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Pluriactivity, the Dutch disease and sustainable agriculture in Algeria

ABSTRACT

Agriculture and rurality have come under severe pressure in the last few decades. The loss of agricultural land and, hence, farming, through urban expansion has been pervasive. As a consequence, farmers tend to engage in pluriactivity to supplement their low farm income. This study explores the pervasiveness and underlying motivation behind pluriactivity by Algerian farmers. Algeria is a particularly interesting case where agriculture has been hit by severe and unique challenges. In particular, Algerian farmers spent more than a decade under the threat of terrorism, followed by a decade and a half of Dutch disease effects. The analysis of a survey data shows that pluriactivity has offered the Algerian farmer the required adaptation capability to survive these two challenges which, ultimately, would sustain agriculture in Algeria.

KEYWORDS

pluriactivity
Dutch disease
sustainable agriculture
developing countries
Algeria
resource movement effect
spending effect

JEL code: Q12, A14

INTRODUCTION

Besides being the main provider of food security, employment and income, agriculture also helps sustain rural development and protect the environment. As emphasized by the United Nations (2015) 'The food and agricultural sector

offers key solutions for development, and is central for hunger and poverty eradication'. Yet, despite its significance farming has always been at a disadvantage to other activities. Poverty is more common among the rural population worldwide where 72 per cent of the poorest people live in rural areas (World Bank 1997). The rural population is increasingly unable to 'make ends meet on their land, forcing them to migrate to cities in search for opportunities' (United Nations 2015), or engage in pluriactivity to supplement their low farm income.

Pluriactivity – gaining an income from more than one economic activity (Eikeland 1999) – can therefore be used both to keep farmers farming as well as to help them out of farming. Agriculture in the industrialized world has been hit by structural, technological and economic changes that have forced farmers to become large, quit farming, or sustain farming by getting off-farm employment (Gebremedhin 1991). This is why pluriactivity has drawn a lot of attention by both researchers and policy-makers in the developed world (cf. Gebremedhin 1991; Eikeland 1999).

Unfortunately, this phenomenon has been largely neglected by both academics and policy-makers in the developing world. Algeria is a particularly interesting case. In addition to the usual problems suffered by farmers in other countries, such as droughts, uncertainty and global competition, Algerian farmers have had to contend with additional shocks, namely, the turmoil period of the civil war of the 1990s and the Dutch disease effects triggered by the sharp rise in oil prices one and a half decade ago.

The aim of this article is to shed light on the practice of pluriactivity by Algerian farmers. Using data from a survey of Algerian farmers, we highlight the pervasiveness of pluriactivity and underlying motives behind its adoption in Algerian farming households.

PLURIACTIVITY

Farming households often rely on family members to work off the farm. Depending on circumstances involving preferences, costs, risks and returns, family members may choose to work entirely off-farm, exclusively on the farm, or a combination of agricultural and non-agricultural work. When at least one family member allocates part of his or her investment (in terms of labour and/or capital) to activities outside the farm, that household is said to be pluriactive (Bessant 2006). Pluriactivity, therefore, describes a situation where a farmer is not fully invested (in terms of labour and capital) in-farm activities. Pluriactivity is sometimes labelled part-time farming or off-farm work.

Motivation for pluriactivity

Investigators see pluriactivity as a two-edged sword. On the one hand, it is seen as a way for farmers to eventually exit farming (Kimhi 2000). For others, however, pluriactivity is seen as a way of preserving farming activities and promoting rural development (Bryden et al. 1993; Hawkins et al. 1993). Part-time farming reflects an adaptability feature of pluriactive farmers who are able to adapt their available labour and capital resources to the changing productive environment (Fuller 1975). Thus, pluriactivity helps the survival and sustainability of farms and, hence, helps preserving rural areas as well as promoting rurality as an acceptable way of life. An economically viable farm can then be transferred to younger generations, hence, ensuring the long-term survival of the farm (Landais 1998).

It is important to understand the motivations behind pluriactivity as being a two-sided issue (Ellis 2000). On the one hand, there is the necessity related motive related to the survival of the farm household and to the management of the risk that farming households face. On the other hand, there is the opportunity and choice motive related to the farm household seeking to maintain or improve their livelihood and raise their standard of living. Thus, pluriactivity is not simply a response to adverse shocks, but, rather, a strategic choice adopted by the farm household to achieve economic and non-economic gains (Barlett 1986). The variety of motivations leading to pluriactivity reflects the internal functioning of the farm household. Thus, financial and economic concerns, livelihood and cultural concerns, the environment surrounding the farm, and sustainability all interplay in the decision for a farm household to go pluriactive.

Pervasiveness of pluriactivity

Pluriactivity is widespread worldwide. Surveys worldwide show that up to two-thirds of farmers report some degree of having off-farm activities (Kimhi 2000). The spread of pluriactivity in North America is significant. In the United States Mishra and Goodwin (1997) report that, between 1974 and 1992, off-farm work went from 62% to 83%. In Canada, non-farm income rose from 67.9% in 1990 to 73.0% by 1999 (Bessant 2006).

In most European countries more than half the family farms are involved in pluriactivity (Gasson and Winter 1992). For example, Finland had 50.4% of its farming households pluriactive in 1995, whereas Ireland had around 47% in 1998 (Kinsella et al. 2000). In Australia between 50% and 60% of farm families survive by adopting pluriactive strategies (Alston 2004). In Brazil, pluriactivity varied between 27.1% and 57.6%, depending on the surveyed region (Anjos and Caldas 2007).

Data on pluriactivity in developing countries is scarce. One notable exception is a survey of Nigerian farmers in which Fakayode et al. (2011) report that nearly 66% of farmers engaged in activities other than farming.

THE DUTCH DISEASE

The Dutch disease is a phenomenon that takes place when a favourable shock, such as a sharp rise in oil prices, changes the structure of production and economic activities in a country. In particular, the appreciation of oil prices in an oil exporting economy leads to a contraction or stagnation of the manufacturing and agricultural sectors. Originally the contraction effect was caused by an appreciation of the real exchange rate following a natural gas boom in the Netherlands, an effect that the Economist magazine coined 'Dutch disease' in 1977. This phenomenon is also known as the 'resource curse' (Brunnschweiler and Bulte 2008).

The Dutch disease can adversely affect economic development in the long-term since economic growth is mainly driven by the cumulated knowledge and skill in the manufacturing and agricultural sectors (Krugman 1987; Torvik 2001).

The model of Corden and Neary (1982) provides a sound theoretical principle as to why this phenomenon might exist. Briefly, when a boom takes place in one sector such as the oil industry, two effects are possible: (1) the resource movement effect and (2) the spending effect. The first effect refers to the movement of factors of production such as labour and capital. When

this occurs, the non-booming sectors become resource poor and shrink. The second effect refers to the spending of the newly acquired resources on the non-traded sector (housing, consumption) which raises the price of the non-traded sector relative to the non-booming sectors (agriculture and industry), which draws resources away from the non-booming sectors.[1]

1. Another implication is the increase in the exchange rate which increases the cost of production in the non-booming sectors.

Empirically, there is no consensus as to the existence of the curse, with both denial (Brunnschweiler and Bulte 2008; Alexeev and Conrad 2009; Sala-i-Martin and Subramanian 2003; Caselli and Michaels 2013) and support (Rajan and Subramanian 2011; Sachs and Warner 2001; Lederman and Maloney 2007; Ismail 2010). Thus the existing empirical evidence suggests that a windfall such as an oil price increase does not necessarily lead to the disease.

Smith (2014) found that the Dutch disease effect is borne primarily by the agricultural sector. His empirical results are consistent with food production shifting to other sectors during a boom with imports displacing local food production. Collier and Goderis (2007) looked at 130 countries for the period 1963 to 2003 and found that while oil price boom does have a positive impact on growth in the short-term, it also has a negative impact in the long-term. More importantly, they found that such a long-term negative impact only existed in countries with bad governance.

This suggests that natural resources wealth has a behavioural dimension. Indeed, it has been suggested that wealth stemming from natural resources leads to greater institutional weakness (Tornell and Lane 1999; Levi 1988). An oil boom can deteriorate governance. Such deterioration might be caused by popular pressure to improve standard of living, inducing uncontrolled government spending, or by political battles between powerful interest groups for the control of oil rents.

However, the resource curse also depends largely on the quality of institutions. Mehlum et al. (2006) find that while there is an overall negative impact of natural resource boom on growth, this negative impact declines with increasing institutional quality and turns positive for sufficiently high institutional quality. This suggests that for a natural resource boom to have a positive effect, the institutions in place need to be 'producer friendly' (Mehlum et al. 2006).

Robinson et al. (2006) suggest that in countries with weak institutions, politicians use clientelism and patronage to influence elections. A sudden abundance of natural resources revenues incentivizes politicians to use these revenues to expand the public sector, create employment to avoid public contempt and hence remain in power. This excessive spending is at the heart of economic mismanagement.

Brahmbhatt et al. (2010) suggest a number of ways of curbing the effects of the Dutch disease. The first is to direct spending towards the tradable sectors, including agriculture, rather than the non-tradables. The quality of such spending is crucial in ensuring that investments are directed towards increasing productivity and sustainability in the tradable sectors. Wise spending can also be beneficial even in the non-tradable sector. Investing in infrastructure and general and technical education can foster know-how, innovation and adoption of technology.

This wisdom should also be directed towards agriculture and rurality. Provision of cheap finance and simplification of procedures can help farmers invest and sustain their livelihood. Investing in rural infrastructure, such as building rural roads, is also a powerful means for reducing poverty and providing employment. Other, equally important reforms, do not even involve

spending. For example, the agricultural sector would benefit greatly from improvements in regulation and reductions in red tape.

PLURIACTIVITY AND THE DUTCH DISEASE IN ALGERIA

The Algerian farmer has witnessed decades of economic and political instability. Following independence in 1962 and up to the mid-1970s, the government adopted socialist policies. These include the destructive '*revolution agraire*'/'agricultural revolution' that entailed nationalization of private land and the grouping of peasants into '*domaines socialistes*'/'socialist syndicates' without land title. A rare study by Chaulet (1987) which was carried out during the 1970s reflects the damage done by these policies. She found that, depending on the sector, between 64 per cent and 74 per cent of workers in the agricultural sector left agriculture for other sectors of the economy.

The 1990s saw the beginning of the Algerian Civil War, which, coupled with substantial drop in oil prices, led to severe social and economic turmoil. Unemployment rose sharply with the mass dismissals of employees by state-owned enterprises to hit 33 per cent of the total workforce by 1997. Rural poverty affected four million people in 1998 (ONS 1998). Military action by extremist groups was mostly felt in the rural parts of the country, resulting in a huge exodus from areas affected by terrorism.

From 2001 Algeria saw the easing of the civil unrest and a rapid increase in oil revenues. With ample financial resources, the government attempted to revive the agricultural sector with its National Plan for Agricultural Development. For example, between 2000 and 2005 the government spent €2.29 billion (Chabane 2013). Unfortunately, government spending was not effective. As Bedrani (2008) emphasised 'they financed anything in any [arbitrary] way'.

On the policy front, pluriactivity has been poorly supported, even though diversification of economic activities in rural areas was formally introduced as a key policy in agriculture for the government's new policy of rural renewal (Ministry of Agriculture 2009). For example, the policy did not focus on individual family farms. Instead, much attention was given to large, inefficient and non-viable projects. As Bedrani (2008) explains, 'Each project costs millions, even billions [of Algerian Dinars]. It should have been subject to a preliminary study to see whether it is viable or not'.

The oil boom led to a housing policy that aimed to build more than two million new homes at the expense of much of the rural areas neighbouring urban cities. For example, the government used agricultural land to house some 350,000 people (The Report: Algeria 2013). In 2013, the minister of agriculture announced that, since independence, 150,000ha of arable land has been lost to housing projects. Some estimates, however, go up to 270,000ha (Benalia 2013). In total the government built more than 1.7 million homes between 1999 and 2009, and the current plans running into 2017 aim to build a further 2.45 million homes (The Report: Algeria 2013). The distribution of free social housing, and subsidized private housing meant that rural families missed out on this bonanza (Anon. 2015a).

This 'rentier' behaviour by the state has obvious consequences. First, its policy is not sustainable. Some members of the public (especially urban) will benefit from rentier distribution only as long as oil prices and production are high enough. The government seems to be buying public satisfaction today at the expense of potential public outrage in the future. The recent outbreak of

violent demonstrations in the southern regions is a clear warning sign of the dangers of such policies (Ould Khettab 2015).

Second, and more important, the rentier policy is inequitable. The family farm has benefited very little despite it being the most category in need of subsidy. In a recent interview, Mohamed Alioui, the Secretary General of the Algerian farmers union emphasized that 'farmers have suffered more than the rest of the population' and that 'the state support is not adapted to the farmer's needs' (www.algeria-watch.org). The threat to agriculture seems real enough. There are both push factors, resulting from the difficulty for farmers to sustain their livelihood, and pull factors, resulting from the government spending that other sectors have benefited from.

The housing opportunities in urban areas has attracted farmers' family members and acted as pulling factors away from the rural life towards urban life. This can result in weak succession rate by farmers' children to their parent's farm holdings. Moreover, the high salaries offered in other sectors attracted workers away from agriculture. In particular, the oil sector's salaries are so high that they cause social unrest in the south where the oil fields are situated and where the local population demanded to be employed by the oil companies (Anon. 2014).

Finally, an investment organization created by the government to help young citizens establish micro and small enterprises,[2] provides qualifying (young) citizens with government-guaranteed interest free loans. It is common knowledge in Algeria that most of these qualifying citizens are judgement proof (because they own little or nothing and because failing to repay a loan is not a criminal offence in Algeria) and, consequently, do not intend to repay the loan and employ ruses to convert these investments into consumption. At the same time, even though farmers are not judgement proof (as they have collateral) and would therefore be more likely to repay their loans, they face extreme difficulties in obtaining finances (Daoudi 2010).

Given the above factors, Algerian farmers find it extremely difficult to keep their farms and much easier to move to urban life with all the facilities and opportunities. In this article we contend that pluriactivity is a potential factor in sustaining farming and keeping farmers on their land. The mechanism is simple. When farmers work partly in the booming sector they are allowed to share in the spending boom and hence do not feel obliged to leave the sector completely. Just as pluriactivity allows farmers to respond to urban pressure and the loss of rural livelihood, it also allows them to respond to the spending boom that exists in other sectors.

2. Agence Nationale de Soutien à l'Emploi des Jeunes (ANSEJ).

DATA AND METHOD

Although pluriactivity is an old phenomenon only a couple of studies provide, by now dated, descriptive information on pluriactivity in Algeria (Chaulet 1987; Bourennane 1991). Agricultural data is particularly scarce in Algeria. For example, in World Programme for the Census of Agriculture, Algeria is the only large country that has had no census conducted or planned in the last ten years (FAO 2015). Primary data collection is costly and, given our limited resources, the choice of sampling methods had to be contrasted with issues of practicality and affordability. We therefore used a two level stratification method. At the first level, we combined information from the Ministry of Agriculture data to determine the seven most important agricultural counties/regions in Algeria (Blida; Ain Temouchent; Skikda; Djelfa; Bejaia; Algiers; and Medea). Blida was then randomly selected.

Municipality	Geographic zone	Total number of holdings	Holdings in sample	Percentage (%)
Bouarfa	Piémont	86	30	34.88
Boufarik	Plaine	218	30	15.50
Ain Romana	Montagne	282	30	10.60

Source: Agricultural services branches of Bouarfa, Boufarik and Ain Romana municipalities.

Table 1: Sample characteristics.

The selection of the county of Blida, although random, is fortunate as Blida is close to Algiers, the capital, which has had the biggest share in urban expansion through the government's generous programme of housing expansion.

The second level was based on the topographic and geographic nature of agricultural land. The aim was to select, randomly, one municipality from each of the three typographies (plain, piedmont[3] and mountain). Three groups of municipalities were therefore identified and within each group one municipality was randomly drawn, giving our sample of Boufarik, Bouarfa and Ain Romana.

The intended sample size being 90 farm households, we were able to obtain 30 names drawn randomly from each of the selected municipality. Our sample characteristics are presented in Table 1.

Both structured and unstructured data were collected. Unstructured data were recorded via a relaxed discussion with farmers on an 'ask as you go' basis. Initial questions started on the reason for pluriactivity if any and whether the farm income was sufficient. The farmer was allowed to divert to other problems and questions that were perceived as important to him.

The questionnaire is structured into four parts. The first focuses on the profile of the farmer. The second part focuses on the household's main characteristics. Relevant information is then collected on the farm. The fourth part draws information on the head of the farmer's pluriactivity.

Detailed questions were asked on whether the household is pluriactive, the level of pluriactivity, the industry attracting off-farm employees, the reasons behind the farmer's choice, and the seasonal nature of the farmer's off-farm employment. Data explaining farm choices include the age of farmer, the number of people in the household, the arable proportion, the income of the household, the proximity of the farm to off-farm workplace, the time spent on off-farm work, the educational level of farmer and the rate of irrigated areas.

3. We refer to semi-mountainous areas as piedmont.

STUDY AREA

We focus on holdings in three rural areas of the Blida province (see the appendix for a map of the province). Blida lies in one of the most important agricultural areas of Algeria. It is also one of the most important industrial and trade regions of the country. More importantly, Blida is very close to the capital Algiers lying just about 30km from the capital. This proximity may facilitate both the resource movement effect (locals find it relatively easy to find jobs in urban areas), and the spending effect (the government as well as the private construction sector find it relatively easy to expand out of the capital Algiers where land is scarce to a neighbouring province where agricultural land is relatively more abundant).

In 2014, the total number of farms in the county of Blida was 11071, 81 per cent of which were private and the remaining 19 per cent were state-owned concessions leased to individuals or cooperatives (Algerie Press Service 2014).

The three surveyed municipalities of Boufarik (plain), Bouarfa (piedmont) and Ain Romana (mountain) are summarized in Table 2. The largest agricultural area lies in the mountainous municipality of Ain Romana. It has the lowest population density and lowest proportion of arable land to total area. On the other hand, this municipality has the largest number of farms, implying high levels of rurality among farm family. The other municipalities have similar arable land proportion, but are otherwise very different. First, the plain municipality of Boufarik has almost double the population of Bouarfa, reflecting the proximity of Boufarik to the capital Algiers (only 29km) and the high levels of urbanization in this region. The number of farms in Boufarik is almost three times that of Bouarfa. Overall, the three surveyed municipalities are quite distinct and present a rich set of information on the farm holdings in these different rural areas.

Our survey was carried out in three waves. In February 2013 the first set of interviews were done in the municipality of Bouarfa (piedmont), in the south-west of the county of Blida. This municipality is located about 3km from the county capital. Listed as mainly rural, Bouarfa has approximately 11,640 employees, mainly in traditional crafts, agriculture and animal husbandry. The young generation suffers from severe unemployment, with rates reaching 20 per cent (ONS 2008). Products derived from this area include cereals, fruits, vegetables and olives.

The second survey was undertaken in March 2013 in the town of Boufarik, which is the largest municipality after the county capital of Blida. Boufarik is located at 35km south-west of the capital Algiers and 14km from the county capital Blida. Farming is intensive in this region and mainly focused on arboriculture, especially orange production. The municipality has 56 industrial enterprises, which employ 2691 employees (Municipality of Boufarik 2009).

The final survey took place between the months of June and July 2013 in the municipality of Ain Romana. This is located 16km from the centre of the county of Blida and 60km from the capital Algiers. This is a mountainous area, which extends over an area of 101.38km^2 and has a population of 12,483 inhabitants (Municipality of Ain Romana 2012). This area is well-known for the fertility of its land, which gave a stable agricultural vocation based on the production of cereals, citrus fruits and livestock. Like Bouarfa, the unemployment rate is very high at 18 per cent (ONS 2008).

Municipality	Landform	Population	Total agricultural land (ha)	Proportion of arable land (%)	Number of farms
Boufarik	Plain	68,469	1909.81	91	218
Bouarfa	Piedmont	35,662	494.62	90	86
Ain Romana	Mountain	12,483	2658.00	80	282

Source: Planning Authority of the Province of Blida (Direction de la Planification et de l'Aménagement du Territoire de la Wilaya de Blida).

Table 2: Main characteristics of the surveyed municipalities.

During the 1990s, these three municipalities were highly traumatized by terrorism. In particular, in the piedmont and mountain regions (Bouarfa and Ain Romana), most farmers left their land in search for safety. However, in the early 2000s, farmers began to return to their land and resume their farming activities following improved security conditions.

RESULTS AND DISCUSSION

Questionnaire results

The main results of the survey are shown in Table 3. In total, pluriactivity represents nearly 56 per cent of farms, which is close to the proportions observed in developed world. The table also shows a great degree of regional disparity. Pluriactivity ranges from about a quarter of farm households in the plain, to about half in the mountain, to more than three quarters in the piedmont.

Pluriactivity is clearly related to farm size, with larger sizes (as in Boufarik) inducing lower rates of pluriactivity. The extremely high level of pluriactivity of Bouarfa is clearly driven by the large proportion of farms with less than a hectare area.

The table also shows the irrigation rate and its relation with pluriactivity. Counterintuitively, more irrigation requirement seems to drive higher rate of pluriactivity. For example, the average proportion of irrigated land in Bouarfa is more than 76 per cent of total farm land, which is associated with the high level (86.70 per cent) of pluriactivity in the municipality.

For the sake of brevity, we will not go into detail regarding the following farm characteristics. Instead, we provide a brief summary of the main points.

The distribution of age is also interesting. In the mountain region, pluriactive farmers tend to be young (82 per cent of household heads were below the age of 45). In contrast, most pluriactive farmers in the other two municipalities are 55 years or older.

Mountain (Ain Romana) farmers were found to exercise pluriactivity primarily in their own municipality or in the neighbouring one. In the piedmont (Bouarfa), farmers work either within their area or go all the way to distant urban counties to find work. In the plain (Boufarik) most pluriactive farmers seek work in the urban regions of the capital Algiers because of the proximity of their municipality to Algiers.

Municipality	Farms	Pluriactive farms		Size of pluriactive farm			Proportion of irrigated land	
		(N)	(%)	Small (<1ha)	Medium (<10ha)	Large (>10ha)	Mean (%)	Standard deviation
Boufarik (Plain)	30	8	26.70	0	3	5	1.11	0.69
Bouarfa (Piedmont)	30	26	86.70	12	12	2	76.60	38.30
Ain Romana (Mountain)	30	16	53.30	0	11	5	56.10	48.40
Total	90	50	55.55					

Table 3: Distribution and characteristics of pluriactive farms.

Mountain farmers tend to mostly find off-farm work in liberal professions (31%) or trade (25%). This is natural because of the lack of availability of industrial or administrative infrastructure in this region. For the piedmont region of Bouarfa, however, the vast majority of pluriactive farmers find jobs in (mainly government) administration (43%) or in the service sector (23%). In the plain region of Boufarik no occupation dominates. The eight pluriactive farmers have chosen different occupations, which is not surprising given that this region has a wide range of opportunity available to pluriactive farmers.

Illiteracy is dominant amongst pluriactive farms. The proportion of farmers without formal education is 81 per cent for Bouarfa and 50 per cent for Ain Romana.

The use of mechanized equipment is widespread amongst small farms, thanks mostly to the practice of equipment rental. It seems likely that the reason for these small farms to use rented equipment is to limit the time on farm and exploit time off-farm for additional income. This is probably why the acquisition of a tractor is not linked to the size of the farm in our sample.

The limited size of the farms in the surveyed areas implies that farmers cannot adapt to the volatile and unstable agricultural production by expanding their exploitations. They seem likely to adapt to these adverse conditions by turning to off-farm employment. This is the same conclusion reached by the Chaulet (1987)'s study on the Algerian agricultural labour market in the 1970s.

Income seems to be a major driver of pluriactivity in two of the three municipalities. Indeed nineteen out of the 26 pluriactive farms in Bouarfa reported that their income from farming was insufficient to sustain their livelihood, whereas twelve out of the sixteen pluriactive farmers in Ain Romana stated that their income was unsatisfactory. Boufarik shows a different pattern. In contradistinction to the piedmont and mountain regions, the plain farmers of Boufarik actually have a relatively high income. Five out of the eight pluriactive farmers stated that their farm income was satisfactory. As we see below, the reason for this apparently contradictory behaviour is the drive to guarantee a pension.

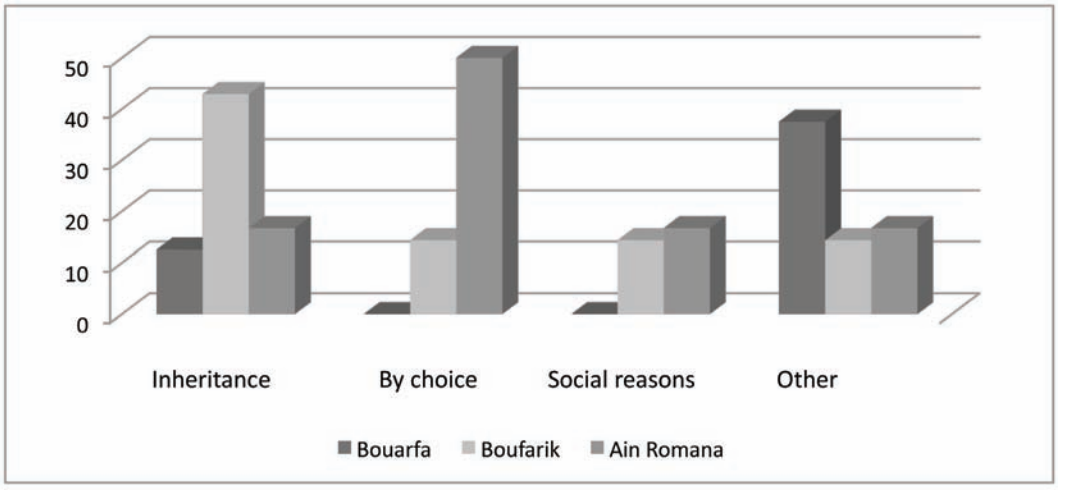

Figure 1: Motives for remaining in agriculture.

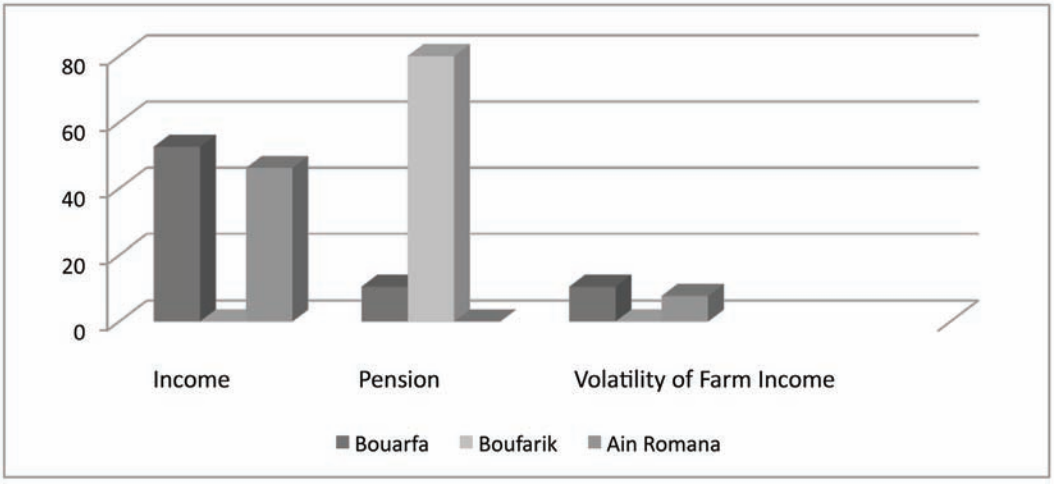

Figure 2: Motives for pluriactivity.

Thus, the data from our survey show that pluriactivity and off-farm income of Algerian farm households are linked to the usual factors of geographical location, size of the household, age of heads of households, agricultural income, irrigation and education.

The main non-financial reasons for remaining in the farming business are summarized in Figure 1. As can been from the figure the farmers of the three areas have markedly different motives. The majority of pluriactive farmers in Boufarik keep farming because they inherited the farm. This implies that farmers that are surrounded by urban areas have become implicitly urbanized, and only keep the farm because they do not want to waste their endowment. The mountain farmers of Ain Romana remain in agriculture by choice, whereas farmers of the piedmont have a mixture of motives.

Financial motives are very important for pluriactive farms as can be seen from Figure 2. However, here again the near urban area in the plain (Boufarik) is quite distinct from the piedmont and mountain areas. For the former, the main reason for undertaking pluriactivity is pension contribution. Not surprisingly, as these farmers live side to side with their urban neighbours, they are more culturally driven towards working to secure a pension. The piedmont and mountain farmers seem to clearly ignore pension motives and focus instead on current incomes. The risk of farm income, or diversification motive, is rather marginal. None of the plain farmers give it any importance (for the obvious reasons of high income from both farm and non-farm activities), whereas only a small minority of farmers in the piedmont and mountain areas have highlighted the importance of risk in their decision to become pluriactive.

INTERVIEW RESULTS

As mentioned earlier, the authors came across a number of interesting findings. Because of the friendly atmosphere that the personal contact created, farmers were generally more forthcoming than expected, and some went on to criticize the official agriculture institutions in their region. Most of their comments related to their livelihood and the difficulty they faced in sustaining their rural livelihood.

Three general themes were revealed. First, most farmers were generally unhappy to do off-farm jobs, and were, most of the time, doing it to top up their income. One farmer emphasized 'If we didn't love farming we would have abandoned our land a long time ago'. Second, several farmers pointed to the nature of jobs in other sectors as less risky and more rewarding. Other farmers, however, maintained that farm income was more important to them because they were unskilled to do other jobs, but that the uncertainty of farm production was the key reason they were working elsewhere. One farmer explained 'Our work is full of risks and problems … It is tiring, and we feel marginalized'. Third, interviewed farmers were generally pessimistic about the young generation's involvement with farming. The majority of interviewed farmers encouraged their children to study and work in other sectors so that, in the words of one farmer 'They can have a decent life and sufficient income'.

The dissatisfaction by farmers in working outside their farms reflects a strong link between farmers and land. But the strong incentives offered by the non-tradable sector seem to be 'pulling' farmers towards pluriactivity. The general impression from farmers' response is that the government has been slow in tackling many of the major problems faced by farmers in Algeria. The fact that off-farm employment has become essential for the survival of the farming household is symptomatic of the resource movement effect mentioned earlier. The non-agricultural sectors have attracted the younger generation and have pulled them away from farming. This suggests a likely attrition in the number of farmers and farming households in the long-term, which puts into question the sustainability of agriculture in Algeria.

Among the many difficulties faced by farmers is red tape. One farmer complained 'Bureaucracy has increased in the last ten years. They ask us for tons of paperwork, tons of forms to fill-in … it took at least one month to prepare the required paperwork, and even then the bank still refused to give me a loan'. Another difficulty mentioned by farmers is the lack of funding. One farmer explained 'I have been trying to get a loan but it has been impossible. They ask us for guarantees … I don't have guarantees'. Yet, outside agriculture, interest-free loans are provided to (young) citizens without any guarantees (Rosso and Allik 2014).

Despite the existence of an official agricultural plan and the allocation of a substantial budget to agriculture, institutional weaknesses have meant that help seldom reaches the individual farmer. One farmer commented 'We [farmers] don't even bother to go [ask for help] to the agricultural authorities'. He explained that these government organizations make it such an inhospitable environment that farmers are discouraged from asking for help, 'Unless you know someone', he added. For example, buying fertilizer is complicated in Algeria as a result of the terrorism legacy of the Algerian Civil War of the 1990s. Although the government has recently relaxed this regulation, fertilizer remains inaccessible to farmers at subsidized prices and most farmers are forced to buy it from private traders at excessively high prices.

The interviewed farmers have made it explicit that they feel neglected by the government. As one farmer put it, 'Everything seems to be against us. Even when potatoes price increases a little bit, the media start criticizing us and the minister of commerce comes out and states that he would import cheaper potatoes to bring prices down'. This reality reflects a spending effect of the Dutch disease, whereby imports displace local food production. Government policy seems to focus more on social infrastructure to raise

standards of living rather than the importance of the long-term sustainability of agriculture and its role in sustainable development and food security. As one farmer put it 'They [the government] can buy it [food], why should they bother to produce it?'.

The resource movement effect is most obvious in the agriculture labour market. All interviewed farmers complained about the difficulty of hiring labourers, especially during harvesting seasons. One farmer explained 'Even my children refuse to help me'. Another added 'In the past, we used to get young men asking for work and shelter … we offered them modest wages but that wasn't a problem'.

Finally, know-how and technology have been mentioned as barriers to sustainability. When asked about the adoption of modern equipment, machinery and techniques, many farmers commented that they have neither knowledge nor resources to invest in new technology. In terms of training offered by authorities, some farmers were unaware of the existence of any such schemes, while others have actually attended some training sessions but complained that these programmes were ineffective. The overall view was that government have shown little if any dedication to knowledge transfer for this sector.

CONCLUSION

'And if you want food, you must either grow it or buy it. It's that simple' (Clarke 2009: 98). It seems that the agricultural version of the Dutch disease stems mainly from the wealth-induced focus of decision-makers on the '*buy it*' part. Judging by the behaviour of policy-makers in Algeria since the early 2000s, this illusion seems real enough and it has had serious consequences for the future of agriculture in Algeria. The arable land is shrinking, agricultural work is problematic and unprofitable, and the new generation is shying away from this sector.

Pluriactivity may be a way of preventing this trend, and its importance is evident in the literature. Unfortunately, most studies focused on industrialized economies, where farmers face problems that are fundamentally different from those of developing economies, and even more so from oil rich economies.

Our results reveal several interesting aspects of pluriactivity that may not be present in many developed countries. One fact is that spatial factors (topography, proximity to industrial areas) matter. Our survey results show that pluriactivity is more predominant in the mountainous and piedmont areas where natural constraints, such as the poor quality of the soil and the climate, force most of the farm families to seek off-farm work to supplement the household income.

At the same time, farms in these areas are smaller on average than those in the plain area. For the latter, both farm size and income were found to be relatively high, thus explaining the low rate of pluriactivity in this area. Both of the previous facts lend credence to the thesis that pluriactivity is more a result of the push factors than the pull factors. If pull factors were important, our plain area farmers, who happen to live in the fringes of urban areas and industrial zones, should have shown higher propensity to work off-farm. Instead, what we found is that pluriactivity is not widely practised. The better quality of soil and the large size of farms mean that farmers can focus exclusively on farm activity.

Pluriactive farm characteristics are not uniform and also depend greatly on the location of the farm. Plain area pluriactive farmers are younger, while the piedmont and mountain pluriactive farmers are much older on average. This is symptomatic of rural exodus by young farmers to urban areas, thus permanently exiting agriculture and depraving rural areas from renewal of its human capital.

Pluriactive farmers are employed in a variety of activities, ranging from administrative jobs to commerce. Again, this distribution greatly depends on the availability of these types of jobs, which in our case depend on the proximity of each farm to urban or industrial areas.

We also found differentials in the attitudes of pluriactivity farmers, again, depending on the location of the farm. In particular, the main motive for the more deprived areas of the piedmont and the mountain is income supplement. These also happen to be small farms, which explain partly why income is an important motive. This supports the argument that pluriactivity helps keep the agricultural household in rural areas.

Our results have implications for policy-makers. In disadvantaged areas, farming is threatened by low income and risk. Losing rurality would mean losing not only agricultural production, but also agricultural heritage and know-how, rural culture and natural habitat. Thus, redressing this 'market failure' by some kind of subsidy or investment in rural areas should be a priority for policy-makers.

For Algeria, despite the best of intentions, the agricultural policy has so far failed to reach rural farmers. Both the scale and distribution of subsidies are at fault. First, the existing agrarian support plan is insufficient. The Algerian state's subsidy to agriculture is six times smaller than that of the European Community. For example, while the European Community gives 288 Euros per hectare in subsidies, Algeria only gives 49 Euros (Chabane 2013). To add insult to injury, these already meagre subsidies are plagued with inefficiency and mismanagement, so much so that only little subsidy reaches those who need it most.

The marginalization of the agricultural sector can have long-term adverse effects on the farm household. At this trend, the rural farm may well disappear in the future. We are already seeing a massive exodus of the young rural population to large cities, where a chance of getting a permanent job, a government house, and possibly an interest free government loan (possibly a donation) look too good to miss.

Our study has obvious limitations. How far can we extrapolate, or generalize, our findings to other countries remains to be confirmed. Our sample is relatively small, and includes a single county, albeit an important one. Nevertheless, we hope our work can motivate future work to focus on this important topic. We have indeed only provided a shred of evidence. But given the lack of work on pluriactivity, even a shred of evidence is worth considering.

APPENDIX

Figure A1 shows the province of Blida and the three surveyed municipalities of (from top to bottom) Boufarik (plain), Bouarfa (piedmont), and Ain Romana (mountain). The county is bordered by Algiers, the capital county, from the north, and by the mountainous counties of Medea and Bouira from the south.

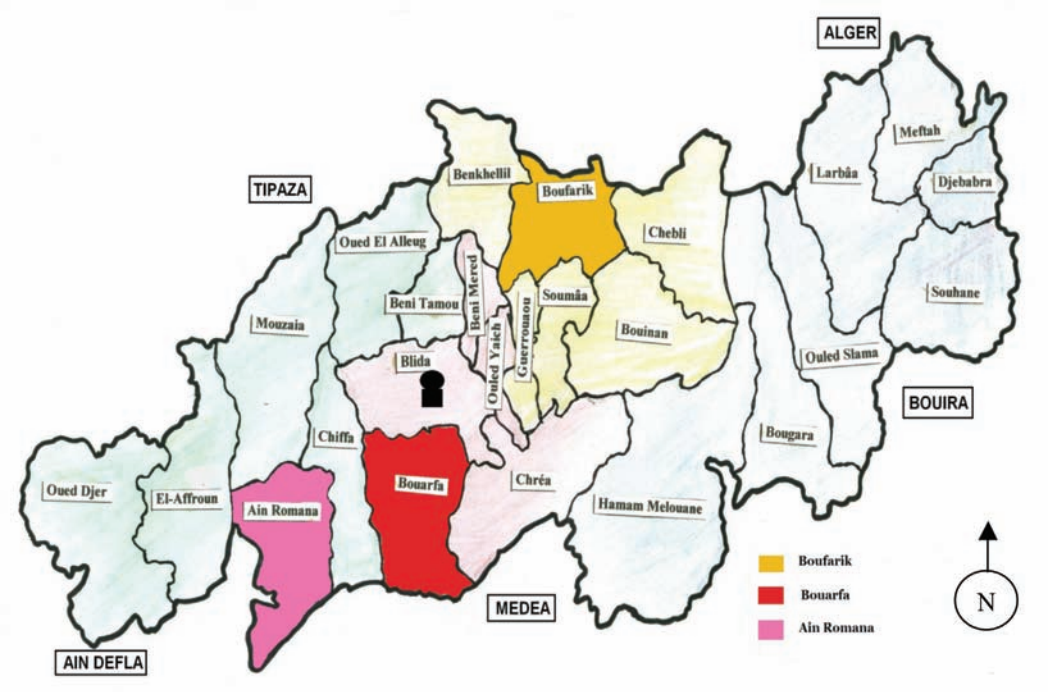

Figure A1: The location map of the surveyed municipalities (source: Direction des Services Agricole, Blida, 2014).

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