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### **GROWTH PERFORMANCE OF MENA AND AFRICAN COUNTRIES: IMPACTS OF THE VARIATIONS IN LAND AND NATURAL RESOURCE OWNERSHIP**

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#### **Abstract**

This paper examines the primary determinants of the contemporary economic growth performance in MENA and African countries using a panel data estimation and random effects model during the period 1996-2014 for 24 countries. It is hypothesized that the variation in natural resources rents, initial human capital stock, and initial inequality in land ownership have significant impacts on contemporary economic growth rates in different countries. Furthermore, various political economy factors are controlled for in order to measure the effect of institutional quality. The estimation results show that the natural resources rents, initial inequality in land ownership, initial income, and government effectiveness influence GDP per capita growth rates with a statistical significance.

**Keywords:** Land Distribution Inequality, Natural Resources Rents, Initial Conditions, Conditional Convergence, MENA and African Countries

**JEL Classifications:** O15, O41, P16, Q00

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#### **1. Introduction**

This study aims to shed light on the fundamental factors affecting the recent macroeconomic performance of a sample of 24 MENA and African countries. For the last couple of years, most of the countries in the region have been going through massive transformations due to the Arab Spring movement and internal-external ethnic / religious violence. The demands of local people in these countries have been pushing forward plausible economic policies and governance to be implemented.

We examine the influence of various macroeconomic, time – invariant initial, and political economy factors on economic growth in the period 1996 – 2014. We adopt a panel data estimation, random effects model in order to assess the impacts of time – invariant beginning conditions on economic growth. We use land distribution inequality, education amount, and income level as the initial conditions. Rodrik (1994) uses similar initial factors for an analysis on a set of East Asian countries. The importance of human capital accumulation to maintain a sustainable economic growth trend is emphasized in the related literature. A highly educated labor force leads to a higher R&D expenditure and production of new higher technology products. It is hypothesized that in this way the economies which have more initial accumulated human capital will achieve a faster economic growth trajectory (Barro, 1991, Galor *et al.* 2009).

Considering the estimation results, the natural resources rents show a positive and statistically significant effect on economic growth rate. This result points out to the situation that among the MENA and African countries economic over – reliance on natural resources ownership, commodity goods income, and the resulting insufficient sectoral diversification are rather likely to make these countries prone to get negatively affected from global recessions and natural resources / commodities price fluctuations. Furthermore, increases in government ineffectiveness can affect economic growth negatively. The initial land distribution inequality which represents the initial asset distribution inequality has a positive, and initial income level has a negative correlation with the GDP per capita growth rate. The paper continues as the following. Section 2 discusses the related literature, section 3 presents the empirical analysis, and section 4 concludes.

## 2. Related Literature

The literature analyzing the determinants of economic growth and the relationship between inequality and economic growth has been widespread, multi layered, and far from reaching an agreement. An important portion of the disagreements arises from the variation of the factors controlled and the estimation techniques employed (Fort, 2007). Obviously, it is not possible to discuss all the related works in this limited space. Instead, we prefer to highlight the works which significantly contribute to the formation of this paper.

There are various studies done about the economic development experience of the MENA and African region. Some of these, for instance Chaney *et al.* (2012) analyze the impact of the historical institutional and religious evolution on growth variations and recent social unrest in the region. Other studies examine the general economic outlook of the region and its relative development performance compared to other regions in the world (Nugent and Pesaran, 2007). O'Sullivan *et al.* (2011) talk about the economic difficulties MENA countries can experience after the Arab Spring, and encourage policy makers to implement plausible and transparent economic policies and governance actions.

One of the objectives of this paper is to find out how certain initial conditions affect current macroeconomic performances in the MENA and African region. From this perspective, this study follows the path of the work by Rodrik (1994). He analyzes the effects of initial economic conditions on contemporary development experiences in a set of emerging East Asian countries. He finds out that the initial levels of land ownership inequality, income inequality and education are effective in causing regional growth variations. As stated earlier, this work's estimation results contrast with the negative correlation between land ownership inequality and economic growth found by Rodrik (1994). Our outcomes are consistent with what Barro (1991) finds using a sample of 98 countries during the period 1960-1985: Economic growth rate has a positive correlation with the initial education amount, and a negative correlation with the initial income level. In a different study, Barro (2000) finds empirical evidence for a Kuznets curve hypothesis. He also argues that higher income inequality may be harmful for low-income countries' growth rates, whereas it can positively affect economic growth in high-income countries.

There are some studies which analyze different aspects of the relationship between land ownership inequality and economic development, and we benefit from during the development of this paper. Erickson and Vollrath (2004) use two distinctive land inequality indicators. They find that a less unequal land distribution can encourage the government to provide more public education. Keefer and Knack (2002), and Fort (2007) emphasize the channel of secured property rights establishing the negative relationship between land inequality and economic growth. Deininger and Olinto (1999) argue that the availability of assets for households' access is more important than a more equal income distribution. Moreover, a higher land inequality can hamper education reforms. Frankema (2005) discusses that colonial institutions primarily determine historical land distribution, and are also effective over current income inequality levels. Muller and Seligson (1987) examine possible linkages between land inequality, income inequality, and political instability, separatist actions, economic development.

### 3. Empirical Analysis

#### 3.1. Data Details

We examine the effect of different time – variant, time – invariant initial and institutional factors on economic growth in 24 MENA and African countries between 1996 and 2014 (The comprehensive country list can be seen in Table 1). The time – variant factors are the investment rate, trade openness degree, foreign direct investment level (fdi), and natural resources rents (resource rents) which are expressed as percentage ratios of GDP. The measurement period for these variables is 1996-2014, and they are extracted from the World Bank’s World Development Indicators (WDI).

**Table 1. Country List**

<b>24-Country Sample</b>	<b>15-Country Sample</b>
Algeria	Algeria
Bahrain	Bahrain
Burkina Faso	Egypt, Arab Rep.
Chad	Iran, Islamic Rep.
Egypt, Arab Rep.	Iraq
Ethiopia	Israel
Guinea	Jordan
Iran, Islamic Rep.	Kuwait
Iraq	Lebanon
Israel	Libya
Ivory Coast	Morocco
Jordan	Saudi Arabia
Kuwait	Syrian Arab Republic
Lebanon	Tunisia
Libya	Turkey
Mali	
Morocco	
Niger	
Saudi Arabia	
Senegal	
Sierra Leone	
Syrian Arab Republic	
Tunisia	
Turkey	

The political economy variables which assess institutional quality are corruption control (corruption), government effectiveness (govteffect), regulatory quality (regquality), and rule of law (ruleoflaw). The examination period and data source for these factors are 1996-2014 and the World Bank’s Worldwide Governance Indicators, respectively. As the numerical values of these indicators increase the institutional quality attributed to a certain indicator improves, e.g. corruption control strengthens, rule of law improves.

We control four time –invariant initial conditions in the estimations. We use the 1995 GDP per capita (constant 2005 US\$) (initial gdp) values derived from the WDI as initial income levels. As the initial education levels measuring initial human capital accumulation we extract the 1995 average years of total schooling (age 15+) from the Barro-Lee Educational Attainment Dataset (Barro and Lee, 2013). In order to identify the type of colonial legal rules which have been enforced in the countries in the sample as the Company Law or Commercial Code, we control for the legal origin (Dahlberg *et al.* 2017) with a dummy variable. It is classified in five categories: (1) English Common Law; (2) French Commercial Code; (3) Socialist/Communist Laws; (4) German Commercial Code; and (5) Scandinavian Commercial Code. We experience challenges while collecting the initial land inequality (land gini) data. There are a few reasons for this. First of all, the inequality of land distribution statistics are not easy to find. Secondly, the MENA and African

countries are historically not good at collecting, recording, and reporting their national statistics<sup>1</sup>. Therefore, we compile the beginning land distribution inequality data from various sources; Muller and Seligson (1987), Taylor and Jodice (1983), Frankema (2005), World Census of Agriculture Report by FAO (2001), and Deininger and Olinto (1999). The initial land distribution inequality data show variation regarding the recorded beginning years with 1962 as being the earliest and 1993 as being the latest available years.

In both the 24-country and 15-country samples, it is checked whether each variable has a unit root. In the comprehensive 24-country sample, it is found that the political economy variables, corruption control, government effectiveness, regulatory quality, and rule of law; and in the 15-country sample trade openness have a unit root. To resolve this problem of non-stationarity the first order differences of these variables are used in the estimations. Furthermore, we check if there is any reverse causality between the dependent variable, GDP per capita growth rate and the explanatory variables with a Granger-causality test for panel data estimations. No reverse causality is found in both the 24-country and 15-country samples. Therefore, there is no need to use the lagged versions of any of the independent variables including institutional quality indicators.

The benchmark estimation equation is designed as the following:

$$y_{it} = \beta_0 + \beta_1 x_{it} + \beta_2 p_{it} + \beta_3 z_i + (\alpha_i + u_{it}) \quad (1)$$

where  $y_{it}$  is GDP per capita growth rate (interchangeably used with economic growth rate) measured over the 1996-2014 period, and the dependent variable.  $x_{it}$ ,  $p_{it}$  and  $z_i$  are the vectors of the time – variant, political economy, and time – invariant initial factors, respectively.  $\alpha_i$  captures the unobserved individual effects, and  $u_{it}$  is the error term. We adopt a random effects model in order to be able to estimate the effects of time – invariant initial conditions on GDP per capita growth rate in the subsequent time period of 1996-2014. Furthermore, the random effects model produces smaller standard errors, and it assumes that  $\alpha_i$  is uncorrelated with the independent variables to build a more efficient estimator. We also control for heteroscedasticity in all regressions.

### 3.2. Estimation Results

Table 2 presents the regression results for different specifications of the benchmark equation (1) for the comprehensive sample including 24 MENA and African countries. Investment in physical capital, trade openness, and foreign direct investment appear to be positively correlated with economic growth rate, which is consistent with what the related literature proposes. Yet, trade openness turns out to be statistically significant at 15% (15% significance levels are not reported in Tables 2 and 3) and 10% levels in most of the models. Natural resources rents, which are a composite variable of oil, natural gas, coal, mineral, and forest rents have a positive effect on GDP per capita growth rate, and this effect is statistically significant at the 5% level in all specifications. When natural resources rents increase, this positively affects economic growth rates in the 24 MENA and African countries.

The coefficients of the institutional quality indicators and their interaction terms with initial income have changing positive and negative signs. Only the coefficient of corruption control in model (2) turns out to be statistically significant at 15% level. Nonetheless, its negative sign indicates that as corruption control improves this negatively affects economic growth which contradicts with what the related literature generally proposes.

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<sup>1</sup> Qatar and the United Arab Emirates, although identified as MENA countries, are not included in the sample due to the unavailability of data.

Table 2. Comprehensive Sample (24-Country Sample) Estimation Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
investment	-0.017 (0.0434)	-0.0183 (0.0417)	-0.00956 (0.0464)	-0.0253 (0.0381)	-0.0335 (0.0441)	-0.019 (0.0414)	-0.0283 (0.0385)
fdi	0.246*** (0.0581)	0.221*** (0.0639)	0.238*** (0.0614)	0.228*** (0.0581)	0.223*** (0.0718)	0.241*** (0.0563)	0.197*** (0.0641)
resource rents	0.0669** (0.0308)	0.0588** (0.0285)	0.0738** (0.0328)	0.0516* (0.0267)	0.0426 (0.029)	0.0589** (0.0296)	0.039 (0.027)
trade openness	-0.0475 (0.0863)	-0.0434 (0.0835)	-0.0409 (0.0752)	-0.0505 (0.0911)	-0.052 (0.0872)	-0.0418 (0.0778)	-0.0404 (0.0814)
land gini	0.0191 (0.0572)	0.0176 (0.0533)	0.0101 (0.0616)	0.0311 (0.0479)	0.0339 (0.0445)	0.0243 (0.0555)	0.0328 (0.0429)
initial education	0.00495 (0.0221)	0.00487 (0.019)	0.00944 (0.0243)	0.000606 (0.0173)	-0.00301 (0.0157)	0.00414 (0.0213)	0.00027 (0.0142)
initial gdp	-0.0151** (0.0066)	-0.0148** (0.00629)	-0.0155** (0.00677)	-0.0146** (0.00588)	-0.0133** (0.00587)	-0.0142** (0.00637)	-0.0139** (0.00575)
legal origin	-0.00446 (0.0121)	-0.00447 (0.0114)	-0.00441 (0.0136)	-0.00485 (0.0106)	-0.0039 (0.00949)	-0.00336 (0.0113)	-0.00508 (0.0108)
corruption		-0.031 (0.0229)	-0.105 (0.307)				0.0493 (0.246)
govtfect		0.0316 (0.0244)		0.286*** (0.106)			0.496** (0.215)
regquality		0.00185 (0.0386)			-0.27 (0.355)		-0.382 (0.313)
ruleoflaw		-0.0053 (0.0341)				-0.367 (0.377)	-0.326 (0.208)
corruption^gdp			0.00931 (0.0342)				-0.00982 (0.0288)
govtfect^gdp				-0.0317*** (0.0123)			-0.0555** (0.0249)
regquality^gdp					0.0324 (0.0381)		0.0473 (0.0355)
ruleoflaw^gdp						0.0431 (0.0419)	0.0391* (0.0233)
constant	0.117** (0.0548)	0.118** (0.0536)	0.114* (0.0588)	0.119** (0.0502)	0.114** (0.0518)	0.107** (0.0522)	0.116** (0.053)
Observations	229	229	229	229	229	229	229
R-squared	0.44	0.482	0.412	0.526	0.482	0.422	0.535

Note: Dependent variable is the GDP per capita growth rate (economic growth rate) in all specifications. Robust standard errors are shown in parentheses. \*, \*\*, and \*\*\* represent 10%, 5% and 1% significance level respectively.

Regarding the time – invariant initial conditions, the coefficient of initial education appears positive in all specifications, and statistically significant at the 15% and 10% levels in most of the specifications. When the initial human capital accumulation is higher, this may cause higher economic growth rates in the following future periods. The initial (year 1995) income is negatively correlated to GDP per capita growth rate at the 5% significance level in all seven models. This result is in consistence with the conditional convergence argument proposed by Barro (1991), among others. The lower the beginning income, the faster a country can grow in subsequent periods. The legal origin dummy variable appears insignificant with a negative sign. The coefficient of initial inequality in land distribution is positive and statistically significant at 10% level in all specifications. As the initial land distribution inequality is higher, this can lead to higher economic growth rate in the following time periods, which is again a consistent outcome with the conditional convergence hypothesis.

Table 3 shows the regression results for different specifications covering the subsample of 15 countries which primarily belong to the MENA region. Therefore, the estimation results can be partially biased based upon the smaller number of observations and the particular countries in this sample. The coefficients of investment ratio and trade openness now have negative signs which are quite counter – intuitive, though their influences are insignificant in all specifications. Foreign direct investment shows a positive and statistically significant (at 1% level) effect on GDP per capita growth rate which is a consistent result with the related literature arguing that higher foreign direct investment can cause higher economic growth. Natural resources rents have a positive and significant effect on GDP per capita growth rate indicating that when natural resources rents rise, this can contribute to higher economic growth rates.

Among the political economy variables government effectiveness, rule of law, and their interaction terms with the initial income show statistically significant impacts on GDP per capita growth rate in specifications (4) and (7) in Table 3. Government effectiveness mainly aims to assess the quality of public services, policy formulation and implementation, and civil services; alongside the credibility of the government's commitment to its announced policies and its actions' independence from various political pressures. The coefficient of government effectiveness turns out to be positive and statistically significant at the 1% level indicating that when the degree of government effectiveness increases this can positively affect economic growth. However, as the initial GDP per capita increases, this direct positive influence of government effectiveness gets diminished. Rule of law tries to assess the quality of contract enforcement, property rights and courts. In specification (7), the negative coefficient of rule of law indicates that as rule of law improves this may negatively affect economic growth which is a contradictory result compare to what related research proposes. When initial income increases the direct negative impact of rule of law becomes deteriorated.

The impacts of the time – invariant initial conditions appear to comply with the conditional convergence argument for the subsample of 15 MENA countries. The initial GDP per capita exerts a negative and statistically significant (at 5% level) effect on GDP per capita growth in the following future time periods. As the beginning 1995 income increases, this may slow down economic growth performance later on. The coefficient of initial education is positive (except in model (5)) although it does not have statistical significance. Similar to the results in Table 2, the coefficients of legal origin appear negative and insignificant. When the initial land distribution inequality increases, this may have a positive effect on economic growth rates, even though compared to the results obtained with the comprehensive sample now the impact does not have statistical significance.

Table 3. 15-Country Sample Estimation Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
investment	-0.017 (0.0434)	-0.0183 (0.0417)	-0.00956 (0.0464)	-0.0253 (0.0381)	-0.0335 (0.0441)	-0.019 (0.0414)	-0.0283 (0.0385)
fdi	0.246*** (0.0581)	0.221*** (0.0639)	0.238*** (0.0614)	0.228*** (0.0581)	0.223*** (0.0718)	0.241*** (0.0563)	0.197*** (0.0641)
resource rents	0.0669** (0.0308)	0.0588** (0.0285)	0.0738** (0.0328)	0.0516* (0.0267)	0.0426 (0.029)	0.0589** (0.0296)	0.039 (0.027)
trade openness	-0.0475 (0.0863)	-0.0434 (0.0835)	-0.0409 (0.0752)	-0.0505 (0.0911)	-0.052 (0.0872)	-0.0418 (0.0778)	-0.0404 (0.0814)
land gini	0.0191 (0.0572)	0.0176 (0.0533)	0.0101 (0.0616)	0.0311 (0.0479)	0.0339 (0.0445)	0.0243 (0.0555)	0.0328 (0.0429)
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initial gdp	-0.0151** (0.0066)	-0.0148** (0.00629)	-0.0155** (0.00677)	-0.0146** (0.00588)	-0.0133** (0.00587)	-0.0142** (0.00637)	-0.0139** (0.00575)
legal origin	-0.00446 (0.0121)	-0.00447 (0.0114)	-0.00441 (0.0136)	-0.00485 (0.0106)	-0.0039 (0.00949)	-0.00336 (0.0113)	-0.00508 (0.0108)
corruption		-0.031 (0.0229)	-0.105 (0.307)				0.0493 (0.246)
govteffect		0.0316 (0.0244)		0.286*** (0.106)			0.496** (0.215)
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Observations	229	229	229	229	229	229	229
R-squared	0.44	0.482	0.412	0.526	0.482	0.422	0.535

Note: Dependent variable is the GDP per capita growth rate (economic growth rate) in all specifications. Robust standard errors are shown in parentheses. \*, \*\*, and \*\*\* represent 10%, 5% and 1% significance level respectively.

#### 4. Concluding Remarks

We attempt to assess the influence of time – variant macroeconomic, political economy, and time – invariant initial factors on economic growth of 24 MENA and African countries in the period 1996-2014. We report the estimation results with a caveat due to the regional concentration of countries in the sample and the specific measurement time period. Investment ratio, trade openness, and foreign direct investment show positive correlations to GDP per capita growth rate, even though investment ratio and foreign direct investment appear insignificant in most of the specifications. Natural resources rents have a positive and statistically significant at the 5% level impact on economic growth rate. This outcome is consistent with the viewpoint that considering the structure of these economies commodity goods income and natural resources rents construct an important portion in their comprehensive national incomes. Nonetheless, this also hints that over-reliance on rents from natural resources and commodity goods, and lack of sectoral diversification pose considerable challenges for plausible economic policy making and sustainable economic growth.

The beginning human capital stock proxied by initial education amount shows a positive and mostly significant impact on GDP per capita growth rate even though it loses significance in some specifications in Table 2 indicating that when a country initially has a highly skilled / educated labor force, it will positively affect its subsequent economic growth performance. This result is consistent with the finding of Rodrik (1994). Initial income level shows a strongly significant negative correlation with subsequent economic growth rate. We use the initial land distribution inequality as an indicator of asset distribution inequality. The initial land distribution inequality exerts a positive and statistically significant (at 10% level) influence on GDP per capita growth indicating that as the beginning land distribution equality (or more broadly asset distribution equality) worsens, this may contribute to the inclinations in economic growth in the medium run. These two outcomes are counter intuitive to the findings of Rodrik (1994), among others, although they are consistent with the conditional convergence hypothesis proposed, for instance, by Barro (1991).

We redo the estimations with a subsample of 15 countries which primarily locate in the MENA region. Foreign direct investment (at 1% significance level in all specifications) and natural resources rents ( at 5% and 10% significance levels in most of the specifications) show positive and statistically significant correlations with GDP per capita growth rate. Initial land distribution inequality has a positive relation with subsequent economic growth, although now it does not appear to be significant. Beginning initial income level again holds a significant (at 5% level) and negative correlation with GDP per capita growth rate. Government effectiveness and rule of law show statistically significant positive and negative effects respectively. Through their interactions with initial income, these direct impacts diminish as the beginning GDP per capita increases.

These overall estimation results appear to be consistent with the situation that the 24 MENA and African countries in the sample heavily rely on the national income from commodity goods and natural resources to maintain a sustainable growth trend. Commodity goods and natural resource ownership still play a crucial role in these countries' domestic economies. Being located in a region burdened with civil wars, violence, and ineffective governments additionally increases the macroeconomic challenges in front of these countries down the road. In this respect, it is meaningful that government effectiveness also turns out to be statistically significant in the estimations. As mentioned earlier, we have come across challenges while finding and collecting proper land distribution inequality data. Future research which can integrate improved land distribution inequality statistics, different asset distribution indicators, and other institutional quality factors holds high prospects.

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