

Master's in Economic Development and Growth

***Dependent development dynamics:
Algeria and Morocco, 1970-2010***

Laura Maravall Buckwalter
eut11lma@student.lu.se

Abstract: The aim of this thesis is to understand if theory based on economic dependency can be applied to two countries that belong to the Maghreb region: Algeria (DZA) and Morocco (MAR). The period analysed comprehends 1970 to 2010, and a time series approach is used for both countries. This paper will first review previous literature and findings related to dependency theory. Second, it will give a qualitative analysis of Morocco and Algeria and explain why both countries were chosen. Third, following previous research it will find if “development dependence” dynamics are significant when explaining economic growth. Finally, it will state its conclusions.

Key words: Dependency, economic growth, North Africa.

EKHR92

Master thesis (15 credits ECTS)

June 2012

Supervisor: Lennart Schön

Examiner: Erik Green

Content

1. Introduction	3
2. Theoretical framework and literature review	3
3. Country specificities	5
4. Historical background.....	9
5. Empirical method and data	11
6. Theoretical Framework for the explanatory variables.....	14
a. Trade dependency.....	14
b. Capital Dependency	17
c. Domestic State.....	20
d. Other Variables.....	22
7. Regression Results	23
a. Total GDP Algeria.....	23
b. Total GDP Morocco	24
c. Agriculture GDP Algeria.....	25
d. Agriculture GDP Morocco	26
e. Manufacturing GDP Algeria	27
f. Manufacturing GDP Morocco.....	28
g. Industrial GDP Algeria.....	29
h. Industrial GDP Morocco	30
i. Services GDP Algeria	31
j. Services GDP Morocco	32
8. Conclusions	32
Appendix	35
Sources and Variables.....	37
Bibliography.....	38

1. Introduction

This paper analyzes whether *dependent development* dynamics are found in Algeria and Morocco between 1970 and 2010. Although both countries by the end of the 20th century directed their economic policies towards more open-market economies they have different export diversification patterns which are interesting to analyze.

Most dependency arguments failed to be consistent after the 1990s. Still, this paper applies the dependency development approach following Bradshaw (1988). This approach takes into account the positive effects of internationalization and aims to find if local capital, foreign capital and the state contribute to a diversified development among different sectors within a country.

The structure is as follows. First, it reviews previous literature and shows which stream of dependency theory will be followed. Second, it provides a brief historic background of both countries. Thirdly, a theoretical framework presents the key explanatory variables used in the model. This section is followed by the empirical part which explains the methodological approach used and provides regression results. Finally, it states the conclusions.

With respect to the methodological part, the paper applies a least square regression for time series. In this model economic growth by sectors is dependent upon different variables that reflect the three main factors of dependent development theory: local capital, foreign capital, and state.

Throughout the paper several caveats are presented. For instance, with respect to Algeria and Morocco on occasion there is lack of data and therefore results may not be accurate. Additionally, the variables chosen often do not allow differentiating effects such as the effects of vertical versus horizontal foreign direct investment or investment ownership. This might lead to different results. However, conclusions will take into account this problem.

2. Theoretical framework and literature review

The analysis of the impact of globalization on economic growth in a long-term perspective has occupied much research. The channels through which a more integrated economy affects different countries are hard to distinguish and become more complicated as time goes by. In order to comprehend what determines a country's economic growth, it is important to take into account its exposure to the global economy and to what degree it depends on it.

After the Second World War three blocks were established within the world economy: the East, the West and a third one, characterized by the "decolonized" countries of Africa, Latin America and Asia. Research based on the development of the latter reflected the origin of the dependency stream and began during the 1960s. Later, during

the Cold War years, development theory expanded and the concept “North-South” began to be commonly used among researchers. For them, the difference between both regions was due to high/low investments, high/low wages and industrialization versus agricultural-rural economies (Sekhri, 2009).

Most arguments and ideas based on dependency theories started with Latin American countries. Its leading theorists were Frank, Cardoso and Faletto, among many. After the 1970s, dependency ideas expanded beyond this region. African and Asian countries became also the focus of attention. Within Africa, the main researcher on economic dependency is Samir Amin. He claims that countries such as Algeria or Morocco are integrated into the “core” but have not become part of it (Amin, 1971).

The impact of dependency has been debated until today. Researchers that claimed the existence of a negative relation between dependency and economic growth were usually able to confirm their theories up to the late 1990s. Authors like Kentor or Chase-Dunn support this relation. However, in 1992 a paper published by Firebaugh contradicted these theories, criticizing measurement and theoretical arguments (Boswell and Dixon, 1996). Still, following that critique, dependency theorists were able to overcome the criticisms and keep supporting the negative effect between dependency and growth. For example, Kentor (1998) proved that dependence on foreign direct investment of peripheral countries does in fact slow economic growth. He highlighted that the relationship is consistently and significantly negative throughout different models and that the dependency structure “perpetuates” the negative effects.

The neo-classical economists maintained that dependency could be seen as an increased amount of flows that would lead to convergence between the industrial core (North) and the poor periphery (South). Dependency for them had a positive effect on the growth of developing countries. Authors such as Schelling, Chenery, Strout and Firebaugh belong to this stream. Others, like Cardoso and Faletto, believed that *dependent development* was given (Kaufman et al. 1975). This term implied that the only negative impact of dependency was higher inequity.

In other words, depending on the type of dependency, a country may or may not develop or grow in a sustainable way, which is why it is relevant to understand dependency dynamics and follow a certain dependency stream. It is clear that openness to international markets has increased the vulnerability of developing countries towards international market shocks. Wibbels (2006) explains that, as globalization increases, attention must be focused on “international markets per se” and not only domestic factors. The author contributes to dependency theory focusing on the “constraints associated with the functioning of international markets” (p. 434). He argues that while rich nations are more flexible towards income shocks, it is very hard for governments in developing countries to “smooth consumption across the business cycle”. These cycles have been reinforced by the dependence towards certain exporting sectors and the external finance flows which characterize these countries. Both, the specialization in

exports and increased external finance lead to a stronger economic and political dependence.

Empirical testing to understand if dependency theories are given is relevant for policy making. Indeed, McGowan and Smith (2009, p. 181) test several African countries for three different types of political economy branches: dependency theories, conventional economists and Marxist analysis of underdevelopment. They argue that the three different points of view have some common patterns but also non-compatible solutions. Hence, in order to give policy options, empirical research must be consistent with one of the theories.

The overall impact of dependency on economic growth is still debated. However, by the end of the 1990s, when globalization effects strongly expanded, dependency ideas began to fade as the positive impact of more integrated economies was evident. Bradshaw (1988)¹ did take into account the relevance of the globalization process. He explained that, although there are three different dependency streams, they must not be considered separately due to globalization. What must be analyzed within dependency theories is the “changing dynamics” among them in time. While classical dependency theory only takes into account the relation between foreign capital and elites, the dependent development theory considers internationalization of the internal market. This means that foreign capital, local businesses and state elites interact and facilitate growth only within one modern sector contributing to the deterioration of the others.

Still, research analyzing these changing dynamics is scarce. Therefore, the purpose of this paper is to apply this approach. The following section briefly introduces both countries selected and shows their main characteristics.

3. Country specificities

Algeria and Morocco are both situated in North Africa. Countries in this region, with respect to climate and geography, are known to have two types of zones: the north, cultivable due to its proximity to the Mediterranean, and the South which has the Sahara desert. It is a particular region which is interesting to analyze due to its unique localization. Indeed, Amin (1971, p.10) well defined it as a region “isolated from the Egyptian and eastern Arab world, and from Black Africa, by thousands of kilometers of desert. Separated from Europe by the sea, it well merits the name given by the Arabs: *Djaziret al Maghreb* – Island of the Sunset.”

Both belong to the Maghreb region. This region is formed by North African countries that signed a Union Treaty in 1989. It includes Libya, Tunisia, Algeria, Morocco and Mauritania. The word *Maghreb* means “West” in Arabic. Countries that belong to this region were the latest ones to fall under the Islamic conquests of the 7th and 8th century and were forced to adopt Arabic and Islam. In the past these countries were able to resist Punic, Roman and Christian invasions; however, they have been strongly

¹ Based on Evans’ (1979) ideas.

influenced by the invasions of a variety of ethno linguistic groups such as Berber, Arab, Phoenicians or French². Hence, as Rogerson (1998; p. 329) states, this Union was supposed to create “a modern political entity capable of exceeding all past glories: of Carthage, Caliphial Ifriqiya or the great Fatamid, Almoravid and Almohad Empires”.

Many studies have focused on the Maghreb; nonetheless, empirical research for this region is limited due to lack of data. For this reason most authors focus only on Algeria, Morocco and Tunisia. These countries are of special interest because in recent years they have undertaken several reforms with the aim to stabilize macroeconomic conditions, increase trade integration and attract foreign direct investment. Nonetheless, they still face high unemployment (SEDG³, 2006).

Algeria and Morocco share similar characteristics but at the same are growing at very different rates. They share three economic problems which are common to the Maghreb: rapid labor force growth, dependency on few export industries and higher international trade competition (Brenton et al., 2006). The following tables show some of the main economic indicators relevant to this paper.

Table 1. National Output

Country	Pop**	GDP		GDP per capita growth %		Structure (2009 value added % of GDP)		
		Billions 2009*	Per capita*	2002-2004	2007-2009	Agriculture	Industry	Services
Algeria	35.47	76.41	2186.28	4.04	0.95	11.73	54.54	33.73
Morocco	31.95	57.78	1797.41	3.62	3.27	16.39	28.59	55.02

Source: UNCTADstat and Worldbank

* Constant US \$, ** Estimates 2010 in millions

Table 2. Trade and Foreign Investment

Country	Goods and services trade (2009 % of GDP)			Inwards FDI stock (2010 % of GDP)
	Exports	Imports	Total trade	
Algeria	40.4	36.12	76.52	12.19
Morocco	28.7	39.69	68.4	46.22

Source: UNCTADstat and Worldbank

Population trends for these countries are very relevant. Algeria has a larger area in comparison to Morocco which is about one fifth of Algeria’s total land⁴; however, as it is possible to see in Table 1, they have a comparable total population. One important characteristic of the North-African governments is the challenge of the socio-economic

² "Maghrib." Encyclopædia Britannica. Encyclopædia Britannica Online Academic Edition. Encyclopædia Britannica Inc., 2012. Web. 17 Jun. 2012.

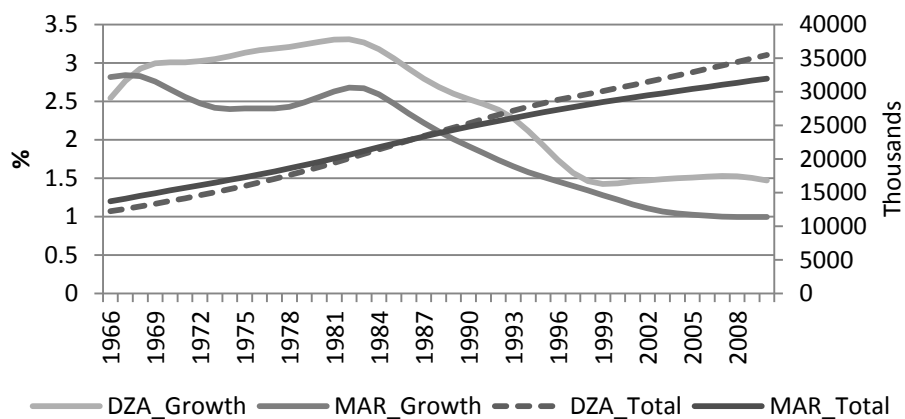
<http://www.britannica.com/ludwig.lub.lu.se/EBchecked/topic/356614/Maghrib>

³ SEDG is Social and Economic Development Group, see reference list.

⁴ 446550 km² of Morocco versus 2381741 km² of Algeria. <https://www.cia.gov/library/publications/the-world-factbook/geos/ag.html>

change that they faced in the 1990s. While in European countries the demographic change was already mostly under control, North-African countries faced by the late 20th century a demographic situation where population growth was higher than economic growth (Rogerson, 1998). However, from the graph below it is possible to see that both countries have managed to control their population growth and since 2000, have pursued a constant growth. Still, currently they face a growing labor force which cannot be absorbed by the labor market due to high unemployment rates (Brenton et al., 2006).

Figure 1. Population



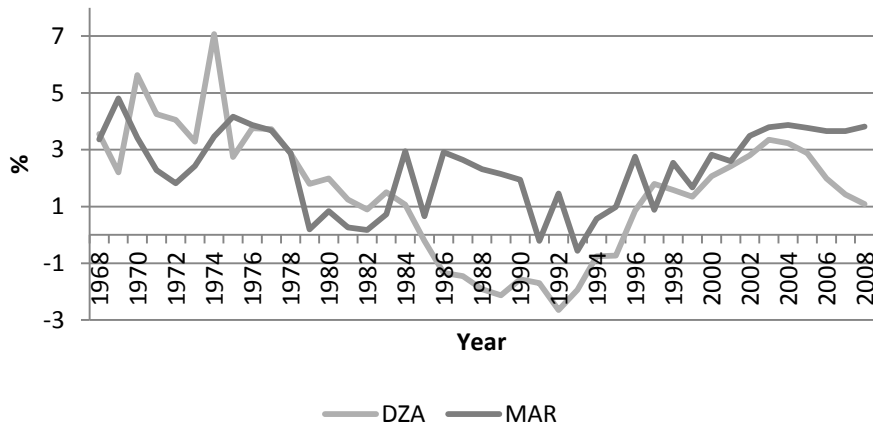
Source: World Databank, World Bank (2005).

With respect to economic output, table 1 shows that Algeria has a greater total GDP. If growth data are analyzed, then it is noticeable that Morocco is managing to grow at a higher rate since 2002. Figure 2 shows that on the whole, from the mid-1980s, Morocco has proved to have a relatively higher and more stable growth. The African Economic Outlook⁵ shows that in 2003 Algeria’s real GDP growth was of 6.9 percent while Morocco’s was 6.1 percent. However, these trends have changed and in 2010 Algeria’s growth decreased to a 3.3 percent while Morocco was growing at a 3.7 percent. If the annual GDP per capita growth is analyzed, then it is possible to see that although Algeria in the early 70s was growing above Morocco, the trend changed over the years up to 2010. Additionally, Morocco’s growth proves to be more stable during the 40 years analyzed in this paper. On the overall, the average per capita annual growth for Algeria is of 1.48 while Morocco’s is of 2.36. If standard deviation is calculated it is possible to conclude that Algeria’s overall variation from a mean growth is larger, being 5.03 versus 4.16, which means that the Algerian growth is more volatile.

The structure of GDP also differs for both countries. Table 1 indicates that Algeria’s GDP is mostly explained by industry while Morocco’s is reflected by the services sector (for more detail see Appendix, figure A1). Indeed, the dependency towards limited export industries is one of the problems that the Maghreb countries face.

⁵ <http://www.africaneconomicoutlook.org/en/countries/north-africa/morocco/>

Figure 2. GDP per capita (annual percentage growth, 5 year moving average).



Source: World Databank, World Bank (2005)

Table 1 shows trade indicators obtained from the UNCTAD statistics or the WITS⁶. Both countries have a similar imports share of GDP while Algeria's share of exports are higher. One of the main flaws of the Maghreb's lagged economic expansion is the lack of diversification of exports. Morocco's merchandise exports are mostly explained by textiles, which are facing strong competition from emerging markets such as China, India and eastern European countries. However, the country has expanded its services sector, becoming in 2010 nine times higher than its value added in 1966⁷. Indeed, the services sector provides the biggest value component of its GDP, reflecting approximately 50 percent in 2009 (Table 1). On the other hand, Algeria is completely specialized in fuel exports not favoring employment growth (Brenton et al. 2006). With respect to foreign direct investment, table 2 shows that the latter is about three times larger in Morocco than in Algeria, proving a stronger openness towards international markets. Still, in comparison with other countries, the Maghreb region has not attracted significant inflows of capital. This is mainly due to low education levels.

Therefore, the two countries have big advantages with respect to geography, labor force and trade agreements⁸ that can contribute to more productive and diversified economies (Brenton, 2006). The aim of this paper is to analyze dependent development dynamics to understand what lies behind the different growth patterns for Algeria and Morocco. It is always argued that comparisons among countries are not accurate enough because of their strong differences; climate, geography, history or institutional factors such as government or corruption. The case of these two countries allows controlling for certain factors such as geography or religion.

⁶ <http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx>; United Nations Conference on Trade and Development.

⁷ <http://wits.worldbank.org/wits/>; World Integrated Trade Solutions

⁸ WITS

⁸ The analysis of trade agreements goes beyond the purpose of this paper. However, recent trade agreements with EU or US have contributed positively to the access of these countries in the international markets (Brenton, 2006).

The following section will give a historic overview and argue why a comparison between these two countries may give interesting insights into long-term economic growth explanations. It is the differences between these two countries that make this analysis interesting.

4. Historical background

To comprehend economic growth trends for Algeria and Morocco, especially from a dependency perspective, the historical framework within their frontiers and the international context must be introduced. The data analyzed in this paper begins around the 1970s and goes up to 2010, beginning when dependency ideas were flourishing and often had an impact on many countries' policy making.

As already explained, the fact that they both belong to the same region makes the comparison more accurate. Their population is a 99 percent Muslim and also has the same percentages of ethnic groups; a 99 percent Arab-Berber and less than 1 percent Europeans⁹. There is another relevant factor that simplifies the analysis: they both were affected by French colonization. Additionally, they not only share the same colonial past but achieved independence within a 6 years' time gap; Morocco pursued full independence in 1956 while Algeria obtained it in 1962.

Both countries are classified as developing countries by the World Bank although Morocco belongs to the lower-middle income group and Algeria to the upper-middle income group¹⁰. However, although they have this similarity, Amin (1970) explains that modern development started when French rule began; in Algeria in 1880 and in Morocco in 1912, and therefore must be taken into account during the analysis. Indeed, from the 70s these countries have reflected similar factors such as population or domestic investment growth while shown very different behaviors with respect to other determinants, such as openness towards foreign direct investment. Therefore, if neoclassical models of economic growth were followed¹¹, the analysis would be implying conditional convergence because these countries only share some similar aspects of steady state equilibrium and therefore tend towards different steady states. However, this paper does not intend to analyze convergence towards the steady state but aims to find evidence of dependency theory within reasonable economic growth frameworks throughout simple regressions.

The period analyzed in this paper is divided into two sub-periods that go before and after the 1990s. During the 60s and the 70s dependency theories were very common. They had a strong impact on many developing countries' leaders, which saw the birth of these ideas as an "Enlightenment in the underdeveloped world" (Sehkri, 2009). This was

⁹ <https://www.cia.gov/library/publications/the-world-factbook/geos/mo.html>

¹⁰ Following the World Bank definition: "Economies are divided according to 2010 GNI per capita, calculated using the World Bank Atlas method. The groups are: low income, \$1,005 or less; lower middle income, \$1,006 - \$3,975; upper middle income, \$3,976 - \$12,275; and high income, \$12,276 or more" in US dollars. <http://data.worldbank.org/about/country-classifications>

¹¹ Based on authors such as Solow, Barro or Sala-i-Martin.

the case of Algeria. As Sekhri (2009, p. 245) claims, it is a country “long known for its struggle against dependency.” During these years Algeria’s agenda was based on “socialism versus capitalism, nationalization versus foreign ownership, industrialization versus agriculture, and Arabization versus Francophony”.

After the Algerian independence war (between 1954 and 1960), the relations with France worsened, although the country strongly depended on French aid for development. For this reason, after the war the government’s objective was to fight against the “old colonialism”. Its main target was to “reawake the traditional countryside” (Amin, 1970; p. 125) and industrialize the economy. However, the plan failed. The agrarian reforms proved to be too expensive and ineffective. The agricultural reforms implied a “regrouping of villages” which generated hundreds of thousands of peasants left without their land. This meant a drop in agricultural production and capital outflows due to investors’ fear of high risks, and by 1961 “more than 85% of savings were exported” (p. 128). Productive investments were only given within the oil industry. As Amin (1970) concludes, up to 1961 what drove growth in the Algerian economy was military expense, the oil industry and some basic capital projects. There was an overall drop in agricultural production and population living standards. Only some classes benefitted from sectors improved by war. Hence, the fall in economic activity and the increase in public expenditure characterized the years after 1963.

After 1962, French and foreigners departed leaving the productive agriculture and industrial sectors mostly with unskilled Algerians. Additionally, the socialist government implemented a centralized and self-sufficient economy with the aim to obtain political independence. During the 70s, development plans were implemented in order to improve productivity and increase growth. Still, with the 1986 oil price drop and several riots, the government was forced to implement stronger reforms directed towards increased openness and foreign direct investment. For example, during that period the government allowed management autonomy to two-thirds of state-owned enterprises¹².

This economic behavior differed from Morocco’s. This country aimed earlier to improve its economy by increasing investment inflows through a series of development plans. These plans had the objective to develop sectors such as agriculture and tourism. Later in the 70s Morocco started to invest more in industries such as chemical, phosphates, paper and metal. However, most economic growth analysis based on Morocco divides the period from the 1960s to 2010 into three groups: from the 1960s to 1980s, 1980s-1990s and after the 1990s because the 70s were known as the “Moroccanization”, one of nationalizations and imports substitution. This was financed with income proceeding mainly from phosphates exports and derivatives. During this decade land was expropriated from the French and distributed among small landowners, mainly a government strategy to control rural elites. Also, it was a contradictory phase because, although Morocco tried to attract foreign direct investment, it passed an economic plan that stated that at least 51 percent of corporations had to be owned by

¹² <http://www.country-data.com/cgi-bin/query/r-383.html>; Encyclopedia of the Nations.

Moroccans. By the end of the decade a huge dependence on foreign borrowing and a significant public debt forced the government (under IMF and World Bank pressure) to implement a restructuring plan (known as “de-Moroccanization”) that led to currency devaluation (1983) and openness (Friedman, 2010).

In brief, it seems that both countries, by the end of the 20th century were somehow changing towards more open economies, although in different ways. This trend is consistent with the international framework which, as Williamson (2011) explains, during the 1990s was facing the establishment of a new *world economic order* (after two hundred years of transition towards it). This *world economic order* was characterized mainly by differences between “the rich industrial core” and “the poor periphery.” The trade patterns between these two regions differed; the rich industrial core specialized in manufactures while the poor periphery depended on primary product exports.

This decade was characterized by factors that challenged traditional economic growth explanations. It was during these years, after the breaking down of the Soviet Union, that the international system was shaped by a stronger role of peripheries. During this period globalization arrived and had a strong impact; trade and capital integration increased, transport costs fell and policy making shifted towards more open and integrated economies. Two of the most populated countries in the world were experiencing changes: China was growing extremely fast and India was accelerating its growth. The Soviet Empire crashed which, as Crafts (2006) explains, meant the arrival of new “transition economies” with different economic growth behaviors. These facts were strongly incentivized by the fast diffusion of the new information technologies that came to be classified also as General-Purpose Technologies (Crafts, 2006).

All these changes contributed to a faster development of many countries, and hence the dependency approach was “turned into an array of outdated thoughts and perceptions” (Sekhri, 2009). For this reason, this paper applies the dependency development approach following Bradshaw (1988). It is especially interesting because these two countries have two strong differences. With respect to economic policy, Algeria is mostly statist while Morocco is a market oriented economy. On the other hand, Algeria is strongly dependent on natural resources while Morocco is not.

5. Empirical method and data

Empirical testing to understand if dependency dynamics exist is relevant for policy making. Indeed, McGowan and Smith (1978, p. 181) “treat dependency as a positive theory open to empirical testing” (p. 186) and argue that in order to give policy options, empirical research must be consistent with this type of theory.

Most empirical testing is based on cross-national studies and analyzes capital penetration. The use of cross-national studies has been criticized. Every country has unique characteristics and many cross-national assumptions do not hold (Cardoso 1977, Bradshaw 1988). To understand dependency mechanisms individual history must be

considered and therefore, data at an individual level must be used to capture trends in time.

Few studies have used the time series approach. Among the latter Chase-Dunn (1975), Gartrell and Hammer (1986) or Bradshaw (1988) applied it. The empirical methodology in this paper will mostly follow Bradshaw (1988). This author studies the changing dynamics of dependency theory in Kenya. He argues that three dependency streams may be found: “classical” dependency, “dependent development” and “mature dependency”¹³. He explains that given the globalization process it is not possible to perfectly explain dependency with one single approach.

There is a main difference between the classical approach and the dependent development one. On the one hand, the first approach focuses on extractive-export oriented dependency and considers only the negative effects of foreign capital concentrated on the exploitation of raw materials. On the other hand, the dependent development approach takes into account the effects of internationalization of the internal markets. It centers its attention on a stronger relation between foreign capital, local capital and the domestic state.

A least square regression for time series was used. It is a model where economic growth is dependent upon different variables that reflect the three main factors of dependent development theory: local capital, foreign capital and state. This paper uses data from the 1970s to 2010, although one of the main problems to construct the database was the lack of observations. The dependent variable is the annual growth of the GDP per capita by sectors. The sectors analyzed are the agricultural, manufacturing, industrial (excluding manufactures), services and total (aggregate). The model is the following:

$$Y_{i,s,t} = \beta_1 Y_{i,s,t-1} + \beta_2 FCP_{it} + \beta_3 T_{i,t} + \beta_4 DI_{i,t} + \beta_5 S_{i,t} + \beta_6 Z_{i,t} + u_{i,s,t}$$

$Y_{i,s,t}$ is Gross Domestic Product (GDP) per capita growth for country i in year t , for sector s . FCP_t is the variable that reflects foreign capital penetration for country i in year t . This variable may be reflected by foreign investment inflows or external debt. The variable $T_{i,t}$ stands for trade for country i in year t which might be openness growth (exports plus imports over GDP) or simply exports growth. The $DI_{i,t}$ variable reflects domestic investment and S_t is the state's strength for country i in year t . Finally Z_t are the control variables that may be included, such as human capital or unemployment. The regression model and variables used may change depending mainly on the residuals, which ought to be white noise.

The use of certain variables to reflect dependency is based on previous research. However, the fact that Algeria is an oil-rich country may affect results. For example, strong oil endowment gives a country stronger bargaining power with other countries for which dependency theory does not account for (Kaufman et al. 1975). Still, in this

¹³ These theories are based on authors such as Frank, Evans or Hammer and Gartrell.

paper dependency will be tested for an oil rich and a non-oil rich country and the aim is to find whether a dependent development may affect the country's economic growth.

Concerning the independent regressors, the variables for trade will be reflected by export growth, trade openness or/and some trade indicator such as the concentration index obtained from WITS (World Integrated Trade Solution). For capital dependency the variable used will be investment flows and sometimes external debt. Local capital will be Gross Domestic Investment growth. A variable that reflects the domestic state will also be incorporated into the regression model. Finally, following Kentor and Boswell (2003) control variables will also be added into the regression when necessary. The latter will be human capital, oil price growth or unemployment when available. The following table 3 shows the descriptive statistics.

Table 3. Descriptive Statistics

Variable	Algeria					Morocco				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
gdppc_growth	45	1.48	5.14	-13.96	23.63	45	2.36	4.23	-8.00	10.58
gdppcagric_growth	45	0.02	0.12	-0.35	0.26	45	0.04	0.23	-0.45	0.75
gdppcind_growth	45	0.01	0.09	-0.22	0.43	45	0.02	0.03	-0.05	0.08
gdppcman_growth	45	0.02	0.09	-0.29	0.22	43	0.02	0.02	-0.03	0.09
gdppcserv_growth	45	0.02	0.15	-0.43	0.80	45	0.03	0.04	-0.04	0.24
fdiflow	45	0.73	0.67	-0.12	2.69	45	1.21	1.52	-0.24	7.44
ext_debt	40	-0.41	8.09	-12.27	19.59	40	0.08	9.26	-21.42	18.54
export_growth	44	3.26	8.46	-25.93	38.54	45	5.98	7.23	-16.73	21.64
tradeofgdp_growth	44	0.04	6.20	-15.07	17.15	44	1.70	8.12	-19.95	39.22
dom_invest_growth	44	6.68	14.32	-23.76	48.05	45	6.61	15.44	-31.30	46.46
ci_primary	45	5.06	8.68	0.37	34.98	45	54.90	22.61	27.57	92.38
ci_mineral	45	92.10	10.03	59.29	98.45	45	2.18	1.29	0.21	4.85
ci_man	45	2.96	2.10	0.43	8.65	45	42.89	22.04	7.32	70.40
state_strength	43	33.80	5.60	23.27	45.51	40	21.36	4.10	14.61	29.71
state_growth	42	0.22	4.17	-12.95	10.49	39	0.22	2.66	-8.15	8.44
milit_exp	23	2.93	0.81	1.24	3.97	23	3.75	0.57	2.32	4.67
mil_exp_growth	22	0.08	0.40	-0.44	0.96	22	-0.03	0.45	-0.65	1.58
hum_cap	45	48.24	28.10	-0.09	98.62	45	32.01	15.06	8.86	65.49
oilpricegrowth	45	0.07	0.25	-0.49	0.68	45	0.07	0.25	-0.49	0.68
unemployment	19	20.12	6.25	10.20	29.80	23	14.37	3.62	9.60	22.90
hum_cap_growth	44	2.24	1.57	-1.54	7.43	44	1.29	1.25	-1.88	3.37

Source: World Bank and WITS

Once the database was completed having mostly more than 40 observations per variable it was possible to analyze the series in order to make further changes. Military expenditure and unemployment have few observations but they will only be included in the regression after the 1990s. Most of the variables used are in percentages which allow not taking logarithms. Further, for all of them there is no clear increase of variability as the level increases.

The series were analyzed for each of the regressors. At a first sight, the fact that the regressors seemed non stationary (revealed by the presence of a possible trend), while

the dependent variable was clearly stationary made me suspect that differencing the regressors would be appropriate.

However, at the trial-and-error first stage, running the regression with non-differenced regressors yielded clearly stationary residuals that could be accepted as white noise.

Thus, if

$$y_t = \sum_i \beta_i x_{i,t} + \varepsilon_t$$

Represents the regression, the fact that y_t and ε_t were both stationary implied that the term $\sum_i \beta_i x_{i,t}$ (a) had to be stationary also. Hence, (a) can be seen as a co-integration relationship between the regressors. As a consequence there was no need to difference the non-stationary series and estimating the full regression in levels was more efficient. This is the way this paper proceeded.

Algeria and Morocco had several missing observations. For the missing observations linear interpolation has been applied. All the trade series for Algeria had missing observations for 1967 and 1972. Also, both countries had 8 missing observations for the human capital variable and Algeria had three for capital dependency. Estimating AR(1) for these series I was able to see that the coefficient of the retarded value was extremely near unity, hence, these series needed differencing to be stationary. For these models linear interpolation is the best method.

For series considered most relevant, backward forecasting was applied so that they would begin the same year. For the human capital control variable the years from 1966 to 1970 were predicted with ARIMA (1,1,0) plus mean. For foreign capital penetration the years from 1966 to 1971 were predicted using the same model.

6. Theoretical Framework for the explanatory variables

This section will present the key explanatory variables used in the model. The section will describe trade, foreign capital, domestic state and other relevant variables. It will also state the expected behavior.

a. Trade dependency

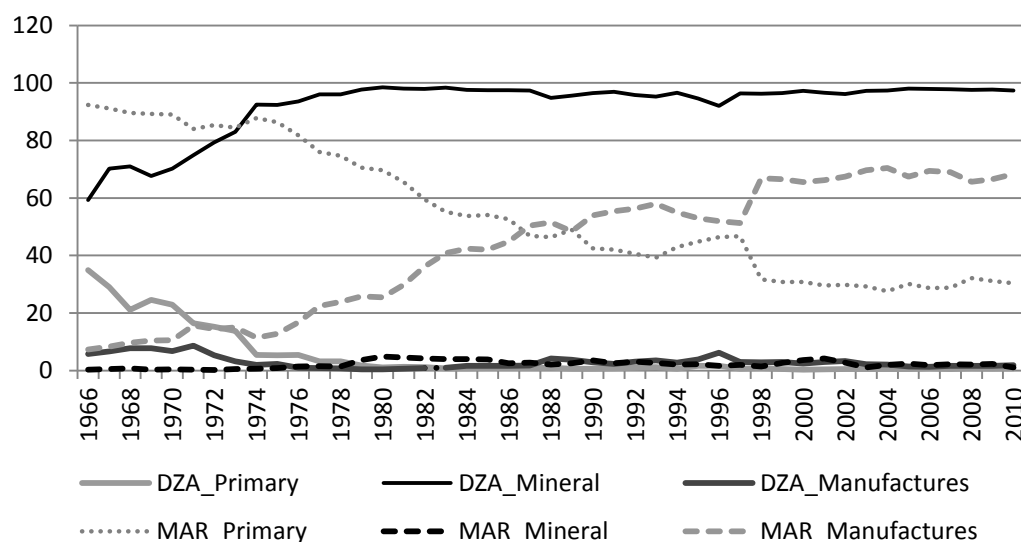
It is the trade composition within the Maghreb countries that shows the resource endowments of each country. Algeria's exports are mainly mineral fuels. Its energy wealth makes of it one of the highest income per capita countries within the Maghreb. This country exports mainly petroleum, natural gas and related products. Indeed, income from the latter reflects 98 percent of its exports. Morocco, on the other hand, has higher imports than exports. This has led to trade deficit deterioration in 2011 (African

Economic Outlook, 2012). Manufactures and primary products reflect the biggest share of exports within Morocco¹⁴.

With respect to partners, the main trading partners of the Maghreb countries are the European Union and other European countries; however, other countries like the US or China account for a large share of trade. Morocco has several trading partners thanks to its open-market economy. These are mainly the European Union, Asia and the USA. Algeria on the other hand, mainly because of its resource endowment, has intensified its relations with the European Union. Its main trading partners are OECD countries, especially those belonging to the European Union (African Economic Outlook, 2012). Trade within Maghreb countries however is marginal. As DeRosa (2008, p.32) explains, “Trade among the Maghreb countries seems constrained, especially compared with the volume of the region’s trade with the world in the same product categories. Restrictions that hinder greater commerce among the Maghreb countries are evidently at play”.

Different variables may be used to measure dependency forces with respect to trade. The importance of analyzing this trade dependence is that it gives an idea of an “unbalanced international trade structure” (Kentor and Boswell, 2003; p. 303). Trade composition, export partner concentration and export commodity concentration are the most commonly used in research to capture dependency. It has been shown that the latter, which reflects the diversification of a country’s exports, has a negative long term impact on economic growth. Kentor and Boswell (2003) apply a panel data approach to several developing countries at five period intervals from the 1970s. They find that export commodity concentration has a long term negative impact on economic growth. This differs from export partner concentration which is found to be insignificant.

Figure 3. Concentration Index (% of total exports)



Source: WITS, DZA is Algeria and MAR is Morocco.

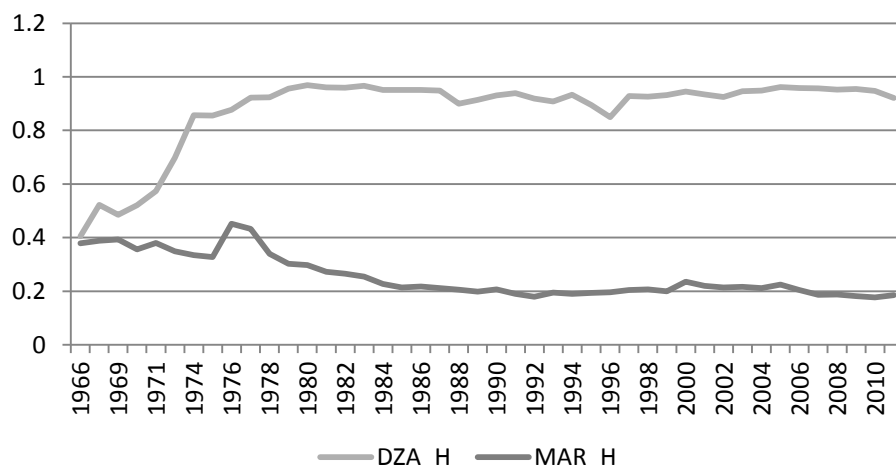
¹⁴ Data was obtained from <http://wits.worldbank.org/wits/>. See also Appendix.

Figure 3 shows the concentration index which reflects the commodity concentration of exports. This index was obtained from the 1960s to 2010. It is the share of each export product (at SITC revision level 1) in the country's total exports. The disaggregation level had to be chosen and then data was aggregated in order to obtain primary, mineral and manufactures' concentration indices.

The initial situation of Algeria in 1966 reflects what characterized “the poor periphery” in the 1960s, where more than 85% of its exports were agricultural or mineral (Williamson, 2011). The graphs show that after the 1970s Algeria's mineral fuel exports reflected more of 90 percent of the overall export composition. Morocco, on the other hand, shows a higher diversification. Primary exports have decreased its share while manufactures have increased significantly. This is relevant because the lack of export diversification may reflect a risk towards financial stability due to a high vulnerability. As WITS¹⁵ explains, when a country develops a diversification towards manufactured goods, then it will lead to “higher and more stable export earnings, job creation and learning effects and the development of new skills and infrastructure that would facilitate the development of even newer export products”.

Figure 4 shows the Hirschman Herfindahl Index. If a country has a completely diversified exports portfolio, then the value will be near 0. On the other hand, if the country only exports one type of product, the value is near 1. It is possible to see how both countries are following different concentration patterns.

Figure 4. Hirschman Herfindahl Index



Source: WITS, DZA is Algeria and MAR is Morocco.

Finally, WITS and the UNCTAD provide the Revealed Comparative Advantage Index (Figure 5). This index reflects a country's export potential¹⁶ and was created by Balassa

¹⁵ <http://wits.worldbank.org/wits/>

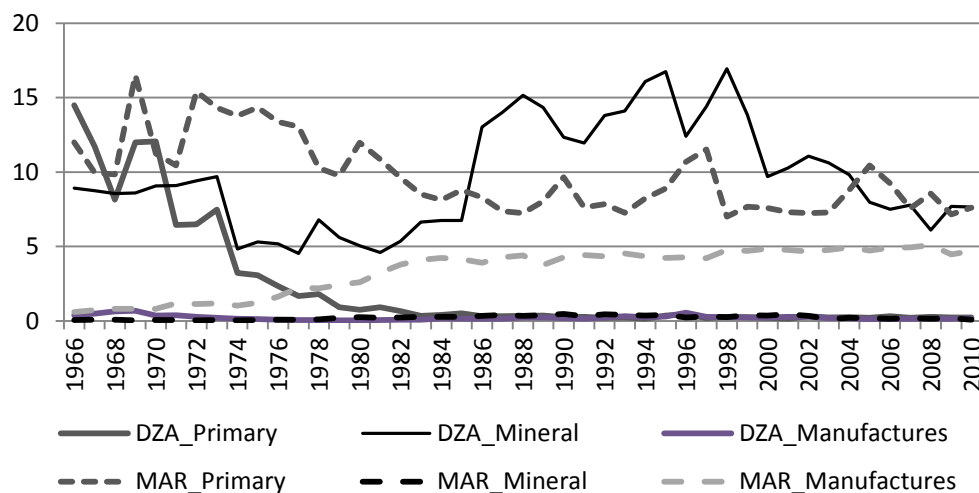
¹⁶ The RCA index of country I for product j is often measured by the product's share in the country's exports in relation to its share in world trade:

$$RCA_{ij} = (x_{ij}/X_{it}) / (x_{wj}/X_{wt})$$

Where x_{ij} and x_{wj} are the values of country i's exports of product j and world exports of product j and where X_{it} and X_{wt} refer to the country's total exports and world total exports. A value of less than unity

(1965)¹⁷. It gives an idea of a country's share of a commodity over total exports with respect to the exports of the latter on the world's total exports. It is possible to see that Algeria has benefitted from its comparative advantage with respect to minerals. As stated above, the country shows a strong comparative advantage for gas and petroleum (DeRosa, 2008). This advantage however has decreased since the late 1990s. Morocco instead has kept a constant revealed comparative advantage of primary products and manufactures.

Figure 5. Revealed Comparative Advantage Morocco and Algeria



Source: WITS, DZA is Algeria and MAR is Morocco.

In summary, trade indicators for these two countries reflect different diversification trends. They show that Morocco is more diversified while Algeria is concentrated into mineral exports. Correlations (see Figure A2 and A3 in Appendix) are mostly over 50 percent. For this reason, trade indicators are included individually if used.

b. Capital Dependency

Many authors have focused on this type of dependency. There are different variables that might be used. Kentor (2003) claims that two variables can be used. The first one is foreign capital concentration which reflects the share of investment market owned by the main foreign investor. One of the main flaws of this paper is that this data is not available for the countries analyzed and therefore it will not be included. The second variable is foreign capital penetration and reflects the overall level of foreign direct investment (FDI). This paper will use the latter, using FDI inward flow as a percentage of GDP. Most authors have used this measure¹⁸ and it shows the degree to which a country depends on foreign investment.

implies that the country has a revealed comparative disadvantage in the product. Similarly, if the index exceeds unity, the country is said to have a revealed comparative advantage in the product.

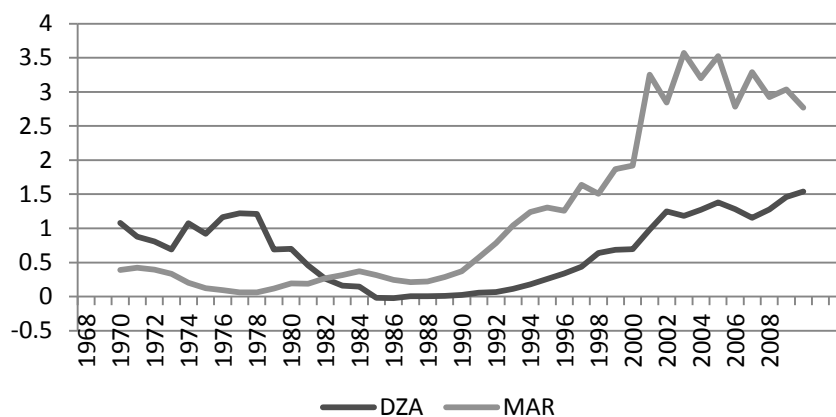
¹⁷ Not used in the paper. Cited by De Rosa (2008).

¹⁸ Dixon and Boswell (1996), Firebaugh (1996), Kentor (1998) and Soysa and Oneal (1999). From Kentor (2003)

Kentor's (2003) most outstanding result is that foreign capital concentration is consistently negative and significant when included. Instead, FDI penetration coefficient in the regression is not consistently negative, not even significant, especially when investment concentration is included. The author concludes that the reason why foreign capital penetration is not significant after the late 80s is because of the stronger growth of globalization, which makes ownership structure more relevant than the overall level of investment. He also argues that the non-significance of penetration does not imply that it is not relevant; its impact on development or inequality is still not studied and it is harder to recognize.

The structure of ownership in Algeria and Morocco may be quite significant. As Kentor (2003) explains, it is this structure that has a long term negative impact on growth of developing countries. It is argued that there is no clear cut answer about the impact of capital dependence on the host country's economy because researchers have not differentiated between overall investment inflows and foreign ownership (Kentor and Boswell, 2003). This paper will take into account this problem when concluding.

Figure 6. Foreign Direct Investment Inflows (5 year moving average)



Source: World Bank. Year 1966-1969 were backward forecasted while 1993 to 1995 were interpolated. DZA is Algeria and MAR is Morocco.

Figure 6 shows that both Algeria and Morocco have experienced increases in their FDI inflows after the late 1980s which, as explained in section 4, is due to their more open economies and international integration. However, it is obvious that Morocco's capital integration is stronger.

It is risky to explain capital dependency with FDI flows. Indeed, there are countries that may receive large inflows of FDI and still their policies can remain autonomous. For this reason some institutional variable will be included later to understand and capture the effect of state autonomy or "state strength" (Evans, 1995).

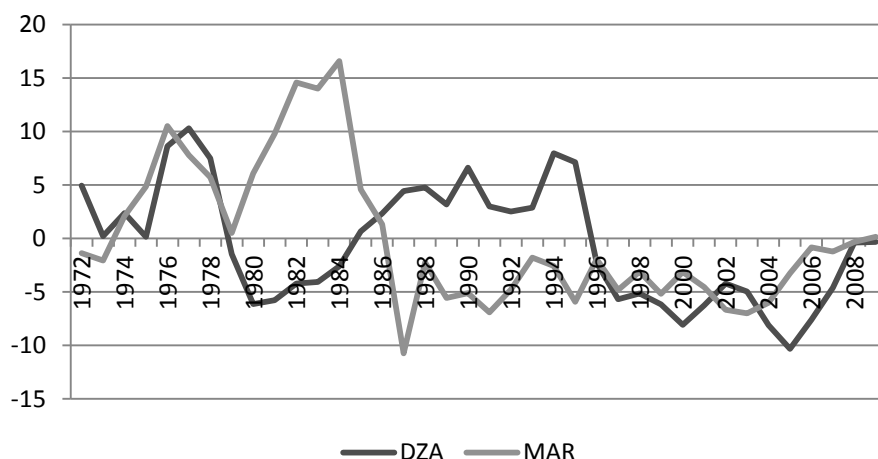
It would also be useful to differentiate between vertical and horizontal FDI. These two types of investments may lead to very different outcomes with respect to economic growth. Multinationals may go to different countries for different reasons; they may

want to profit from a higher foreign demand, benefit from lower labor costs or be motivated only by natural resource endowments (Protsenko, 2004). However, it has been argued that it is extremely complicated to differentiate among these two types of investment. Usually, to make the differentiation it is necessary to obtain firm-level data. The purpose of this paper is to analyze the relevance of capital inflows. Depending on the significance and sign of results it may be possible to get an insight of the type of FDI that has its major weight within Algeria or Morocco.

Therefore the expected signs and significance of variables are not clear due to the above mentioned reasons such as ownership concentration or vertical versus horizontal FDI. For example, with respect to Algeria, if the coefficient of the foreign capital variable is positive and significant, then it can imply that it is contributing positively to the country's economic growth and therefore, probably it is horizontal FDI leading to internal development. On the other hand, if it is investment only directed towards the extraction of natural resources not providing an improvement towards the host country, then the sign should be negative and vertical FDI would be stronger.

Negative effects can be observed for other reasons too. Authors such as Chase-Dunn (1985) and others have found this relation. These authors argue that the investing country pursues an advantage versus the host country reinvesting profits in their home country instead of investing in the host country, generating negative externalities such as a higher inequality (Kentor and Boswell, 2003). Many have criticized the negative relation arguing that the overall impact of investment within developing countries is positive (Firebaugh, 1992). However, with empirical research on the effects of these inflows it is quite hard to make strong statements because many times it is not possible to see if benefits are repatriated. Therefore, there is no clear cut answer of the expected sign for capital dependence variables.

Figure 7. External Debt Stock (3 year moving average, growth % of GNI)



Source: World Bank, DZA is Algeria and MAR is Morocco.

External debt is sometimes included in the regressions. Authors many times have used debt as a dependency measure. For example, Chase-Dunn (1975) or Kentor (1981) used debits on investment income in US or external public debt. Chase-Dunn (1975)

analyzed both debits on investments and debt dependence per capita. He explains that the dependence of a country towards foreign credit is reflected by external public debt, formed by loans to the government and governmental guaranteed loans.

Figure 7 shows the external debt stocks of Algeria and Morocco as a percentage of GNI. This measure reflects the debts (public, publicly guaranteed and private non-guaranteed long-term debt, use of IMF credit and short term debt¹⁹) that are owned to non-residents. It is possible to see that both countries have decreased their external debt dependence. Morocco especially decreased it by mid 1980s and stayed stable while Algeria, due to war, only started to decrease after mid-1990s. This differs from capital dependence reflected by foreign direct investment, which grows continuously after the 1990s.

Local capital is also included to reflect the dependent development dynamics explained by Bradshaw (1988). The relevance of local capital within dependency development theory can be caused by different reasons. For example, multinationals many times need commercial networks that only local firms provide. Also, foreign capital might need domestic capital in order to obtain protection from the state. In these cases then both domestic and foreign capital are expected to be significant. However, many times they might exclude each other. For instance, domestic capital from local elites might be averse to foreign capital within a sector. In this case, simultaneous significance of both variables is not expected. Yet significance of these variables may be affected by laws that force foreign capital to share ownership with domestic capital (Bradshaw 1988).

In summary, a positive and significant sign would imply that local capital (many times reflected by local elites) is strong enough to contribute to the economic expansion of a sector. However, results would be more accurate if domestic capital would be disaggregated by sectors but lack of data did not allow doing this.

c. Domestic State

“State strength” is also used in the models. Its purpose is to understand if the state contributes to the economic growth of different sectors reflecting the institutional part of the model. Its significance and sign are expected to be very different depending on the country and the sector.

Several dependency theorists have included a variable that reflects “state strength”. Previous literature has used collection of taxes to reflect the “state’s strength” because it reflects the ability “to direct national resources and to control basic economic behavior” (Bradshaw 1988, p.702). Bradshaw (1988) explains that for African countries, like Algeria, it is hard to reflect the states’ strength with tax revenues. This is because of the large amounts of non-tax revenues received by the governments of many African countries.

¹⁹ See Appendix for more information.

Different hydrocarbon endowment among countries makes them diversify their tax revenues in different ways. Managing taxes can face problems such as complex tax systems or corruption. The two countries analyzed in this paper have different sources for government revenues. Morocco relies strongly on non-hydrocarbon resource and has a strong direct tax system while Algeria obtains large amounts from taxes on oil and gas (Imam et al. 2007). Indeed, in Algeria the revenues obtained from these taxes have amounted to more than 70 percent of the total budget revenue. If corruption is analyzed with the *Corruption Perception Index* from Transparency International, then one can conclude that Algeria has higher levels of corruption²⁰. Hence, government revenue from all sources may reflect “state strength” for Morocco but it does not reflect the extractive capacity of the Algerian state.

To overcome this problem with Algeria, this paper follows Henry (2004) and uses “military expenditure” as a proxy for state strength after the 1990s. As the author explains, *rentier states*²¹, such as Algeria, strongly depend on international oil prices. Hence, their political and economic stability is vulnerable towards international shocks. For these countries it is hard to face these shocks by peaceful ways and for this reason they have strong military expenses encouraging “military rule” (p. 1). This is explained by many authors with the *rentier theory* which relates tax behavior and military repression. The increased military expenditure is usually seen as a consequence of the incapability of the state to maintain institutional capacity. Also, the necessity to obtain economic information for tax purposes increases this type of expenditure. Therefore, state planning, as theory predicts, deteriorates (Henry, 2004).

Algeria before the late 1990s had a strong extractive capacity. Indeed, until the early 1990s Algeria’s military expenditures were low. For instance, although Algeria profited from higher oil revenues than Tunisia up to the 1990s, it outpaced the latter in extractive capacity (reflected by tax revenue). Nevertheless, the civil war in 1986 decreased its extractive capacity and led to growing military expenses. It was because of the civil strife and hostilities with Islamism groups that Algeria increased the role of the military forces. Therefore, military expenditure after the 1990s can work as a state strength variable²²; especially because after Algeria’s independence military forces had always a

²⁰ http://cpi.transparency.org/cpi2011/in_detail/#myAnchor1. The Corruption Perception Index is defined as: “the abuse of entrusted power for private gain. This is the working definition used by Transparency International (TI), applying to both the public and private sectors. The CPI focuses on corruption in the public sector, or corruption which involves public officials, civil servants or politicians. The data sources used to compile the index include questions relating to the abuse of public power and focus on: bribery of public officials, kickbacks in public procurement, embezzlement of public funds, and on questions that probe the strength and effectiveness of anti-corruption efforts in the public sector. As such, it covers both the administrative and political aspects of corruption. In producing the index, the scores of countries/territories for the specific corruption-related questions in the data sources are combined to calculate a single score for each country”.

²¹ Idea first developed by Hussein Mahdavi in ‘The Patterns and Problems of Economic Development in Rentier States: The Case of Iran’, in M. Cook (ed.), *Studies in Economic History of the Middle East* (Oxford 1970).

²² The data for Algeria available for military expenditures starts after 1987.

relevant role within the state. Many times they favored directing oil revenues toward “development projects unrelated to security” (Henry, 2004; p. 71).

Therefore, Algeria’s expected sign for this variable’s coefficient is ambiguous with respect to the different GDPs. For example, the impact of oil revenues and the ability of a state to extract taxes and its accountability are not clear. The effects may be influenced by country-specific factors like tax-fraud which is punished differently among states (Henry, 2004).

With respect to Morocco, at a first sight tax revenues should hold as a variable for states’ strength. This country relies strongly on direct taxes and, as Imam et al. (2007; p. 10) say, its tax administration is “relatively well developed”. However, government revenue from all sources will also be used because of the following. As Imam et al. (2007) explain, Morocco does reflect a well-constructed tax system; still, tax revenue may not be a good proxy depending on the country’s characteristics. It is important to take into account that in Morocco both the agricultural and services sector have a major role within its economy. These two sectors many times are informal and often laborers are not paid regularly. There is not much left of formal economy to tax (Imam et al. 2007, p. 10).

Consequently, it is complicated to choose which variable might reflect the “revenue generating capacity” of a country. In this paper, following Bradshaw (1988), total central government revenue from all sources will be used for Morocco for the whole sample period. For Algeria the same variable will be used before the late 1980s while, after the 1980s, the variable “military expenditure” will be included.

d. Other Variables

The economic output will be the dependent variable and its lagged value will be included as a regressor. As Bradshaw (1988) does, one regression will be applied for each sector. Economic output growth has been chosen as the dependent variable to see if foreign capital is equally invested among the different sectors or if it only contributes to specific ones. Foreign capital penetration or trade probably will have different impacts depending on sectors, especially after the 1980s.

With respect to Algeria, it is probable that foreign capital will contribute to the expansion of the oil and gas sectors while not contributing to manufactures or agriculture. The opposite is expected from Morocco.

GDP was disaggregated in agricultural value added, manufacturing value added, industrial (which includes manufactures) and services value added. However, per capita data was not available and therefore it was converted and calculated its annual variation.

Human capital is also sometimes used as a control variable. Theory based on the *curse of natural resource* argues that the lack of diversification within a country’s economy deteriorates the labor market and therefore its educational system. Henry (2004)

believes that this was not the case for the Algerian economy. Although this country strongly depends on oil revenues its educational level was not negatively affected by the oil international prices shock of the 1970s. After independence, the state invested a lot into education. The higher expenditures on education led to greater enrolment among students in primary and secondary. The country also invested in higher education with the aim to form “technicians for its ambitious industrial infrastructure” (Henry, 2004; p. 72). Henry (2004) concludes that thanks to these investments, the country “generated a large, educated middle class of aspiring cadres trained for occupations outside the petroleum industry” (p.72). For both countries the expected sign of the human capital is positive when included.

7. Regression Results

The method is the following. First the paper finds some reasonable basic model that explains GDP growth and then it tests for the relevance of trade dependency, capital dependency and state strength. Many regressions were tested using different variables; however, only the most reasonable and consistent with theory have been included. All results included passed Bartlett’s and Portmanteau’s test for white noise residuals. Similar regressions have been tested for agriculture, manufactures, industrial, and services GDP. For the industrial GDP the World Bank contains data of industrial value added²³ which includes the value added that comes from mining and quarrying, manufacturing, electricity, gas and water supply and construction. In order to differentiate from the manufacturing sector, the value added from this sector was subtracted from the overall industrial GDP.

a. Total GDP Algeria

Algeria Total GDP per capita growth						
	total	year<1990	year>1990	total	year<1990	year>1990
L_gdppc_growth	-0.12 (1.88)	-0.13 (1.62)	-0.09 (0.73)			
fdiflow	1.06 (1.71)		1.12 (1.46)	1.24 (2.24)*		1.06 (1.51)
ext_debt	-0.03 (0.87)	-0.04 (0.49)	-0.02 (0.66)	-0.03 (0.75)	-0.09 (0.98)	-0.01 (0.27)
export_growth	0.48 (12.15)**	0.48 (12.47)**	0.45 (4.60)**	0.51 (10.90)**	0.51 (11.82)**	0.44 (4.71)**
dom_investgrowth	0.11 (3.02)**	0.09 (1.91)	0.18 (3.39)**	0.10 (2.71)*	0.09 (2.10)	0.17 (3.25)**
ci_mineral	-0.10 (2.15)*	-0.16 (2.43)*	-0.02 (0.14)	-0.08 (1.13)	-0.14 (2.01)	-0.05 (0.32)
oilpricegrowth	0.10 (0.08)	1.14 (0.41)	2.53 (1.98)	-0.18 (0.15)	0.82 (0.32)	2.25 (1.73)
state_strength	0.18 (3.10)**	0.35 (2.31)*		0.16 (3.14)**	0.31 (2.66)*	
militaryexpenditureofgdp			-0.36 (0.68)			-0.30 (0.59)
_cons	1.59 (0.44)	2.27 (0.50)	1.06 (0.07)	0.70 (0.11)	2.07 (0.32)	3.44 (0.23)
N	39	19	20	39	19	20

²³ Following the ISIC revision 3 classification.

	total	year<1990	year>1990	total	year<1990	year>1990
F	99.69	56.77	19.59	86.20	71.06	36.76
R ²	0.93	0.93	0.90	0.92	0.92	0.90
R2_A	0.91	0.89	0.83	0.90	0.88	0.84

* $p < 0.05$; ** $p < 0.01$
t-values are reported in parentheses.
Robust to heteroscedasticity.

Some variables have consistent behaviors such as the annual growth of exports which is always significant at a 1 per cent level and positive. External debt is never significant but it always has a negative coefficient which is consistent with theory. In fact, as seen previously, the Algerian government by the mid-1990s decided to decrease external debt. Foreign direct investment always enters the regressions positively and is only significant when total years are taken into account and the lagged dependent variable is not included. Domestic investment instead behaves differently. It is significant using the total sample and after the 1990s. This shows that the government has tried to increase domestic investment while lowered external capital dependence. It is also consistent with Bradshaw's (1998) explanation of dependent development, where after the 1990s both foreign capital and state need the collaboration of local businesses. Also, this result may be influenced by the law that states that corporations must be owned by a minimum by domestic investors.

State strength enters the regression as expected; it is positive and significant within total years and before the 1990s. However, after the 1990s, military expenditure enters negatively although not significant. This might show the state's effort to open its country towards international flows, decreasing national enterprises.

Including human capital as a control variable does not make any difference in the results and therefore, it will not be included. Finally, the concentration of exports on mineral shows that it has a significant and negative effect from the 1970s to 2010, confirming the idea that lack of diversification is negative for Algeria. Including human capital does not make a difference and is never significant.

b. Total GDP Morocco

Morocco Total GDP per capita growth

	total	year<1990	year>1990
L.gdppc_growth	-0.54 (4.49)**	-0.60 (5.01)**	-0.64 (4.53)**
fdiflow	0.43 (2.11)*		0.18 (0.45)
D.tradeofgdp	-0.32 (3.20)**	-0.51 (4.60)**	-0.21 (3.19)**
dom_investgrowth	0.15 (4.23)**	0.14 (4.04)**	0.37 (2.69)*
D.ci_manufactures	-0.13 (1.18)	-0.13 (0.74)	-0.34 (2.55)*
state_strength	-0.05 (0.38)	0.21 (1.27)	-0.42 (1.34)
_cons	3.43	-0.67	12.14

	total	year<1990	year>1990
	(1.40)	(0.22)	(1.54)
<i>N</i>	40	20	20
<i>F</i>	10.62	9.94	7.11
<i>R</i> ²	0.61	0.72	0.72
<i>R</i> ² _A	0.54	0.61	0.59

* $p < 0.05$; ** $p < 0.01$

t-values are reported in parentheses.

Robust to heteroscedasticity.

With respect to Morocco, results mainly shows that domestic investment contributes strongly to the overall growth of the economy. Trade's growth affects negatively the total output growth. Export growth was also included but was never significant. This result seems highly unlikely because exports are an important factor within Morocco's economy. Indeed, the overall output regressions above are included just to give an idea of the relevance of the domestic investment growth and foreign investment in the total years. Morocco's economy relies heavily on the agricultural sector which is very volatile and this could be affecting the results. That is why the disaggregated GDPs will be analyzed.

c. Agriculture GDP Algeria

Algeria Agriculture GDP per capita growth

	total	year<1990	year>1990	total	year<1990
L.gdppcagric_growth	-0.19 (0.95)	0.06 (0.25)	-0.01 (0.05)		
fdiflow	0.04 (1.26)		-0.01 (0.28)	0.03 (1.10)	
export_growth	0.00 (0.59)	0.00 (0.75)		0.00 (0.39)	0.00 (0.71)
D.ci_primary	-0.01 (2.10)*	-0.01 (2.31)*	0.12 (2.35)*	-0.01 (1.98)	-0.01 (2.48)*
dom_investgrowth	-0.00 (0.65)	-0.00 (0.32)	0.00 (0.64)	-0.00 (0.34)	-0.00 (0.37)
oilpricegrowth	0.11 (1.32)	0.25 (2.40)*	-0.08 (0.95)	0.10 (1.04)	0.24 (2.56)*
state_growth	-0.01 (0.98)	-0.01 (0.53)		-0.00 (0.74)	-0.01 (0.59)
mil_exp_growth			-0.08 (1.17)		
_cons	-0.00 (0.13)	-0.00 (0.02)	0.04 (0.96)	-0.01 (0.34)	0.00 (0.07)
<i>N</i>	42	22	20	42	22
<i>F</i>	1.48	2.60	10.14	1.20	3.31
<i>R</i> ²	0.17	0.33	0.39	0.13	0.33
<i>R</i> ² _A	-0.00	0.06	0.11	-0.02	0.12

* $p < 0.05$; ** $p < 0.01$

t-values are reported in parentheses.

Robust to heteroscedasticity.

With respect to agriculture many regressions were tested using different variables; however, many coefficients have near zero values and lack significance. With the lagged dependent variable R^2 improve.

Within the agricultural sector, foreign capital penetration, export growth and external debt if included are never significant. Algeria does not contribute to the agricultural

sector by exporting its products. Also, domestic investment growth is always insignificant and always has a null coefficient. Hence, result show that Algeria's government does not contribute to the agricultural sector.

Diversification reflected with the concentration on primary products is always negative within the whole sample and before the 1990s. That is an expected result. This clearly shows that Algeria's export diversification does not contribute to the expansion of this sector. However, it changes after the 1990s becoming positive and significant. This may imply that the country is trying to diversify its economy contributing positively to the agricultural sector.

Institutional variables are never significant and always negative indicating that the state does not contribute to the sector. Finally, oil price variation shows an interesting result. It is positive and significant before the 1990s while it is negative and insignificant after the 1990s. This shows that agriculture was positively affected by oil price increases and affected negatively by decreases before the 1990s. Instead, after the 1990s it is consistent with the positive relation with the concentration index and hence, less volatile toward oil price changes.

In summary, results show that the agricultural sector's growth in Algeria is not able to expand due to concentration in other sectors and therefore does not benefit from capital, trade or states contribution.

d. Agriculture GDP Morocco

Morocco Agriculture GDP per capita growth

	total	total	year<1990	year>1990
L.gdppcagric_growth	-0.56 (4.62)**	-0.56 (4.59)**	-0.60 (4.60)**	-0.57 (3.61)**
fdiflow	0.01 (0.72)	0.01 (0.52)		-0.02 (1.41)
ext_debt	-0.00 (2.44)*	-0.00 (2.37)*	-0.00 (0.95)	-0.01 (0.87)
dtradeofgdp	-0.02 (4.95)**	-0.02 (3.59)**	-0.02 (2.91)*	-0.02 (4.69)**
dom_investmgrowth	0.35 (2.18)*	0.36 (2.21)*	0.20 (1.11)	1.59 (3.11)**
D.ci_primary	0.02 (2.04)*	0.02 (2.09)*	0.01 (0.62)	0.03 (2.44)*
D.hum_cap	0.01 (0.91)	0.02 (1.01)		
state_strength	-0.01 (1.19)	-0.01 (1.07)	-0.01 (1.18)	-0.01 (0.50)
oilpricegrowth		-0.07 (0.61)		
D.unemploymenttotaloftotallaborfor				-0.02 (0.75)
_cons	0.21 (1.94)	0.20 (1.89)	0.28 (1.42)	0.30 (0.54)
N	39	39	18	20
F	13.12	14.99	11.53	11.41
R ²	0.75	0.75	0.79	0.82
R2_A	0.68	0.67	0.67	0.69

* $p < 0.05$; ** $p < 0.01$

t-values are reported in parentheses.

Regressions for agriculture in Morocco may not be very accurate although some consistent results are found. Agriculture in Morocco is very sensitive to climate (Chemingui, 2006)²⁴. Usually periods of low growth are related to previous droughts. Additionally, this sector employs almost 50 percent of the labor force and this data is not enough and for this reason it has only been included in the last regression.

The variables that are significant are the lagged dependent variable, the growth of trade, the concentration index in primary products and external debt in the total sample. The fact that the lagged dependent variable enters the regression negatively would imply that there is convergence consistent with the neoclassical approach, where the higher the growth is in the previous period then the lower the growth is in the current year. In fact, the agricultural GDP growth tendency along the whole sample is positive but it decreases as time goes by.

Trade growth is significant but negative. These results could be affected by the droughts and the fact that agriculture growth depends on imports. It could also be that the agricultural sector in Morocco is being negatively affected by trade liberalization and higher competition. Concentration of exports within the agricultural sector implies that it is contributing positively to its growth.

Finally, state's income is continuously negative but not significant which shows that it does not have an impact on the agricultural growth. Results show that foreign direct investment is not significant. This could mean that foreign capital probably has been directed towards some other sectors. If export growth substitutes the trade variable then it is not significant which is not very consistent because agriculture in Morocco depends on exports.

In summary, although most results seem consistent, the regression may be strongly biased by the climatic conditions which are not included. However, with respect to dependent development theory, it seems that only domestic investment contributes to this sector.

e. Manufacturing GDP Algeria

Algeria Manufactures GDP per capita growth

	total	year<1990	year>1990	total	year<1990	year>1990
L.gdppcmanuf_grow	0.21 (2.21)*	0.22 (1.78)	-0.12 (0.47)			
fdiflow	-0.01 (0.33)	-0.01 (0.15)	0.04 (3.20)**	-0.01 (0.35)	-0.01 (0.27)	0.04 (3.12)**
dom_invest	0.00 (2.69)*	0.01 (2.80)*	0.00 (1.23)	0.01 (3.63)**	0.01 (2.50)*	0.00 (1.13)
export_growth	0.00 (3.30)**	0.00 (2.28)*	-0.00 (0.53)	0.00 (2.83)**	0.00 (1.93)	-0.00 (0.47)
oilpricegrowth	-0.01	-0.00	-0.00	-0.01	-0.01	-0.01

²⁴ <http://www.emdat.be/result-country-profile>. The biggest natural disaster was in June 1999 causing damages of the value of 900 million US dollars. There were also other big natural disasters such as an earthquake in 2004 (400 million), flood in 2002 (200 million), an earthquake in 1960 (120 million) and other 4 floods of a value above 2 million us dollars of damages. Source: "EM-DAT: The OFDA/CRED International Disaster Database

	total	year<1990	year>1990	total	year<1990	year>1990
D.ci_manufactures	(0.16) -0.01 (0.65)	(0.03) 0.00 (0.13)	(0.02) -0.01 (1.22)	(0.14) -0.00 (0.48)	(0.06) -0.00 (0.10)	(0.14) -0.01 (1.34)
state_growth	-0.01 (1.30)	-0.01 (1.55)		-0.01 (1.11)	-0.01 (1.48)	
mil_exp_growth			-0.04 (2.22)*			-0.04 (2.13)
_cons	-0.14 (2.27)*	-0.19 (2.31)*	-0.11 (1.79)	-0.17 (2.91)**	-0.17 (1.89)	-0.10 (1.80)
N	42	21	20	42	21	20
F	6.81	4.74	5.88	7.05	4.20	6.76
R ²	0.45	0.54	0.61	0.41	0.50	0.61
R2_A	0.33	0.29	0.39	0.31	0.29	0.42

* $p < 0.05$; ** $p < 0.01$
t-values are reported in parentheses.
Robust to heteroscedasticity.

Capital penetration is negative and insignificant except after the 1990s. After the 1990s it is positive and significant at a 1 percent level. This may reflect the fact that Algeria is changing towards a more open market economy, making an effort to attract more FDI. On the other hand, domestic investment behaves in the opposite way. It is only significant between 1970 and 2010 period and before the 1990 although its coefficient is very small.

With respect to trade results are positive and significant for all years and before the 1990s while after the 1990s it becomes insignificant and negative. This might also be caused by the stronger role of the services sector in the Algerian economy.

The state strength variable is always negative and has a significant impact on manufactures GDP growth only after the 1990s. This shows that the government does not contribute much to its development nor worries about directing investments towards the manufacturing sector. These results coincide with the African Economic Outlook (2011) that states that although the manufacturing sector is a key strategic sector for industrial development, Algeria's did not grow as expected.

The concentration index is not significant and shows no consistent sign. Hence, overall results for the manufacturing GDP show that foreign capital investment is relevant after the 1990s while domestic investment decreases. Following dependent development theory it can be concluded that the interaction links among foreign capital, domestic capital and state are not found simultaneously in this sector.

f. Manufacturing GDP Morocco

Morocco Manufactures GDP per capita growth

	total	year<1990	year>1990	year>1990	year>1990
L.gdppcmanuf_growth	-0.24 (1.39)	-0.18 (0.76)	-0.12 (0.70)	-0.10 (0.73)	-0.11 (0.79)
fdiflows	0.41 (2.20)*		0.29 (1.13)	0.37 (1.46)	0.36 (1.40)
dom_invest	0.00 (0.16)	-0.00 (0.06)	-0.00 (0.52)	-0.00 (0.90)	
ci_manufactures	-0.00	-0.00	0.00	0.00	-0.00

	total	year<1990	year>1990	year>1990	year>1990
state_growth	(2.48)* 0.00	(1.55) 0.00	(0.05) 0.01	(0.42) 0.01	(0.26) 0.01
D.unemploymenttotaloftotallaborfor	(1.59)	(0.01)	(2.32)*	(2.70)* 0.00	(2.65)* 0.00
_cons	0.04 (3.21)**	0.05 (1.82)	0.02 (0.54)	0.01 (0.29)	0.02 (0.55)
N	39	18	20	20	20
F	2.27	0.69	2.16	2.14	2.10
R ²	0.25	0.15	0.42	0.49	0.47
R2_A	0.14	-0.11	0.21	0.25	0.28

* $p < 0.05$; ** $p < 0.01$
t-values are reported in parentheses.
Robust to heteroscedasticity.

Results in Morocco are unexpected. There is a lack of significance of variables. Foreign direct investment is only significant for total years. Domestic investment growth is also insignificant showing that local manufacturing capital is not strong enough to stimulate manufacturing growth. On the other hand, state strength is positive and significant after the 1990s. It seems that it is the state's effort after the 1990s which keeps the manufacturing sector growing.

Concentration of manufacturing is significant in the overall years but has an extremely small coefficient. If the control variable human capital is added results do not change and the variable is not significant.

In fact, if the tendency line of the overall growth of the manufacturing GDP is calculated then it is possible to see that it has a negative overall tendency²⁵. This is due to the fact that as time goes by Morocco it is specializing within the sectors service. Additionally, Morocco is increasingly facing higher competition from Asian or eastern countries that produce manufactures at low costs.

If the control variable of labor force is included then results change. State growth is consistently positive and significant after the 1990s. More labor force growth is also significant and positive in this sector, although the impact is extremely low. Concentration was also included. This final result is interesting. It says that the latter is contributing negatively to the growth of manufactures GDP. In fact, as observed previously, when analyzing the revealed comparative advantage, it is possible to see that although the trend is positive, the slope decreases as time passes.

Following Bradshaw's (1988) ideas, it is possible to conclude that no dependent development dynamics can be found in this sector.

g. Industrial GDP Algeria

Algeria Industrial GDP per capita growth

	total	year<1990	year>1990
L.gdppcind_growth	-0.02 (0.22)	-0.07 (0.58)	0.16 (1.76)

²⁵ $y = -0.0005x + 0.0329$; $R^2 = 0.0673$

	total	year<1990	year>1990
fdiflow	0.01 (0.56)	-0.02 (0.41)	0.00 (0.71)
export_growth	0.01 (6.08)**	0.01 (5.33)**	0.01 (10.56)**
D.ci_mineral	0.00 (0.02)	0.00 (0.43)	0.00 (3.35)**
dom_investmgrowth	0.03 (0.32)	0.18 (1.27)	0.13 (4.82)**
state_growth	-0.00 (2.22)*	-0.01 (2.19)*	
mil_exp_growth			-0.01 (3.04)*
_cons	-0.02 (2.30)*	-0.03 (1.76)	-0.02 (2.92)*
N	42	22	19
F	8.77	8.29	55.32
R ²	0.78	0.81	0.95
R2_A	0.74	0.74	0.92

* $p < 0.05$; ** $p < 0.01$
t-values are reported in parentheses.
Robust to heteroscedasticity.

GDP industrial is expected to behave differently. The World Bank data gives industrial value added²⁶ which includes value added that comes from mining and quarrying, manufacturing, electricity, gas and water supply and construction. In order to differentiate from the manufacturing sector, the value added from the latter was subtracted from the overall industrial GDP.

Export growth is always significant at a 1 percent significance level although its coefficient is always small. Human capital is not significant when added. Foreign direct investment is not significant. Concentration index is only significant after the 1990s indicating that it is contributing positively to the industrial growth. A surprising result is the negative effect of the institutional variable. It may mean that the state is making an effort towards diversification. Finally, domestic investment growth is significant and positive after the 1990s.

It would be expected that for this sector FDI, domestic investment and state would be positive and significant. But this is not the case, implying that the hypothesis of dependency development cannot be confirmed for Algeria's industrial sector either.

h. Industrial GDP Morocco

Morocco Industrial GDP per capita growth

	total	year<1990	year>1990
L.gdppcind_growth	-0.21 (1.86)	-0.50 (2.70)*	-0.15 (1.83)
exports_growth	0.17 (2.53)*	0.11 (1.33)	0.31 (13.90)**
ci_mineral	-0.01	-0.02	-0.00

²⁶ Following the ISIC revision 3 classification.

	total	year<1990	year>1990
dom_investmgrowth	(3.93)** 0.13	(4.94)** 0.14	(0.98) 0.20
state_growth	(5.12)** 0.00	(4.31)** 0.00	(3.42)**
mil_exp_growth	(2.56)*	(0.08)	-0.00 (0.40)
_cons	0.04 (3.23)**	0.06 (4.67)**	0.00 (0.13)
<i>N</i>	39	19	20
<i>F</i>	26.17	12.49	68.81
<i>R</i> ²	0.66	0.69	0.76
<i>R</i> _{2_A}	0.61	0.57	0.68

* $p < 0.05$; ** $p < 0.01$
t-values are reported in parentheses.
Robust to heteroscedasticity.

FDI is not significant in any regression and therefore was excluded in order to get better results. Human capital is never significant so it was also excluded.

Domestic investment growth is significant and positive at a 1 percent level. Since value added from manufactures has been excluded, then it is possible to conclude that both domestic investment and states interests are directed towards the mining sector which is mostly phosphates. It is a sector driven mainly by exports and the regression results show that, in the overall sample, state has an interest for the growth of this sector. Hence, if this is a reasonable model then it may be concluded that both domestic capital and state contribute to industrial growth in Morocco.

i. Services GDP Algeria

Algeria Services GDP per capita growth

	total	year<1990	year>1990	total	year<1990	year>1990
L.gdppcserv_growth	-0.12 (0.69)	-0.19 (0.95)	-0.12 (0.42)			
fdiflow	0.05 (0.83)		0.04 (4.27)**	0.05 (0.80)	0.11 (1.00)	0.04 (3.68)**
export_growth	-0.00 (1.74)	-0.00 (1.28)	0.00 (2.31)*	-0.00 (1.92)	-0.00 (1.72)	0.00 (2.29)*
dza_h	-0.03 (0.10)	-0.39 (0.86)		-0.03 (0.13)		
state_strength	0.01 (2.06)*	0.02 (1.40)		0.01 (2.26)*	0.01 (1.73)	
mil_exp_growth			0.01 (0.73)			0.02 (1.21)
_cons	-0.30 (1.13)	-0.43 (1.26)	-0.03 (2.68)*	-0.25 (1.12)	-0.43 (1.72)	-0.03 (2.46)*
<i>N</i>	43	23	20	43	23	20
<i>F</i>	1.56	1.01	5.02	1.93	1.67	4.99
<i>R</i> ²	0.24	0.29	0.50	0.23	0.36	0.49
<i>R</i> _{2_A}	0.14	0.13	0.36	0.15	0.25	0.39

* $p < 0.05$; ** $p < 0.01$
t-values are reported in parentheses.

Robust to heteroscedasticity.

FDI flow is positive and significant after the 1990s. This is again consistent with previous results. Domestic investment on the other hand is never significant and its value is always zero and for this reason it is excluded from the regressions. It seems that domestic capital is still directed towards the industrial sector after the 1990s. The state variable enters positively and significant in the overall sample. This shows that the state is trying to contribute to the growth of the services sector in order to diversify its economy. Again, no dependent development dynamics are observed.

j. Services GDP Morocco

Morocco Services GDP per capita growth

	total	total	year<1990	year>1990
L.gdppcserv_growth	0.01 (0.07)	0.01 (0.06)	0.02 (0.11)	-0.10 (0.40)
dom_investmgrowth	0.12 (4.07)**	0.12 (4.00)**	0.14 (5.54)**	0.01 (0.14)
fdiflows	0.21 (1.14)	0.39 (2.15)*		0.54 (2.06)
state_growth	0.00 (2.13)*	0.00 (2.23)*	0.00 (0.97)	0.01 (2.11)
hum_cap		-0.00 (1.25)		
_cons	0.02 (3.12)**	0.03 (2.99)**	0.02 (2.90)*	0.02 (1.17)
N	39	39	19	20
F	12.36	8.11	11.97	2.48
R ²	0.42	0.43	0.58	0.31
R2_A	0.35	0.35	0.50	0.12

* $p < 0.05$; ** $p < 0.01$

t-values are reported in parentheses.

Robust to heteroscedasticity.

The exports growth variable is never significant and for this reason it is excluded from the model. Results show that Morocco's services sector expansion is mainly caused by domestic investment and state's efforts towards this sector (although its coefficient is very small). The most interesting result is the second one, which control for human capita. Within the whole paper, it is the only regression that confirms that all three agents (domestic capital investors, foreign capital investors and state) contribute and facilitate the growth of this sector. This interaction should explain why the other sector, which are not as modern, lag behind. Probably, these regressions are affected by the absence of employment data; however, it is an interesting result that seems consistent with theory.

8. Conclusions

The aim of this paper is to understand whether dependency development dynamics, based on Bradshaw (1998), are found in Algeria's and Morocco's economic growth. The sample period goes from 1970 to 2010 and has been divided into two sub-periods to capture better the globalization effects.

The structure adhered to is the following. First, it has set forth previous literature findings and argued its theoretical starting point of reference. Second, it has presented the two countries' background and briefly described their history since the 1970s. Third, it has explained the empirical methodology and its theoretical framework. Finally, it has formulated the results.

Both countries analyzed are situated in North Africa and belong to the Maghreb Union. Although they share similar characteristics such as colonial past, religion and geography, they both have different economic growth patterns and structural differentiation (mainly because of resource endowments). For this reason it is interesting to apply dependency development theory to both of them.

The overall effects of dependency on economic growth are still being debated. By the end of the 1990s, when globalization effects strongly expanded, dependency ideas began to fade as the positive impact of more integrated economies was evident. This paper follows Bradshaw's (1988) arguments, who did take into account the relevance of the globalization process. He explained that, although there are three different dependency streams, they must not be considered separately due to globalization. What must be analyzed within dependency theories is the "changing dynamics" among them in time. These dynamics may be recognized by testing the significance of foreign capital, domestic capital and the state's contribution.

Results for Algeria show that within the agricultural sector the state does not contribute to its expansion, nor is foreign capital attracted or domestic capital invested. Morocco's agricultural sector on the other hand is extremely volatile due to climatic conditions and therefore results may be strongly biased. However, results indicate that with respect to dependent development, only domestic capital is significant whereas foreign capital or the state do not contribute to agricultural growth.

With respect to manufactures there is no clear link among foreign capital, local capital and the state in Algeria. Foreign capital contributes only after the 1990s while domestic capital loses significance. In Morocco it seems that the state is interested in keeping the sector growing although international competition and a stronger role of services may be affecting it negatively. Hence, following dependent development arguments, this sector, both for Algeria and Morocco, is not benefitting by the dependent dynamics.

For industrial sector growth, it is possible to see that Algeria's growth is driven by growth in exports. Local capital is good for industrial expansion after the 1990s while the state, if significant, contributes negatively. Morocco shows that both domestic capital and the state contribute to industrial growth which is probably explained by the phosphates industry. Therefore, dependency dynamics can also be rejected within this sector.

Finally, the services sector is analyzed. While in Algeria no dependent development dynamics are found, Morocco does show the dynamics if human capital is included in the model. Hence, it can be concluded that, following Bradshaw's (1998) arguments, interaction among domestic investors, foreign investment and the state are facilitating growth in the services sector in Morocco. If Bradshaw's conclusions are right, then dependent development in this sector would lead to uneven development (expanding only services sector) that would lead to higher income inequality. For this reason the government should keep the manufacture sector highly productive so that the economy is globally competitive.

However, there are some final caveats. First of all, although a time series approach has been applied, it is necessary to go into a deeper understanding at each country's characteristics and history in order to be more accurate. Also, lack of employment data may bias the results, and data for North African countries may not be very reliable. Finally, although it has found dependent development dynamics only within Morocco, one cannot conclude that Algeria does not suffer from structural problems such as the curse of natural resources. But this goes beyond the aim of this paper.

In conclusion, extensive literature has given different explanations to sources of growth. Conclusions may change depending on the approach undertaken. For example, the role of structural change might be neglected by a neoclassical analysis. This paper has tried to use a reasonable model to account for determinants of economic growth although obviously it does not account for every factor. Its aim was to see if dependent development dynamics could be found within growth determinants. Although many flaws might be found within this type of dependency approach, it is interesting to see if significance among domestic capital, foreign capital and state is given and analyze how they might affect internal development of a country. Hence, future research should consider going into a deeper understanding at a country level, improving data and applying this approach.

Appendix

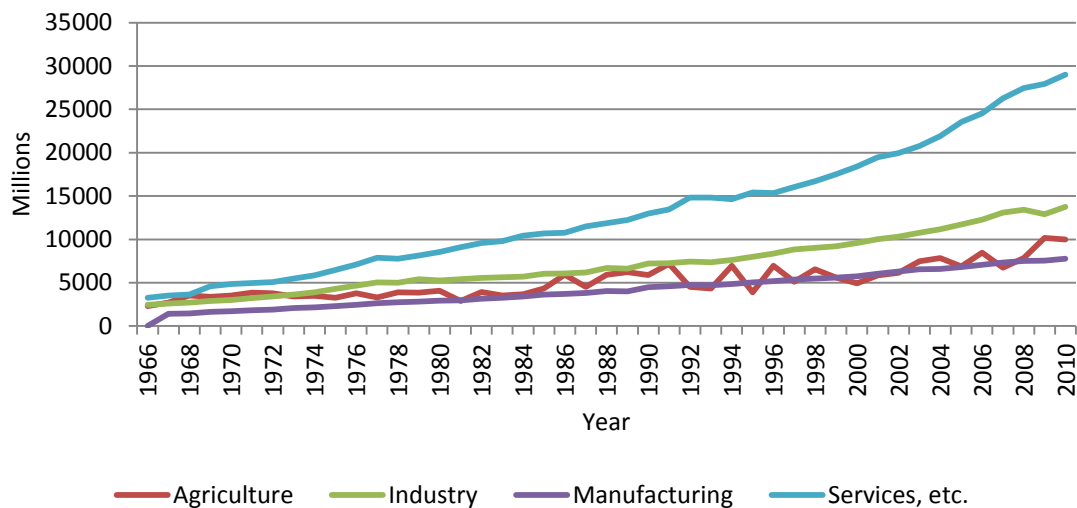
Figure A0. NORTH AFRICA AND MIDDLE EAST



Source: <http://mabryonline.org/blogs/howard/archives/2007/02/index.html>

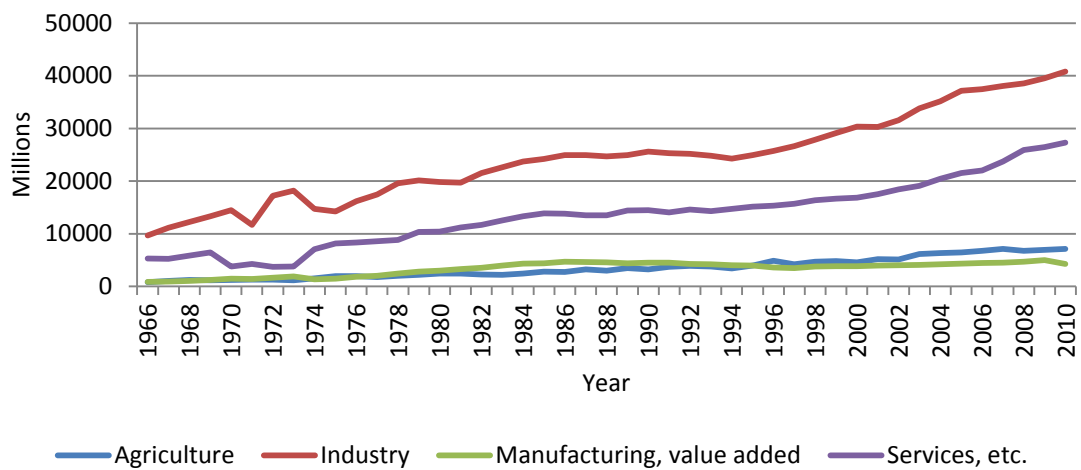
Figure A1. GDP, VALUE ADDED BY SECTORS (per capita, constant 2000 US\$)

1. Morocco



Source: WITS, own production.

2. Algeria



Source: WITS, own production

Figure A2. Algeria Trade Indicators Correlations

	ci_primary	ci_mineral	ci_manuf	dx	rca_primary	rca_mineral	rca_manuf
ci_primary	1.00						
ci_mineral	-0.99	1.00					
ci_manuf	0.74	-0.83	1.00				
dx	-0.72	0.68	-0.36	1.00			
rca_primary	0.99	-0.97	0.71	-0.73	1.00		
rca_mineral	-0.15	0.06	0.31	0.70	-0.18	1.00	
rca_manuf	0.65	-0.73	0.93	-0.27	0.62	0.35	1.00

Source: WITS

Figure A3. Morocco Trade Indicators Correlations

	ci_primary	ci_mineral	ci_manuf	dx	rca_primary	rca_mineral	rca_manuf
ci_primary	1.00						
ci_mineral	-0.99	1.00					
ci_manuf	0.74	-0.83	1.00				
dx	-0.72	0.68	-0.36	1.00			
rca_primary	0.99	-0.97	0.71	-0.73	1.00		
rca_mineral	-0.15	0.06	0.31	0.70	-0.18	1.00	
rca_manuf	0.65	-0.73	0.93	-0.27	0.62	0.35	1.00

Source: WITS

Sources and Variables

Data have been obtained from *World Development Indicators & Global Development Finance* World Bank (2005), WITS (*World Integrated Trade Solution*) and UNCTADstat (*United Nations Conference on Trade and Development*).

gdppc_ind_growth

From: Industry, value added (constant 2000 US\$)
Industry corresponds to ISIC divisions 10-45 and includes manufacturing (ISIC divisions 15-37). It comprises value added in mining, manufacturing (also reported as a separate subgroup), construction, electricity, water, and gas. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Data are in constant 2000 U.S. dollars.

gdppc_agric_growth

From: Agriculture, value added (constant 2000 US\$)
Agriculture corresponds to ISIC divisions 1-5 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Data are in constant 2000 U.S. dollars.

gdppc_manuf_growth

From: Manufacturing, value added (constant 2000 US\$)
Manufacturing refers to industries belonging to ISIC divisions 15-37. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Data are expressed constant 2000 U.S. dollars.

gdppc_serv_growth

From: Services, etc., value added (constant 2000 US\$)
Services correspond to ISIC divisions 50-99. They include value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal services such as education, health care, and real estate services. Also included are imputed bank service charges, import duties, and any statistical discrepancies noted by national compilers as well as discrepancies arising from rescaling. Value added is the net output of a sector after adding up

all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The industrial origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Data are in constant 2000 U.S. dollars.

FDI as a % of GDP.

Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors, and is divided by GDP.

International Monetary Fund, International Financial Statistics and Balance of Payments databases, World Bank, Global Development Finance, and World Bank and OECD GDP estimates.

External debt stocks (% of GNI)

Total external debt stocks to gross national income. Total external debt is debt owed to nonresidents repayable in foreign currency, goods, or services. Total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. GNI (formerly GNP) is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad.

Oil Prices

<http://www.eia.gov/totalenergy/data/annual/showtext.cfm?t=ptb0301>

U.S. Energy Information Administration. Independent Statistics and Analysis. Fossil fuel production prices, 1949-'2010 (Dollar per Billion Btu). In real terms. Both coal, natural gas, crude oil and a composite index are available. Crude oil will be the only one used, its correlation with natural gas is of 0.830511 and coal is not considered. Real prices are in chained (2005) dollars, calculated by using gross domestic product implicit price deflators. Still, I will use the variation of prices.

Bibliography

- African Development Bank, Organisation for Economic Co-operation and Development, United Nations Development Programme, United Nations Economic Commission for Africa. (2012). *African Economic Outlook 2012. Promoting Youth Employment*. . OECD Publishing.
- Amin, S. (1971). *The Maghreb in the modern world: Algeria, Tunisia, Morocco*. Baltimore: Penguin Books.
- Barro, R. J. (1996). Determinants of Economic Growth: A Cross-Country Empirical Study. *NBER Working Paper 5698*.
- Boswell, T., & Dixon, W. (1996). Dependency, Disarticulation, and Denominator Effects: Another Look at Foreign Capital Penetration. *American Journal of Sociology*, Vol. 102, No. 2, pp. 543-562.
- Bradshaw, Y. W. (1988). Reassessing Economic Dependency and Uneven Development: The Kenyan Experience. *American Sociological Review*, Vol. 53, No. 5, pp. 693-708.
- Brenton, P., Baroncelli, E., & Malouche, M. (2006). Trade and Investment. Integration of the Maghreb. . *The World Bank. Working Paper Series*. , No. 44.
- Cardoso, F. H. (1977). The Consumption of Dependency Theory in the United States. *Latin American Research Review*, Vol. 12, pp. 7-24.
- Chase-Dunn, C. (1975). The Effects of International Economic Dependence on Development and Inequality: A Cross-National Study. *American Sociological Review*, Vol. 40, pp. 720-738.
- Chemingui, M. A. (2005). *Productivity Performance in Developing Countries. Country Case Studies*. . UNIDO Research Programme.
- Crafts, N. (2006). The World Economy in the 1990s: a Long-Run Perspective. In P. Rhode, & G. Toniolo, *Understanding the 1990s: The Long-Run Perspective* (pp. pp. 21-42.). Cambridge: Cambridge University Press.
- de Ferranti, D., Perry, G., Gill, I., & Servén, L. (2000). Securing Our Future in a Global Economy. *Washington D.C.: World Bank* .
- DeRosa, D. A. (2008). Maghreb Trade and Investment. In G. C. Hufbauer, & C. Brunel, *Maghreb Regional and Global Integration: A Dream to Be Fulfilled*. Washington, D.C.: Peterson Institute for International Economics.
- Evans, P. (1979). Dependent Development: The Alliance of Multinational, State and Local Capital in Brazil. *Princeton: Princeton University Press*.
- Findlay, R., & O'Rourke, K. H. (2007). *Power and Plenty. Trade, War, and the World Economy in the Second Millenium*. Princeton, New Jersey: Princeton University Press.
- Frank, A. (1979). Dependent Accumulation and Underdevelopment. *New York: Monthly Review Press*.
- Friedman, S. J. (2010). A Tale of Two Economic Developments: Tunisia and Morocco. *CUREJ- College Undergraduate Research Electronic Journal*.
- Gartrell, J. W., & Hammer, H.-J. (1986). American Penetration and Canadian Development: A Case Study of Mature Dependency. *American Sociological Review*, Vol. 51, pp. 201-213.
- Henry, C. M. (2004). Algeria's Agonies: Oil Rent Effects in a Bunker State. *The Journal of North African Studies*, Vol. 9, n° 2, pp. 68-71.

- Hodrick, R. J., & Prescott, E. C. (1997). Postwar US business cycles: an empirical investigation. *Journal of Money, Credit and Banking*, Vol. 29, pp. 1-16.
- Imam, P. A., & Jacobs, D. F. (2007). Effect of Corruption on Tax Revenues in the Middle East. *IMF Working Paper WP/07/270*.
- Kaufman, R. R., Chernotsky, H. I., & Geller, D. S. (1975). A Preliminary Test of The Theory of Dependency. *Comparative Politics*, Vol. 7, No. 3, pp. 303-330. .
- Kaufmann, D., & Mastruzzi, M. (2010). The Worldwide Governance Indicators: Methodology and Analytical Issues. *World Bank Policy Research Working Paper*, No.5430, Available at SSRN: <http://ssrn.com/abstract=1682130>.
- Kentor, J. (1998). The Long-Term Effects of Foreign Investment Dependence on Economic Growth, 1940-1990. *American Journal of Sociology*, Vol. 103, No. 4, pp. 1024-1046.
- Kentor, J., & Boswell, T. (2003). Foreign Capital Dependence and Development: A New Direction. *American Sociological Review*, Vol. 68, pp. 301-313.
- Li, Q., & Resnick, A. (2003). reversal of Fortunes: Democratic Institutions and Foreign Direct Investment Inflows to Developing Countries. *International Organization*, Vol. 57, pp. 175-211.
- McGowan, P. J., & Smith, D. L. (2009). Economic Dependency in Black Africa: An Analysis of Competing Theories. *International Organization*, Vol. 32, pp. 179-235.
- Monty, M. G., Jagers, K., & Gurr, T. R. (2011). *POLITY™ IV PROJECT; Political Regime Characteristics; Dataset Users' Manual*. Center for Systemic Peace.
- Protsenko, A. (Inaugural Dissertation in Ludwig-Maximilians-Universität-München.). Vertical and Horizontal Foreign Direct Investment in Transition Countries.
- Rand, J., & Tarp, F. (2002). Business Cycles in Developing Countries: Are They Different? *World Development*, Vol. 30, No. 12, pp. 2071-2088. .
- Rhode, P. W., & Toniolo, G. (2006). *The Global Economy in the 1990s. A long-run perspective*. Cambridge University Press (300pp).
- Rogerson, B. (1998). *A traveller's history of North Africa. Morocco, Tunisia, Libya, Algeria*. Gloucestershire: The Windrush Press.
- Rouis, M., & Kounetsron, K. (2010). Economic integration in the Maghreb. *World Bank Working Paper, World Bank Middle East and North Africa region*.
- Sekhri, S. (2009). Dependency Approach: Chances of Survival in the 21st Century. *Africa Journal of Political Science and International Relations* , pp. 242-252.
- Social and Economic Development Group, Middle East and North Africa. (2006). *Is There a New Vision for Magherb Economic Integration?* . The World Bank.
- Sutton, K., & Aghrout, A. (1992). Agricultural Policy in Algeria in the 1980s: Progress Towards Liberalization . *Canadian Journal of African Studies*, Vol. 26, No. 2, pp. 250-273. .
- Thomsen, S. (2000). Investment Patterns in a Longer-Term Perspective. *OECD Working Papers on International Investment*, No. 2.
- Wibbels, E. (2006). International Markets, Business Cycles, and Social Spending in the Developing World. *International Organization*, Vol. 60, No. 2, pp. 433-468.
- Williamson, J. G. (2011). *Trade and Poverty. When the Third World Fell Behind*. . Massachusetts: MIT Press.