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Economic Growth and Jobs Creation in Morocco: Overall and Sectors' Analysis

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Abstract

Employment is linked to growth at least in the long-run. Thus, to reduce structurally unemployment it is necessary to boost growth. Thus, any strategy seeking to reduce unemployment must be devised with a good knowledge of the growth content in terms of jobs. In this paper, we use Okun's law, arc point elasticity, and a simple econometric model to assess the intensity of the links between economic growth and (un)employment in Morocco. Okun's law provides evidence that economic growth in Morocco is linked with a reduction of the unemployment rate. The sectors intensities to create jobs are very different and provide unsystematic results. Using an average measure of elasticity over the period 1999-2009, we find that many sectors were net losers of jobs. The overall growth-elasticity of employment is positive but low.

Key words: Growth, Jobs' creation, Growth-elasticity of employment, Morocco

JEL Classification: E29, J2; J6; J60, O4.

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1. Introduction

Economic growth is necessary to increase the wealth of a nation and to meet social requirements, such as jobs' creation and poverty reduction. The former imperative is of prime importance in countries with young population and increasing number of people seeking jobs. This role of growth, in reducing unemployment, is crucial in Morocco and other Arab countries where the inception of the Arab Spring in 2011 was, partially, due to the marginalization of young people from labor market.

The understanding of the mechanisms through which the increase and the structure of Gross Domestic Product (GDP) are linked to the labor' markets is necessary to devise policies to reduce the widespread and pervasive unemployment in countries such as Morocco. Thus, one of the most important issues for policymakers is the intensity of the links between growth and jobs creation.

The objective of our paper is the quantification of employment and growth links. For this we use three techniques. The growth-elasticity of employment which measures the percentage of employment created consequently to 1% growth of GDP. An innovation of this paper is the estimation of the 20 aggregate productive sectors' growth elasticity of employment. That is we estimate the intensity of growth in jobs for each productive sector. The second used technique to capture the links between growth and employment is the Okun's law. The third technique is a regression including as explanatory variable of employment gross domestic product.

The policy consequences of this research are straightforward. In one hand, it is the growth' content in terms of employment that command if a growth enhancing strategy is sufficient to reduce the rate of unemployment and to mitigate the effects of poverty. In the case of a low employment' elasticity with respect to growth, it is necessary to devise more complex policies to increase the part of vulnerable segments of the population in GDP.

The paper develops as follows. In the second section, we briefly present the situation of employment in Morocco by summarizing some well-documented facts. The third section is an overview of some studies about the links between growth and employment in Morocco. The fourth section is reserved to the exposition of the methodology of exploring the links between

growth and employment. The fifth section is reserved to the estimation of the growth elasticity of employment in Morocco. The estimates are for the economy as a whole and for the aggregate 20 productive sectors. The sixth section is for the concluding remarks.

2. Evolution of unemployment in the Moroccan economy

Morocco is a low medium income country. The structure of its economy is dominated by services. Manufacturing is the second contributing sector in GDP by a part of 16% and its contribution in labor force is around 11%. Agriculture contributes to GDP by a part between 15% and 20% depending on the climatic conditions of the year. Almost 40% of labor force exercises in this sector. This means that a huge deficit in productivity is observed in agriculture. Table 1 summarizes the distribution of employed labor force by aggregate sectors during the period 2009-2012.

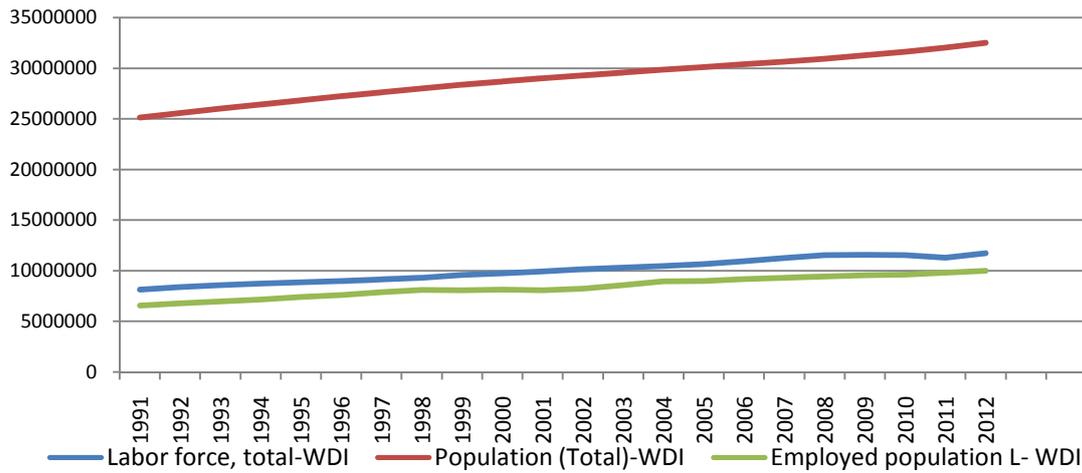
Table 1. Moroccan employed population by sector

	2009	2010	2011	2012
Agriculture, fishing and hunting	40.5	40.2	39.8	39.2
Industry (including artisan)	12.3	12.2	11.8	11.5
Construction and public works	9.4	9.9	10.1	9.9
Services	37.8	37.7	38.3	39.4

Source: elaborated with HCP data

Growth in Morocco is insufficient, weak and volatile (Achy and Sekkat, 2007; World Bank, 2006). It is weak comparatively to emergent countries. It is insufficient if we take account of the huge needs to mitigate poverty and to provide jobs for a growing active population. Finally, economic growth is volatile if we scrutinize the very instable pattern of growth of the Moroccan GDP. Remark that during the last decade, Moroccan economic growth pattern become more stable comparatively to previous decades. Furthermore, in the last 15 years, growth of the Moroccan economy was continuously positive.

Graph 1. Total, employed population, and labor force (1991-2011)



Source: World Development Indicators (2013)

In the period 2000-2013, the rate of unemployment recorded a declining trend. It decreased from 13.4% to 9.2% (Chart 2.a). However, this rate remained practically constant since 2009 around 9%. One of the major reasons of this declining trend of unemployment rate is the decline of the participation rate “during the last decade, generating fewer entrants into the labor markets- on average each year has recorded 123 000 new entrants into the labor market” (IMF, 2013, p. 9). The second factor of the declining rate of unemployment is a robust growth. Consequently, “about 164 000 jobs were created each year between 2000 and 2008, leading to an average yearly reduction of 40000 unemployed” (IMF, 2013, p. 9).

Chart 2.a. Evolution of unemployment rate (1991-2013)

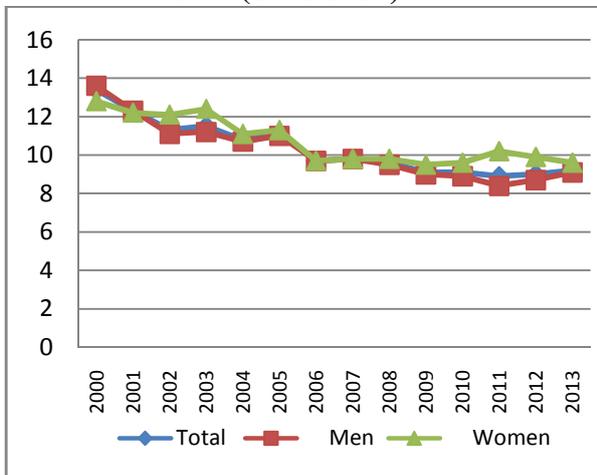
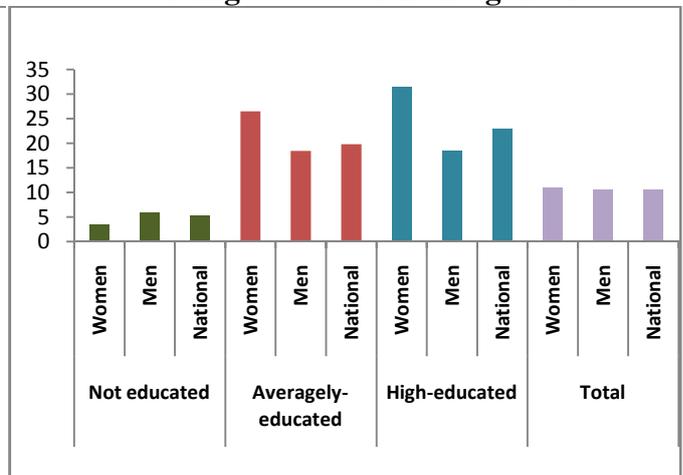


Chart 2.b. Average rate of unemployment according to education and gender



The supply of labor (the population of 15 years and more) is 11549000 in 2012. The demand of labor (employment) was 10.511000 in 2012¹. It increased by an average annual rate of 1.7 % over the period 2000-2012 (Bougroum and al., 2013). During the period 2000-2012, the economy created a yearly average of 139 000 jobs. Focusing on the two different periods 2000-2004 and 2005-2011, we remark a slowdown in the average number of created jobs. This number was 185.000 during the period 2000-2004. In the period 2005-2011, the annual average number of created jobs was 147 000.

In 2012, we observed only a net creation of 1000 jobs. The sectors “Construction and public works” and “services” are the most active sectors in creating jobs. 93% of the created jobs are in these two sectors. “Agriculture, forest, and fisheries” and “Industry and handcraft” are sectors that created few jobs. Since 2000, it appears that the persons that most benefit from jobs creation are those with a medium or a high diploma. Indeed, 92% of created jobs benefited to this category (Bougroum and al., 2013, pp. 15-17).

Table 2. Unemployment rate in Morocco, 2000-2013

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total	13,4	12,3	11,3	11,5	10,8	11,1	9,7	9,8	9,6	9,1	9,1	8,9	9	9,2
Men	13,6	12,3	11,1	11,2	10,7	11	9,7	9,8	9,5	9	8,9	8,4	8,7	9,1
Women	12,8	12,2	12,1	12,4	11,1	11,3	9,7	9,8	9,8	9,5	9,6	10,2	9,9	9,6
Rural	5	4,5	3,8	3,4	3,1	3,6	3,7	3,8	4	4	3,9	3,9	4	3,8
Urban	21,4	19,5	18,3	19,3	18,4	18,4	15,5	15,4	14,7	13,8	13,7	13,4	13,4	14
Highly Educated	28,9	26,8	26,5	27,2	26,7	26,6	19,5	20,8	19,5	18,3	18,1	19,4	18,7	19
Averagely Educated	26,7	24,1	22,2	22,1	21,1	21	18,7	18,1	18	16,7	16	15,4	15,3	15,1
Not Educated	7	6,3	5,5	5,5	5	5,2	4,8	4,9	4,7	4,4	4,5	4	4	4,5
Age 15-24	19,6	18,5	17,1	16,4	16,7	17	16,6	17,2	18,3	17,9	17,6	17,9	18,6	19,3
Age 25-34	20,5	18,9	17,3	17,7	16,5	16,8	14	14,4	13,5	12,7	12,8	12,9	13,2	13,2
Age 34-44	7,3	6,4	6,1	7	6,7	6,5	6	5,9	5,2	5,4	5,4	5,2	5	5,6
Age 45 and +	2,6	2,2	2,1	2,5	2,2	1,5	2,3	2	2	1,9	2,1	1,8	1,9	2,3

Source: Elaborated with HCP data

Rural migration adds pressures to the urban labor market. The gradual openness of the country is another factor causing major transformations in sectors highly exposed to foreign competition leading to the layoffs of thousands

¹ In 2011, there were 1028000 unemployed persons. This figure passed to 1038000 persons in 2012. 7 persons out of 10 additional unemployed persons are urban (DEPF, 2013, p. iv).

of workers. The textile and leather sector is an example. This sector is shrinking since 2005 when the multi-fiber arrangement ended.

In Morocco, the rate of unemployment, noted u , differs accordingly to the characteristics of active population (age, gender, and education) and space (urban and rural). Table 2 summarizes the data about the main characteristics of unemployment in Morocco for the period 2000-2013.

Chart 2a depicts the overall trend of unemployment rate over the period 2000-2013. Table 2 shows that unemployment in Morocco is characterized by four features. First, women are more exposed to unemployment than men. Second, young people are more exposed to unemployment than aged. Third, the urban rate of unemployment is higher than the rural rate. Fourth, the educated population is more exposed to unemployment than uneducated especially among women. These findings are persistent and similar to those of the World Bank (World Bank 2006) and to those of Bougroum and al. (2013).

3. Empirical literature about growth-elasticity of employment in Morocco

There are many studies about the links between growth and employment in Morocco. In its study, Kapsos (2005) provide results for Morocco. The author calculated the employment content of growth for three periods. During the first period spanning from 1991 to 1995, an increase of GDP by 1% was associated to a decrease of employment by 0.09 percent. The second period is 1995-1999, it was characterized by the fact that employment increases more quickly than growth (elasticity=1.07). The third period is 1999-2003. It is characterized by an elasticity of employment with respect to growth equal to 0.28.

In their thorough study about the functioning and the dynamics of the Moroccan labor market, Bougroum and al. (2013) found that an overall growth rate of 1% produced annually an average of 29 400 jobs during the period 2000-2012. In the primary sector, the intensity of growth in jobs is very low because 1% growth of primary GDP produced an annual average of 1900 jobs. In the non-primary sectors, this figure is 27500. Concerning the links between the change in the rate of unemployment u and the growth rate g , the authors found that $u = -0.153g + 0.324$ with $R^2 = 0.308$. Thus, the Okun's law estimated by the authors indicates that growth must be superior to $0.324/0.153 \approx 2,11\%$ to reduce the rate of unemployment.

The Economic Commission of Africa of the United Nations (2010) computed the growth–elasticity of employment for Morocco during two periods 1982-1994 and 1994-2004. The results indicate a weak employment-content of growth during the two periods. It was equal to 0.61 in the first period and oscillated between 0.10 and 0.67 in the second period with an average of 0.30 (Commission Économique pour l’Afrique - Bureau pour l’Afrique du Nord, 2010, p. 9). The United Nations Development Program (2009, Table A-6, p. 66) found a growth-elasticity of employment in the range (0.01-0.06) over the period 2001-2005.

Madariagan, N. (2013) explored the links between growth, productivity and jobs creation in southern and eastern Mediterranean countries during the period 1990-2010. For Morocco, the author found a negative elasticity of -0.36. Messkoub, M. (2008) found for Morocco over the period 1991-2003 that the elasticity of employment with respect to growth is equal to 0.63, 0.52, and 1.06 in agriculture, industry and services, respectively. For Tunisia, the equivalent values are 2.05, 0.77, and 0.57.

4. Employment’s elasticity with respect to economic growth

One of the most important issues in periods of crisis is employment. Thus, policymakers worry about the employment intensity of growth. That is the additional percentages of jobs created by 1% increase of GDP. The origin of the relationship that predict an increase of employment (a decrease of unemployment) following an increase of GDP went back to A. Okun².

To quantify the relationship between employment and Gross Domestic Product (GDP), we recourse to the concept of elasticity of employment with respect to growth, noted ε_L . It is the percentage increase of employment L from period $t - 1$ to period t with respect to 1 percent increase of GDP, noted Y , over the same period. Formally, it is measured as follows:

$$\varepsilon_L = \frac{\frac{L_t - L_{t-1}}{L_{t-1}}}{\frac{Y_t - Y_{t-1}}{Y_{t-1}}} \quad (1)$$

² According to A. Okun (1962), for a decrease of the rate of unemployment u by 1% it is necessary that GDP increase by more than 3 % above its potential level. Generally, Okun’s proposition is that we have $(u - u^*) = a(Y - Y^*)/Y^*$. The constant a is the parameter, Y and u are respectively the observed level of GDP and the rate of unemployment, and Y^* and u^* are the potential GDP and the natural rate of unemployment. The empirical links between unemployment and growth are analyzed with the original or augmented versions of the Okun’s statistical law. See for more discussion and different versions of Okun’s law (Khemraj et al., 2006 and Knock, 2007)

This is what is called point-employment elasticity of growth or “*arc elasticity of employment*” (Kapsos, 2005). Many criticisms may be addressed to this measure as quantification of the link between growth of GDP and growth of employment. The major shortcoming of point elasticity is its instability. That is, if the initial or the final year are far from the normal situation we will find a result that is not very relevant for decision-making (Islam, 2010, Kapsos, 2005; Ajilore and Yinusa, 2011).

In order to face the shortcomings of the point elasticity it is possible to use a regression to quantify the links between growth and employment. In this regression, employment L is the endogenous variable and its explanatory variables are, as in Ajilore and Yinusa (2011), the cost of capital, proxied by r the real interest rate, the real wage rate W , and the real GDP. All variables are transformed to their natural logs so as to interpret the coefficients directly as elasticities. Formally, we have:

$$\ln L_t = \alpha_0 + \alpha_1 \ln r_t + \alpha_2 \ln w_t + \alpha_3 \ln Y_t + \varepsilon_t \quad (2)$$

The alphas are the parameters of the model. The most important of them, in our case, is α_3 since it is simply the elasticity of employment with respect to growth. Thus, we have:

$$\frac{\partial \ln L_t}{\partial \ln Y_t} = \alpha_3 = \varepsilon_L \quad (3)$$

The advantage of the estimation of the elasticity by running this equation is that the estimated elasticity is smoothed over time. We obtain a result that is an average, over time, of the true elasticity of employment with respect to growth. In our case, we regress employment on just GDP due to lack of data. That is, we will run the following equation:

$$\ln L_t = \alpha_0 + \alpha_1 \ln Y_t + v_t \quad (4)$$

The two parameters α_0 and α_1 are assumed to be positive and v_t is an *i.i.d* random variable.

5. Results and discussion

We used data about the period 1991-2011. This period is subdivided into two periods 1991-1999 and 2000-2011. Running the equation: $\ln L_t = \alpha_0 + \alpha_1 \ln Y_t + v_t$ in the three periods yields results indicating that growth-elasticity of employment is positive. It amounts to 0.74, 0.38, and 0.46

respectively in the two periods and the entire sample. Table 3 summarizes the results. It is striking that the growth-elasticity of employment was almost divided by 2 in the second sub-period.

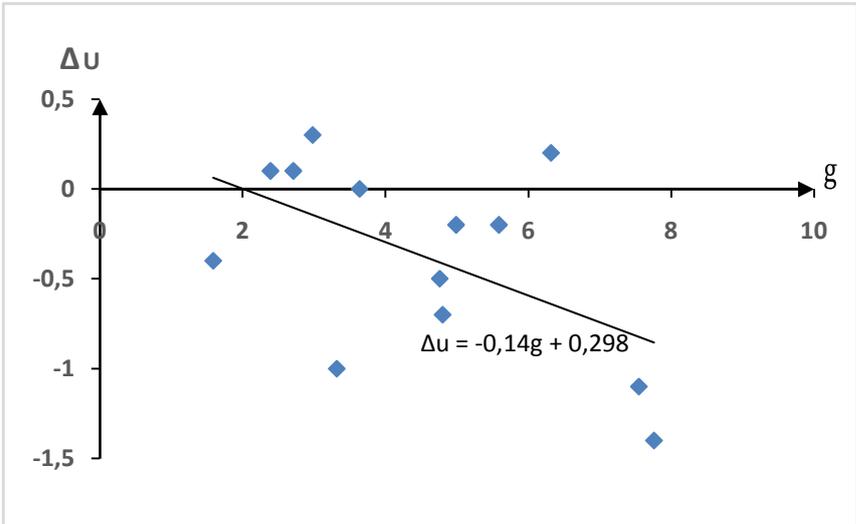
Table 3. Dependant variable LnL

	1991-1999	2000-2011	1991-2011
<i>c</i>	-2.27 (-0.48)	6.34 (10.14)	4.50 (6.16)
<i>LnY</i>	0.74 (3.89)	0.38 (15.5)	0.46 (15.65)
<i>R</i> ²	0.68	0.96	0.92

The value in parenthesis are t-statistics, Results are obtained by using E-views 5. The data covers the period 1991-2011.

To estimate the effect of growth on the variation of the rate of unemployment we used the Okun’s law. The simulated equation is $u = -ag + b$ where *g* is the growth rate, *a* and *b* are two positive parameters to be estimated. The following chart gives the data adjusted by a linear curve.

Chart 3. Growth and change of u over the period 1999-2012



Source: data from DEPF (2013)

The use of the *arc* point approach to calculate the growth-elasticity of employment for the economy as whole and for a set of 20 aggregate sectors yields the results presented in table n° 4. We present the averages over a period of ten years (2000-2009) so as to mitigate the effects of the instability of the arc-point approach to elasticity. These averages are more relevant to rank sectors according to their ability to generate jobs. The results allow distinguishing three classes of sectors. Seven sectors among the 20 sectors have negative elasticities. "Posts and telecommunications", "Food and tobacco industry", and "Textile and

leather industries" are the sectors that are the biggest losers. Consequently, the growth of these sectors was driven by productivity gains.

Six sectors have elasticities above one. The sectors that have the higher elasticities are "Other manufacturing industries (outside petroleum refining)", "Extractive industries (Mining)", and "Electricity and Water".

Table 4. Units of labor per one million MAD of GDP, elasticities, and share of capital in value added (1999-2009)- Average values

	Units of labor per one million of GDP	Elasticity	Share of capital in GDP
Agriculture, forestry, hunting and exploitation	67.27	0.83	0.9311
Fishing and aquaculture	13.02	-0.54	0.6147
Extractive industry (Mining)	6.10	5.29	0.6931
Food and tobacco industry	6.94	-1.80	0.7091
Textile and leather industries	35.07	-1.20	0.5106
Chemical and Para-chemical industries	2.72	-0.62	0.5393
Mechanical, metallurgical and electrical industries	10.19	4.66	0.6304
Other manufacturing industries (outside petroleum refining)	18.66	10.25	0.6407
Refined petroleum and other energy products	4.10	0.53	0.7242
Electricity and Water	2.63	6.54	0.7161
Construction and public works	26.22	0.98	0.7047
Commerce and repair activities	24.16	0.69	0.7524
Hotels and restaurants	15.51	1.00	0.7835
Transport	16.12	1.38	0.5780
Posts and Telecommunications	3.06	-11.87	0.7982
Financial activities and insurance	1.67	-0.05	0.6932
Real estate, rental and services to companies	1.59	0.91	0.9093
General Public Administration and Social Security	11.11	-0.33	0.0873
Education, health and social action	9.04	0.73	0.1659
Other non financial services	67.52	0.99	0.7263
Economy	21.76	0.14	0.6465

Source: Elaborated with HCP data

The seven remaining sectors have elasticities between zero and strictly below one (see table 4). Remark that the economy as a whole has an elasticity of 0.14. The growth of these sectors is driven by productivity improvement and labor increase.

We attempted to explain the pattern of growth-elasticity of employment over sectors by taking into account the average number of units of labor per one million MAD of GDP and the share of capital in the GDP (columns 2 and 4 in table 4). Unfortunately, we failed to find any substantial correlation between each variable and the level of elasticity. We are convinced that more

investigations are necessary to disentangle the intricacies related to the growth content in terms of jobs in Morocco.

6. Concluding remarks

Okun's law provides evidence that increasing Moroccan economic growth rate may reduce unemployment rate. The sectors abilities to create jobs are very different and provide unsystematic results. There are many sectors that are net losers of jobs during the period 1999-2009. The overall growth-elasticity of employment is positive but low.

Two features may explain the low employment content of growth. First, one characteristic of the Moroccan economy is the widespread under-utilization of labor in many sectors. By increasing the rate of labor utilization, we may observe an increase of GDP without substantial increase in employment. Second, it is well known that many sectors, such as agriculture, are very crowded with people with very low productivity. Consequently the growth of this sector is mainly fuelled by productivity improvement. During the period 2000-2012, the agricultural sector generated only 5000 jobs annually. This is only 4% of the annual created jobs (Bougroum et al., 2013, p. 19). Rural migration and inter-sectors reallocation of labor may produce an improvement of overall productivity of labor in Morocco. For this reason, it is important to investigate the links between productivity, jobs' creation, and growth.

Demographic projections indicate that the population at the age of working will amount up to 224 000 each year till 2020. Of the number only 148 000 will be new entrants to labor market (IMF, 2013, p. 11). Of the new entrants the bulk are young people. Available evidence indicates that the Moroccan economy is creating an insufficient number of jobs for youth especially educated. So, it is important to devise policies so as to remedy to this problem.

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