

Received: 29/04/2022

Accepted: 16/06/2022

## **Analysis of the Rural-Urban Migration flow in Algeria Using the model of Harris Todaro**

SENATOR KHALED\*<sup>1</sup>, Imadeddine LACHEB <sup>2</sup>

<sup>1</sup> Master Degree, University of Tsukuba-Japan,  
[senator.khaled@kdis.ac.kr](mailto:senator.khaled@kdis.ac.kr)

<sup>2</sup> PHD Student, LAPLUSHE Laboratory, Bouira's University  
10000, [I.LACHEB@univ-Bouira.dz](mailto:I.LACHEB@univ-Bouira.dz)

### **Abstract:**

This study is a participation to examine the rural-urban migration flows in Algeria using Harris and Todaro model that focus on the economic factors, especially the difference of wages and the job opportunities.

The available data shows that the rural-urban migration in Algeria responds to the difference on wage level, because the wages on urban areas were always higher. However, it is important to take into consideration the historical background during the colonial period and the 10 years the political instability during the 1990s that have had accelerated the movement of the population .

It is also worth mentioning that, despite the policies adopted for objective to redistribute the population, the population is always concentrated on the north part, which lead to the development of shantytowns around major cities, especially the capital Algiers.

---

\* Corresponding author

**Keywords:**

Rural migration, Harris and Todaro model, population growth, job opportunities, shantytowns.

**المخلص:**

تهدف هذه الدراسة إلى تحليل ظاهرة النزوح الريفي في الجزائر باستعمال نموذج هاريس وتودارو الذي يستعمل المتغيرات الاقتصادية لتحليل سلوك المهاجرين، لاسيما الفارق في الأجور وتفاوت فرص العمل بين الريف والمدينة.

المعطيات الإحصائية تبين أن النزوح الريفي في الجزائر يستجيب للتفاوت بين معدل الأجور التي ظلت دوما أعلى في المدن بالمقارنة مع الأرياف، ولكن لا يجب الاقتصار على هذا المتغير فقط، لأن الخلفية التاريخية سواء خلال فترة الاستعمار الفرنسي أو خلال سنوات التسعينيات لعبت دورا مهما في تعزيز حركية السكان.

وبالرغم من السياسات العمومية المعتمدة بهدف إعادة توزيع السكان، تبين المعطيات الإحصائية أن توزيع السكان بقي متمكزا في الشمال، مما أدى أيضا إلى تطور مقلق لظاهرة البيوت القصديرية حول المدن الكبرى، خصوصا الجزائر العاصمة، وما يصاحبها من انحراف وارتفاع لمعدلات الجريمة.

**الكلمات المفتاحية:** النزوح الريفي، نموذج هاريس وتودارو، نمو سكاني، فرص العمل، بيوت قصديرية.

**INTRODUCTION**

Inner or international migration waves are not considered recent phenomena. The former has existed throughout history and has been the subject of several studies based on various approaches and methodologies such as law, demography, sociology, and history.

Most countries around the world have experienced the issue of migration throughout their history, however, it is of more significance due to the increase in both the number and the speed over years, which have participated in the acceleration of

the cultural, economic and social changes.

The rural-urban migration is related to all societal aspects, and it causes many problems for the destination cities, especially in terms of urbanisation and housing. It has also a direct impact on the distribution of the population between sectors of activity, usually causing a significant decrease in the number of the labour force in the agriculture sector. It also affects the development plans and the efforts to improve life quality and economic activities in both rural and urban areas, especially in terms of services of clean water, education and health, etc.

Algeria is no exception, with the growth of society following independence allowing for a significant increase in migration patterns, with many causes and effects, despite a large number of measures aimed at improving agriculture and discouraging people from migrating to urban regions.

This study will use an economic approach for the objective of understanding the phenomena, knowing the factors affecting the decision of migration, in addition to examining its impact on the migrated people and evaluating the potential macroeconomic impacts.

It is worth mentioning that the statistics on the migration are not exact because the flows of migrants are not stable and often not organised although some governments make a lot of bans on people's movements from one country to another or even inside the same country, because of political objectives and also the impact of the migration on the composition of the population.

Research question: why are people immigrating from rural to urban areas? And what are the economic effects of this migration?

The main hypothesis: migration from rural to urban areas happens because people are looking for better jobs with better wages.

Migration increases when the unemployment rates are higher in rural areas compared to urban areas.

### **The theoretical framework of rural-urban migration**

Initially and foremost, it is important to note that several hypotheses are put to explain the phenomena of rural-urban migration. The majority are based on the notion that the destination has enticing characteristics whereas the origin nations or places have repelling aspects. In this brief introduction, I will focus solely on two well-known theories: Ravenstein's theory and the dual economy model.

In the study of G. Ravenstein (1834 –1913) about migration in England and Wales, he found that the attracting factors are more important than the expelling factors when making the decision of migration. He suggested also that the majority of migrants move for a short distance (inside the same country or even the same province), but when people decide to migrate far away from their home country, there must be an important difference in terms of revenue and employment. The same approach finds out that people living in rural areas are more likely to migrate to urban areas and that single young male people are more likely to migrate than old married or females. Moreover, he found out that the population in large cities grows mainly by migration and not because of natural population growth (Greenwood, 2019).

On the other hand, the model of the dual economy (Fei, Ranis and Jorgenson) assumes that there are two sectors of the economy: the traditional and modern sectors. For the reason of profit maximisation, people move from the traditional sector to

the modern sector because the wages are higher, which permits to have capital accumulation for more investments and increases capitalist production. However, this situation also causes a shortage of labour in the agriculture sector resulting in a decline in agriculture products and food supply, which push this sector to adopt technology in order to increase production and face the shortage of labour.

### **1.1. - Principal assumptions of the migration according to Harris and Todaro model**

The Harris and Todaro model aims to explain the phenomenon of rural-urban migration using economic variables. John R. Harris and Michael Todaro developed it in the 1970s. It is based on three main assumptions:

1. The existence of two sectors: rural and urban
2. The two sectors aim to maximise the profits taking into account the factors of production that are determined each on its market
3. The wages are higher in urban areas than in rural areas.

Therefore, the unemployment in rural areas is a key factor behind the migration to urban areas, because people before making the decision to immigrate look for all possible alternatives to get a job with the same level of wage in their hometowns. Thus, before making the decision to immigrate, people proceed to compare the levels of wages in rural areas where most people work in agriculture and the level of wages in urban areas where people mainly work in the manufacturing sector (Srinivasan, 1974).

Assuming that the migrant is a rational individual who takes the decision to migrate or not according to the wage differential between his origin rural area (area of departure) and that urban area (area of arrival), as well as according to the probability of finding a job in the area of arrival (Todaro, 1969). Otherwise, unlike previous models, Harris and Todaro assume that people take the decision to immigrate depending not on the wage differences between rural and urban areas, but on the income, they expect to earn when moving to urban areas. Thus, they compare the level of unemployment in rural and urban areas before migrating, and if the unemployment is higher in urban areas, they prefer staying in their hometown in rural areas.

Migration is, therefore, a response to the expected wage differential, unlike Lewis's model, which believes that migration is a response to the observed wage differential. Concretely, this means that the person who may immigrate considers all the employment possibilities available for his specific case in both rural and urban areas and chooses to migrate if the expected net gains (in terms of income) from migration are positive. These expected gains are measured by the difference between real wages in urban and rural areas, taking into account the probability of finding a job at the new destination. Under this assumption, it is possible to explain the existence of migratory flows from rural to urban areas despite the employment shortages characterising urban regions.

### **1.2. - Equilibrium of employment between rural and urban areas**

According to the model, people do three main comparisons before making the decision to immigrate:

1. The difference in wages between the hometown (rural) and the final destination (urban)
2. The level of unemployment in urban areas
3. The level of response of previous migrants to the opportunities given or opened to migrants.

Therefore, potential migrants follow the following model:

$$M_t = f(W_U^* - W_R)$$

Where:  $M_t$  is the number of migrants from rural to urban areas at the moment t.

$W_U^*$  is the expected wage in the urban areas based on the probability (P) to get a job multiplied by the effective wage to earn. Thus, (P) is directly related to the employment rate in urban areas.

The probability (P) is calculated using the formula:

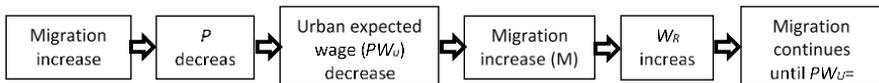
$$P = \frac{L_U}{L - L_R} = \frac{L_U}{L_U + U}$$

Therefore, P is the average recruitment rate.

The expected wage in urban sector equals:

$$PW_U = \frac{L_U}{L - L_R} W_U = \frac{L_U}{L_U + U} W_U$$

Otherwise, the equilibrium of the urban labour market is achieved as follow:



Since  $W_U^* < W_R$ , the migration flows keep existing until the level of wages on the urban areas decreases, or when the migration causes the increasing of the unemployment in urban

areas that causes decreasing on urban wages as  $W_U^* < W_R$ . When we reach the point where  $W_U^* < W_R$ , then the migration flows become inverse because some immigrant people decide to come back to their original hometown.

The model of Harris and Todaro shows that the cost of migration is not limited to the concerned person but its effects concern all of society. They suggest that there is some kind of competition among potential migrants for the jobs created in urban areas. Otherwise, they believe that the opportunity cost of each job created in the city equals the production of two workers or more immigrants looking for this job. Indeed, this cost becomes higher when the migrant person brings his family members with him.

Therefore, the society will support additional costs because of pollution, the increase of building lands, and the additional pressure on public services provided by the government like education, health, transportation... although the migrant person himself supports a part of those expenses included on the costs of food and housing that will increase.

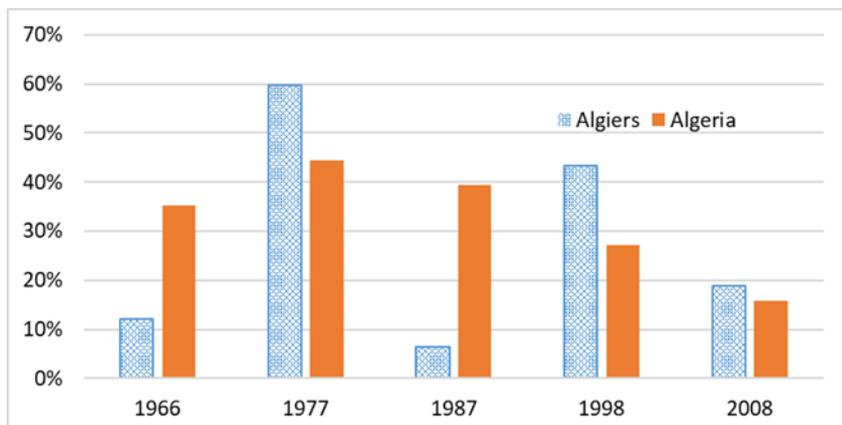
Finally, the government should be very cautious when implementing unemployment policies in urban areas to avoid inverse impact or “Todaro’s paradox”. Otherwise, policies to create new jobs for the potential migrants should take into consideration that there still be other people coming from rural to urban areas because individuals compare the net income to earn. An increase in the employment rate in urban areas by 1% results in increasing the urban population because of migration by more than 1% (Logossah, 2007). Otherwise, since income is higher in urban areas, there will always be people who immigrate. This will have indeed a negative impact on the

primary/agriculture sector, which will suffer a shortage of labour.

## DIAGNOSTIC OF THE RURAL-URBAN MIGRATION IN ALGERIA

The distribution of the population in Algeria is very divergent from one region to another. Despite the large land area of the country (2.4 million km<sup>2</sup>), the population is only 43 million with an average density of 18/Km<sup>2</sup>. However, if we take each part separately, we find that more than 90% of the population is concentrated in the north, which represents less than 16% of the total land [381000 km<sup>2</sup>], while the southern areas are mainly deserted with very few populations.

This situation has been subject to many plans adopted by the public authorities with the objective to redistribute the population, but the general feature did not change and the tendency is always to move from the south to the north and from rural areas to urban areas, especially toward the capital Algiers (figure. 1).



*Fig.1. population growth in the capital Algiers compared to the population growth in the whole of Algeria*

Source: (ONS, Annual report 1996, 1996), (ONS, Annual report 1999, 1999), (ONS, Annual report, 2010), (ONS, Retrospective Statistics 1970-1996, 1999) and (ONS, Statistics of Algeria, Annual reports, 2008)

## 2.1. - The origins of the rural-urban migration

Algeria has recognized many immigrants flows during the last century, not only because of economic purposes but also regarding the exceptional laws adopted by the French occupation that ordered people to move from one part of the country to another, or even to move inside other France colonisation including Metropolitan France, New Caledonia, Madagascar, Vietnam...etc (Bensahraoui, 2017).

The table-1 shows that the population was concentrated mainly in the northeast of the country, while the centre and the northwest had less population although their share of the total population increased slightly. This fact was a natural consequence of the colonial policy to expel Algerians to the Haut plateau and to declare best lands on the north exclusively for the European minority (Amira, 2016).

**Table 1: the evolution of the population in the four main regions in Algeria**

Region	1936		1948		1954	
	Millions	%	Millions	%	Millions	%
North Centre (Algiers)	1,86	29,77%	2,36	30,85%	2,8	33,41%
North West (Oran)	1,22	19,45%	1,6	20,83%	1,77	21,11%
Northeast (Constantine)	2,54	40,67%	2,91	37,97%	3,05	36,38%
South-Sahara	0,63	10,11%	0,79	10,35%	0,76	9,10%
<b>Total (millions)</b>	<b>6,25</b>	<b>100%</b>	<b>7,66</b>	<b>100%</b>	<b>8,39</b>	<b>100%</b>

Source: (Merbi, 1984)

Notes:

The capital cities of the regions are shown in parentheses.

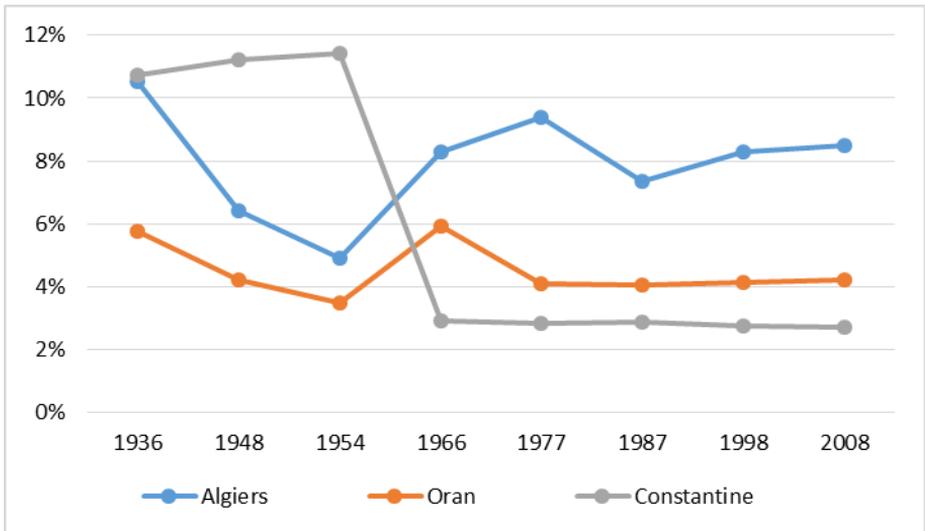
North Centre includes: Algiers, Sour-El-Ghozlane, Blida, Media, Miliana, El-Asnam and Tizi-Ouzou

North West includes: Oran, Mascara, Mostaganem, Sidi-Belabbes, Tiaret and Tlemcen

Northeast includes: Constantine, Batna, Annaba, Bejaia, Guelma, Skikda and Setif

South (Sahara) includes: Aïn Sefra, Ghardaia, Touggourt and El-Ouahat

After the independence in 1962, the population distribution has changed because most Europeans minorities leave the country, and Algerians (Law 63-88, 1963) have occupied their vacant buildings and properties. Thus, the population has largely increased around the capital Algiers and the north part (Mediterranean coasts). The table-1 shows the important evolution of the population of capital Algiers and central areas that increased from 29% in 1936 to 32% in 2008 of the total population, while it decreased in the northeast area from 41% in 1936 to 36% in 2008. The other two regions did not mark major changes (Triki, 2017).



**Fig. 1. Share of the four major cities of the total population (1936-2008)**

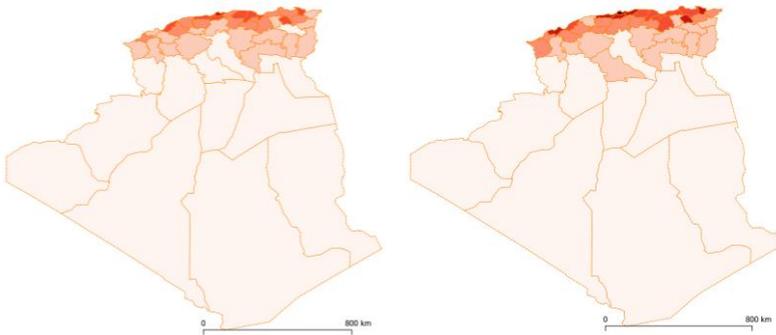
Source: (ONS, Annual report 1996, 1996), (ONS, Annual report 1999, 1999), (ONS, Annual report, 2010), (ONS, Retrospective Statistics 1970-1996, 1999) and (ONS, Statistics of Algeria, Annual reports, 2008)

According to the official statistics, there was a decrease of the population in the so-called rural provinces, and vice-versa for the major cities, especially the capital Algiers. The fig.2 shows that the share of the population of the capital Algiers has passed from 5% in the 1950s to more than 8% in the 1990s and 2000s. However, the share of the second big city Oran kept always stable at around 4~5%, while the share of the capital of the East region declined from 11% in the 1950s to less than 3% in the 1960s.

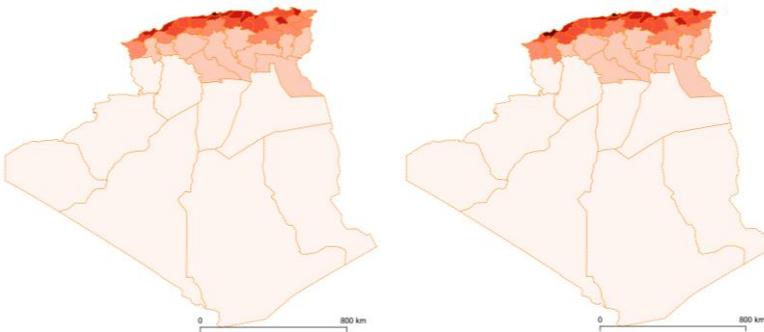
Fig. 3 shows the evolution of the population density of Algeria from 1966 to 2008 par province. The five maps show that the population was always concentrated in the north part of the country, especially on the Mediterranean coasts, while the density in the southern areas is always very small. We can see

that the density is increasing significantly on the Haut-plateaux, especially during the 1990s and 2000s. Moreover, the general feature of the redistribution of the population confirms that most of the population is concentrated in the North-East of the country, and the regions around the capital Algiers (Boumerdes, Blida and Tizi-ouzou).

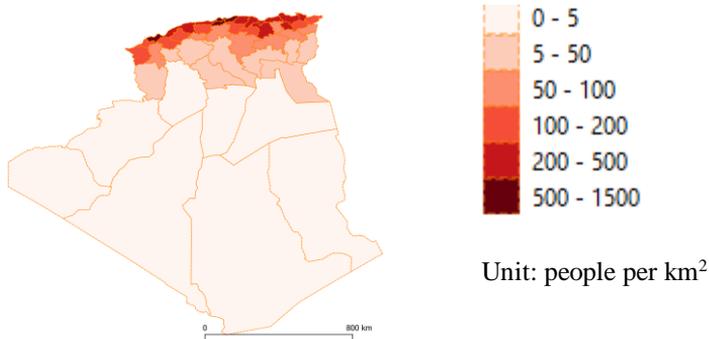
*Panel a. population density in 1966 Panel b. population density in 1977*



*Panel c. population density in 1987 Panel d. population density in 1998*



*Panel e. population density in 2008*



**Fig. 2. Evolution of the population density in Algeria during the period 1966-2008**

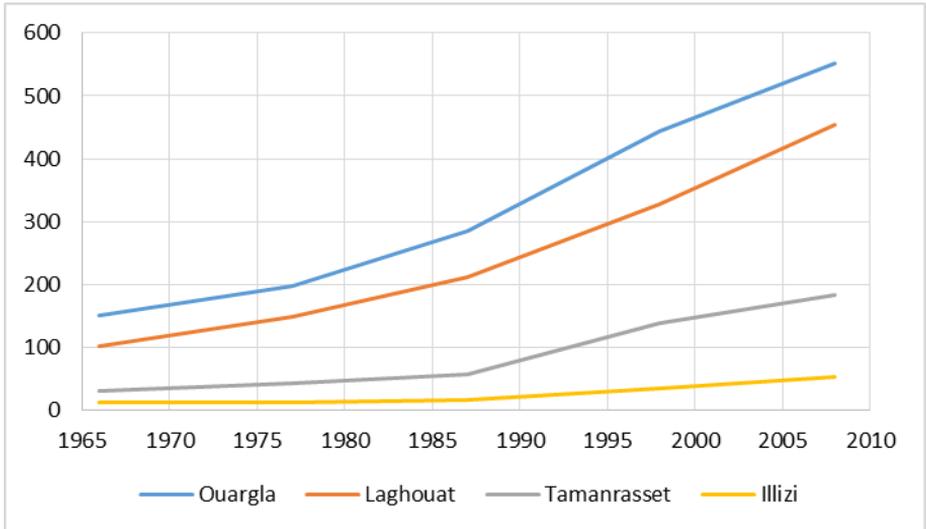
## 2.2. - Causes of rural migration

According to the National Economic and Social Council, the migration from rural to urban areas is a consequence of natural and economic factors, additionally to historical events that favor the migration from rural to urban areas (CNES, 1997).

The difficult climate in the desert/Sahara areas regarding the very high temperature has a direct impact on the plants and the sand ground that is not favorable to agriculture. However, some areas in the large Sahara have considerably grown because of the existence of oil and gas that favour the development of extracting industries with some chemical manufacturing, which permitted an important migration of the population toward those areas despite the difficult weather.

Fig. 4 shows the evolution of the population of the main oil producer provinces. We can see that the population has considerably increased in the two provinces Ourgla and Laghout since 1977 because they are the provinces where oil has been first discovered (in Hassi-Messaoud and Hassi-Rmel). For the

other provinces, oil has been discovered later and its share of the total production is smaller comparatively.



**Fig. 3. Evolution of the population of the oil provinces during the period 1966-2008 (unit: 1000)**

Source: (ONS, Annual report 1996, 1996), (ONS, Annual report 1999, 1999), (ONS, Annual report, 2010), (ONS, Retrospective Statistics 1970-1996, 1999) and (ONS, Statistics of Algeria, Annual reports, 2008)

This finding is compatible with the Harris and Todaro model, because people have moved to the areas that give more opportunities and that give higher wages (generally oil industries give very high wages (ONS, Retrospective Statistics 1970-1996, 1999)), and this regardless of the difficult weather.

The table-2 shows the evolution of the unemployment in the rural and the urban areas in 1977, the year that had recognized the highest rate of rural migration, especially toward the capital Algiers. The unemployment was higher in rural compared to urban areas by more than 13% although more than 55% of the

total labour force was concentrated more in the rural areas. The same data shows that wages are often higher in the urban areas compared to rural areas (Benachenhou, 1982).

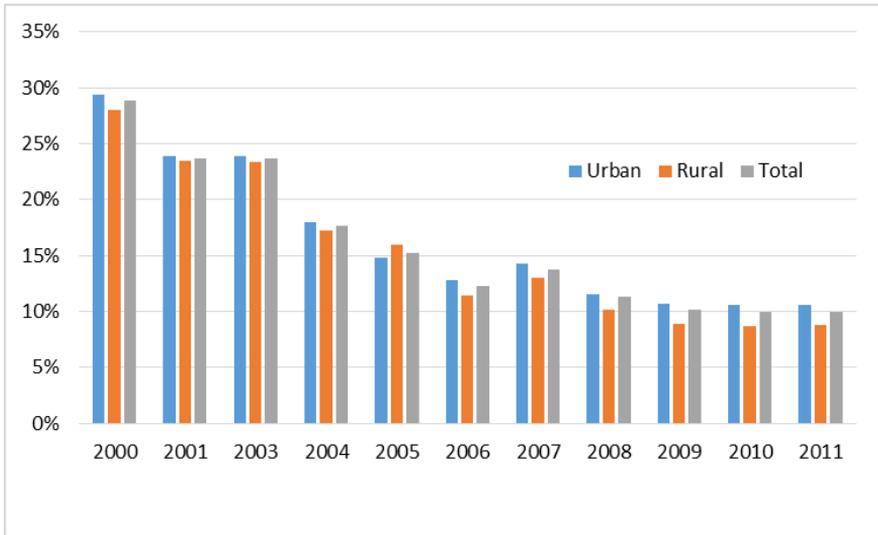
**Table 2. Unemployment in Algeria between rural and urban areas in 1977**

	Urban		Rural		Total	
	Millions	%	Millions	%	Millions	%
Employed	1,1	79%	1,28	66%	2,38	71%
Unemployed	0,29	21%	0,65	34%	0,94	28%
Labour force	1,39	100%	1,94	100%	3,33	100%

Source: (Benachenhou, 1982)

During the 1990s, the situation became worse because of the decline of oil prices and the deep political instability that recognised the country. Additionally, there were long years of drought that encouraged the migration toward urban areas that give much more stable work with higher wages comparatively (Tidjani, 2000).

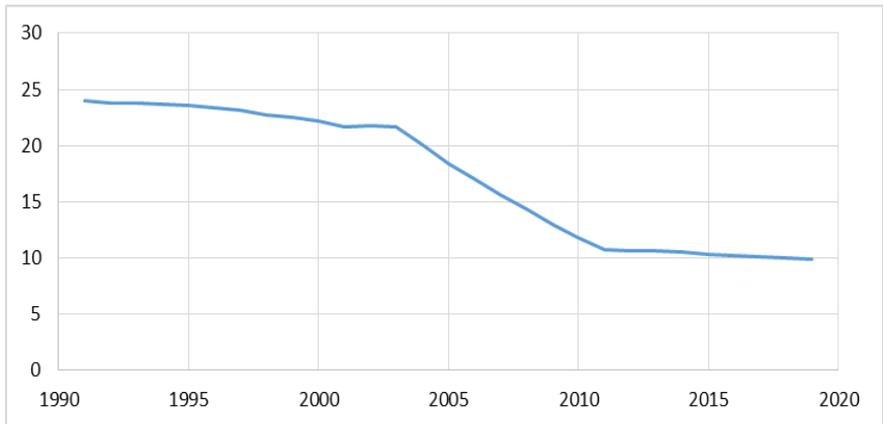
However, the comparison of the unemployment rates of rural and urban areas during the 2000s shows that there is no significant difference in terms of unemployment. Figure 5 shows that rates of unemployment decreased from 29% in 2000 to less than 10% in 2011. It was always slightly higher in the urban areas except in the year 2005. This is contrary to the model of the dual economy (Fei, Ranis, Jorgenson).



*Fig. 4. Evolution of Unemployment rates in urban and rural areas during the period 2000-2011*

Data source: (ONS, Retrospective Statistics 1970-1996, 1999)

However, the data shows that the employment in the agriculture sector has decreased considerably from 24% in 1991 to less than 10% in 2019, causing at the same time an important decrease in the share of agriculture in the total GDP.



*Fig. 5. Employment in agriculture (% of total employment)*

Data source: (World Bank, 2021)

People go to work daily in the morning from rural areas to urban areas and come back home in the evening. Although they did not migrate with their families, their interests are often situated in urban areas. Otherwise, because of the deep housing crisis, they prefer bearing the cost of transportation instead of the cost of renting or buying a new house in urban areas.

On the other hand, it is worth mentioning that the government has adopted many policies in order to develop the rural areas under the socialist system (1962-1989). Therefore, the migration has decreased significantly, especially under the agricultural revolution and the farming villages (Order 71-73, 1971). However, the shifting to a liberal economy after the oil prices decline to start from 1986 has shown the impossibility to keep financing those unprofitable projects. Consequently, many people lost their jobs, especially after the political changes at the end of 1980 and the beginning 1990s, and again other massive

migration waves from rural areas started, which have been aggravated because of the political instability during the 1990s.

Unemployment and the difference in wages are not the unique cause of migration, because the development of the society in all aspects has contributed to the development of the choices of the population. According to (Debla, 2004), people migrate because large cities give more opportunities to the population, especially in terms of education and health services. The following table shows the difference in rates of school attendance for children between 6-and 14 years in 1999.

**Table 3. Rate of schooling in comparison between males and females in rural and urban areas**

	Males	females	Total
National rate	85%	80%	83%
Province capital city	87%	88%	88%
Principal towns	84%	80%	83%
Rural areas	74%	60%	67%

Source. (ONS, Annual report 1999, 1999)

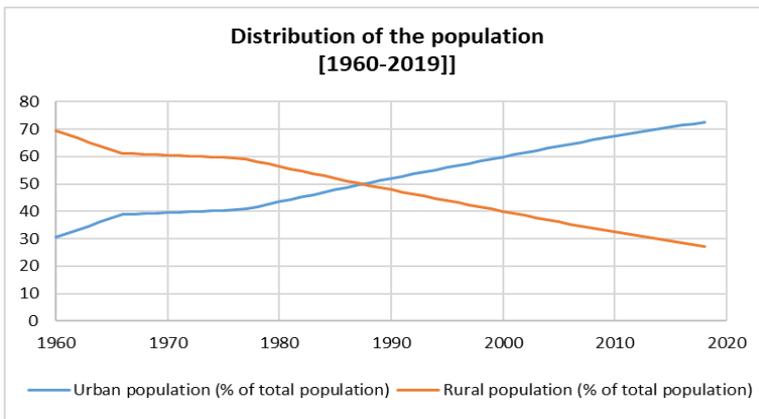
The opportunity to attend school is higher for children living in urban areas compared to rural areas, especially for girls, despite the official speech that keeps confirming the equality of chances between males and females. Thus, many families choose migration to rural areas, especially since these permits also to reduce the costs of transportation and any potential risks for kids. If we take this as a cost to reduce the revenue people earn in rural areas, it will be much more compatible with the Harris and Todaro model.

### **2.3. - Consequences of rural migration**

The available data shows that people are migrating from rural provinces to urban provinces, mainly the capital Algiers.

According to (Amira, 2016) more than 4% of the total population migrated to the capital city Algiers during the period just after the independence (1962-1966), and this flow of population will keep stable during the next 20 years.

The figure-6 shows that the urban population has considerably grown to the detriment of the rural population that keeps decreasing from 70% of the total population in 1960 to less than 30% in 2019. Moreover, the population growth in rural areas decreased dramatically since 1990 and it became negative starting from 1996 until 2000 to increase slightly after that but it kept always negative. This situation coincided with the decline of oil prices since 1986 and the deep political instability that affected mainly rural areas, which pushed people to migrate toward neighbourhood cities and the capital city-Algiers.



**Fig. 6. evolution of the population during the period 1960-2019**

Data source: (World Bank, 2021)

Figure 4 shows the evolution of the share of the urban population by the province during the period 1977 to 2008. It shows contrary to the previous figure that the urban population

is not always concentrated in the north part, because we can see that the urban population was very high in some south provinces (Tindouf, Ghardaia and Ouargla), while in other provinces even in the north and Mediterranean coast was dominated by rural population until the year the 2000s.

Moreover, it is worth mentioning that the rate of urbanisation increases in the whole country, but it has increased more significantly in the Haut plateau and some provinces in the south and the extreme south compared to the Mediterranean coasts except for the three major cities (Algiers, Oran and Annaba).

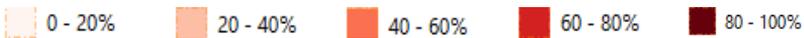
Since the density is higher in the north, especially on the Mediterranean coasts, we can understand that the spread of the population is higher because the conditions are favourable and the rural areas are always near to the capital city of the provinces or any other urban areas. However, in the south and especially in the extreme southern regions, it is difficult to survive far away from the urban areas, because the land is very big, and the distance between one city and another counts often hundreds of kilometres. Thus, the few populations prefer to gather in and around the same urban areas.

*Panel a. share of the urban population in 1977*      *Panel b. share of the urban population in 1987*



*Panel c. share of the urban population in 1998*

*Panel d. share of the urban population in 2008*



**Fig. 7. Evolution of the share of the urban population during the period 1966-2008**

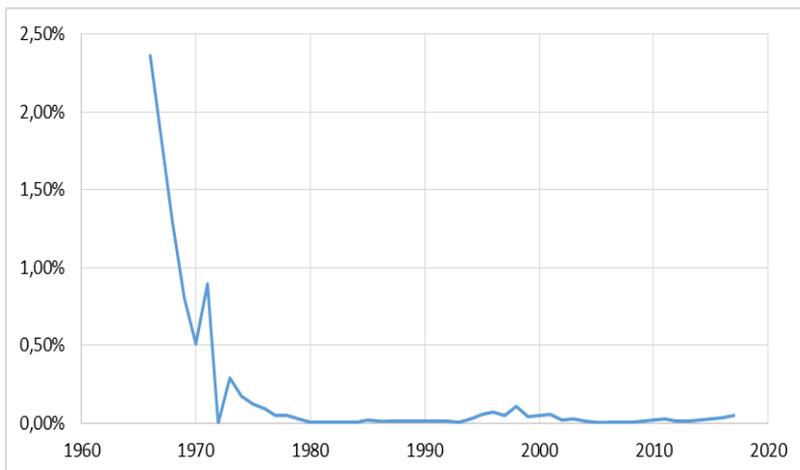
Data source: (ONS, Retrospective Statistics 1970-1996, 1999)

The important migration from rural to urban areas caused many shortages in most sectors, especially the education sector that marked an important deficit in most large cities in terms of infrastructures and teachers. The health sector itself has an

important shortage in the infrastructures and doctors, which negatively affects the quality of services.

The housing sector also marked an important shortage for a very long period since independence, although the important programs adopted by the government to build more than 2 million units in the period 2000-2020, the rural migration and the important increase of the population make the crisis deeper year after year.

The other consequence of rural migration is the negative impact on the labour market. For centuries, agriculture was the main activity of Algerians, and the relationships between urban and rural areas were based on some kind of equilibrium and complementarity. However, rural-urban migration has negatively affected the agriculture activities that suffered from the inexistence of labour, considering also that it provides non-permanent jobs and it gives less wages compared to other sectors. Therefore, large agricultural lands have been abandoned and agricultural production has dramatically decreased.



**Fig. 8. Agricultural raw materials exports (% of merchandise exports)**

Source: (World Bank, 2021)

Finally, many studies focus analysis on the negative impacts on the society, especially the dramatic increase of crimes and drug consumption in and around shanty towns that grow in the peripheries of big cities and directly affect the social life in those cities themselves (Guetali, 2019).

**Conclusion**

The model of Harris and Todaro tries to use economic variables to explain the migration from rural to urban areas and it considers the difference in wage as the main factor that affects the decision to immigrate. However, it did not take into consideration other factors that may affect the decision of immigrating (for example the origins, the distance, the sex and the age).

Moreover, there are some people who immigrate not because of the wage difference, but because they aim to try another style of life, especially among youths. Additionally, the condition of equilibrium of wages between the rural and the urban areas could not be achieved in the reality, because the fact is the levels of wages are always higher in big cities compared to small towns and rural areas, and the migration could not replace the gap on the employment in urban areas or equalise the real wage on the rural areas.

In the case of Algeria, the problem of the distribution of the population was an interesting topic for the policymakers since its independence in 1962. Especially that most agglomerations have been developed on the Mediterranean coasts where the best lands for agriculture have been used to implement buildings. This

situation has considerably reduced the agriculture lands and increased the levels of pollution, and it has created a big disequilibrium in the levels of development between the north parts that regrouping more than 90% of the total population and the south part which includes less than 10% of the total population.

To deal with this situation, the government should encourage activities that create jobs in rural areas (e.g., giving microcredit for farmers to create new opportunities that would help to convene people to not migrate) and to ameliorate the condition of life for their families in the way to reduce the cost of health and education. Moreover, it is also possible to ignore the informal sector in rural areas and focus control on and around urban areas to encourage people who tend to act in the informal sector to join rural areas.

## **References**

- Amira, D. (2016). The problematic of the distribution of the population in Algeria. *The academic Journal of Researcher [University of Ouragla]*, 3 (1), 184-202.
- Benachenhou, A. (1982). *Algeria experience in term of planification and development*. Algiers: University Press of Algeria.
- Bensahraoui, K. (2017). Forced migration to new Caledonia, new lecture of Archive documents. *Mawakif academic journal-University of Mascara*, 12(1), 51-62.
- CNES, N. E. (1997). *Challenges of development in Algeria*. Algiers: CNES-Algeria.

- Debla, A. (2004). *The modern development of Algeria*. Cairo: Chourouk .
- Greenwood, M. J. (2019). The migration legacy of E. G. Ravenstein. *Migration Studies*, 7(2), 269-278.
- Guetali, A. F. (2019). Problems of urban growth in Algerian cities. *The Academic Journal of Social Sciences*, 19(2), 572-597.
- Law 63-88. (1963). *relative to vacant properties*. Algiers: OJ 15/1963.
- Logossah, K. (2007). Migration et rationnement du marché des biens. *Revue d'économie du développement*, 15, 87-111. Récupéré sur [https://www.cairn.info/load\\_pdf.php?ID\\_ARTICLE=EDD\\_211\\_0087&download=1](https://www.cairn.info/load_pdf.php?ID_ARTICLE=EDD_211_0087&download=1)
- Merbii, S. (1984). *Evolution of population in Algeria*. Algiers: National Society for Book Algeria.
- ONS. (1996). *Annual report 1996*. Algiers: National Office of Statistics.
- ONS. (1999). *Annual report 1999*. Algiers: National Office of Statistics.
- ONS. (1999). *Retrospective Statistics 1970-1996*. Algiers: National Office of Statistics.
- ONS. (2008). *Statistics of Algeria, Annual reports*. Algiers: National Office of Statistics.
- ONS. (2010). *Annual report*. Algiers: National Office of Statistics.
- Order 71-73. (1971). *Agriculture Revolution*. Algiers: OJ 97/1971.
- Ranis, G., & Fei, J. (1961). A Theory of Economic Development. *The American Economic Review*, 51(4), 533-. Récupéré sur <https://www.jstor.org/stable/1812785>
- Srinivasan, J. N. (1974). On Reanalyzing the Harris-Todaro Model: Policy Rankings in the Case of Sector-Specific Sticky Wages. *The American Economic Review*, 64(3), 502-508.
- Tidjani, B. (2000). *Urbanisation and development of land in Algeria*. Algiers: University Press Algeria.

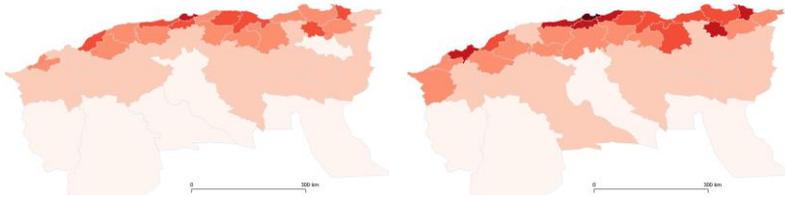
Todaro, M. P. (1969). A Model of Labor Migration and Urban Unemployment in Less Developed Countries. *The American Economic Review*, 59(1), 138-148. Récupéré sur <https://www.jstor.org/stable/1811100>

Triki, H. (2017). Social problems of the rapid growth of urban population in Algeria. *The Academic Journal - University of Taref*, 414-425.

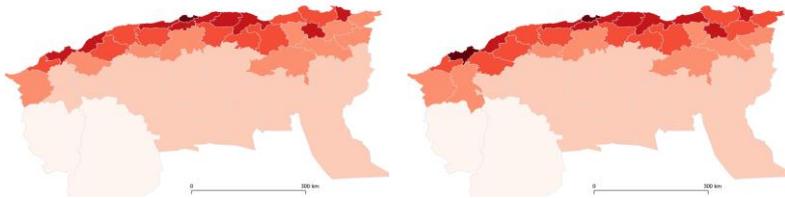
World Bank. (2021, 4 19). *World Development Indicators*. Récupéré sur DataBank: <https://databank.worldbank.org/source/world-development-indicators>

### **Appendix 1. Evolution of the population density in Algeria during the period 1966-2008**

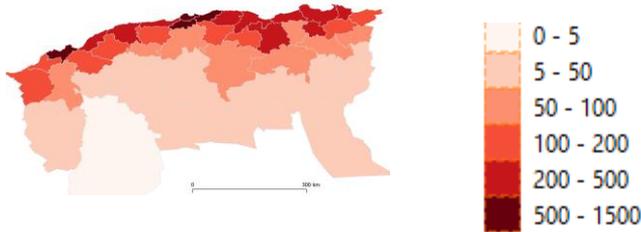
*Panel a. population density in 1966 Panel b. population density in 1977*



*Panel c. population density in 1987 Panel d. population density in 1998*



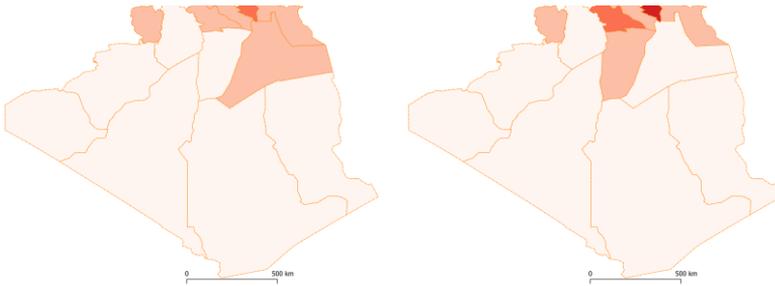
*Panel e. population density in 2008*



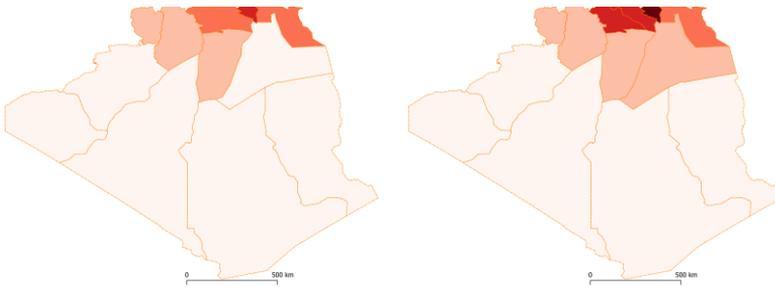
Unit: people per km<sup>2</sup>

Source: (ONS, Annual report 1996, 1996), (ONS, Annual report 1999, 1999), (ONS, Annual report, 2010), (ONS, Statistics of Algeria, Annual reports, 2008) and (ONS, Retrospective Statistics 1970-1996, 1999)

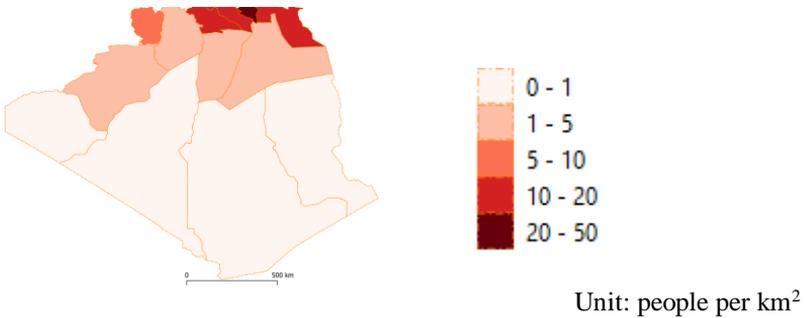
*Panel a. population density in 1966 Panel b. population density in 1977*



*Panel c. population density in 1987 Panel d. population density in 1998*



*Panel e. population density in 2008*



Source: (ONS, Annual report 1996, 1996), (ONS, Annual report 1999, 1999), (ONS, Annual report, 2010), (ONS, Statistics of Algeria, Annual reports, 2008) and (ONS, Retrospective Statistics 1970-1996, 1999)

### **Bibliography List :**

(1) Author, "title of the article," magazine name, folder, number, and year.

Books:

(2) Author, title of the book, publisher, pages.

Forums:

(3) The author, "title of the article," name of the forum, place, year.