-0.64	1.59	-0.25	-1.25			-0.14
2	0.36	-0.76	1.57		-1.33			-0.16
3	0.41	-1.01	1.61	-0.22			-1.78	-0.99
4	0.37	-1.16	1.59				-1.81	-1.00
5	0.43	-0.85	1.64	-0.29		-1.25		-0.32
6	0.38	-1.01	1.62			-1.37		-0.38
7	0.41	-0.73	1.62	-0.20	-0.96		-0.99	-0.85
8	0.37	-0.84	1.60		-0.99		-1.05	-0.91
9	0.42	-0.92	1.66	-0.21		-0.81	-1.13	-0.98
10	0.38	-1.03	1.64			-0.86	-1.20	-1.07

Source: Calculations by the author. FG is fitted growth for Algeria relative to the sample mean.

List of Countries Used in the Study

Algeria, Argentina, Australia, Austria, Bangladesh, Barbados, Belgium, Belize, Benin, Bolivia, Botswana, Brazil, Burkina Faso, Burundi, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Congo Dem. Rep. (Zaire), Congo Rep. (Congo), Costa Rica, Cote d'Ivoire, Denmark, Dominican Republic, Ecuador, Dominican Republic, Ecuador, Egypt, El Salvador, Fiji, Finland, France, Gabon, Gambia, Georgia, Ghana, Greece, Guatemala, Guyana, Haiti, Honduras, Hong Kong, Hungry, Iceland, India,

Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Kenya, Korea Rep., Latvia, Lesotho, Liberia, Luxembourg, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritania, Mexico, Morocco, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Portugal, Rwanda, Saudi Arabia, Senegal, Seychelles, Sierra Leone, Singapore, Solomon Islands, South Africa, Spain, Sri Lanka, St. Vincent and the Grenadines, Sudan, Sweden, Switzerland, Syria, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, United Kingdom, United States, Uruguay, Venezuela, Zambia, Zimbabwe.