Agricultural Land Issues in the Middle East and North Africa

By Rafaelle Bertini* and Abdallah Zouache†

Abstract. The continuing economic stagnation of the Middle East and North Africa (MENA) has typically been explained in terms of the resource-curse thesis. Yet, without analyzing the geographical constraints of MENA and the institutions of the region, particularly ones that pertain to land and property rights, this explanation is partial at best. Specifically addressing the structural constraints on using land for economic transformation, we offer a new explanation for the underdevelopment of MENA. We show that transformation in agriculture is inhibited by fuzzy property rights in land that were inherited from colonial and post-colonial agricultural policies. Political-economic transformation in MENA could unleash the power of land in the region.

Introduction

Middle Eastern and Northern African (MENA)[1] countries have not succeeded in developing their economies, in the narrow sense that their economic growth has not allowed a convergence with the richest countries. At the macro level, if economic performance is measured by GDP per capita, the Arab countries have performed badly. The small economies located in the Gulf (Kuwait, Qatar, UAE) are rich,

*Faculty of economics (Ph. D.) in "politics and economics for developing countries," at University of Florence (Italy). Several years experience with international organizations. His main interests: rural development and transformation, land tenure systems, agricultural land distribution, climate change, migration, and poverty analysis. Email: raffaele.bertini1983@gmail.com

†Professor of economics at Sciences Po Lille France and a member of the CNRS research center board (CLERSE, Lille University). He is a member of international editorial committees: *African Review of Economics and Finance* and *History of Economic Ideas*. Forthcoming publication by Routledge: a critical analysis of the relation between Islam and economic development in mainstream institutionalism and Islamic economics. A 2017 article in *Journal of Institutional Economics* on French colonial economics in West Africa. Email: abdallah.zouache@sciencespo-lille.eu

American Journal of Economics and Sociology, Vol. 80, No. 2 (March, 2021).
DOI: 10.1111/ajes.12391

but, even when we include Oman, Bahrain, and Saudi Arabia, the biggest economy of the region, this Gulf Cooperation Council (GCC) club comprises only 17 percent of the Arab population (Cobham and Zouache 2021a). The majority of the Arab League members, and especially the large populated countries (Egypt, Algeria, Sudan, Iraq, and Morocco), are characterized by a low average level of GDP per capita.

The continuing economic stagnation of the MENA countries has typically been explained in terms of the resource-curse thesis. This standard explanatory hypothesis has to do with the adverse effects that oil and gas resources have on economic performance and on political systems (Ross et al. 2011). This article will test another hypothesis: Could the growth and development failures in the MENA region be explained by the lack of structural transformation in their economies? Indeed, at the sectoral level, the MENA countries, with the exception of Turkey, have not yet succeeded in transforming the structure of their economies. Agricultural production in MENA countries is not efficient and is marked by a low level of productivity. Most countries are dependent on imports to feed their population. Even in small, rich, hydrocarbon economies (Qatar, UAE, Kuwait), food security is challenged and so is food sovereignty. MENA agricultural weaknesses and fragile performance are associated with limited industrialization. MENA countries are not industrialized, nor are their economies diversified. MENA countries participate in global trade via the exports of natural products, mainly gas and oil, but they are not actors within global industrialized networks (Al-Hussami and François 2018).

The literature dealing with structural change is abundant (Syrquin 1988; Timmer 1988). But the fundamental framework can be understood from the contributions of illustrious economists who have approached the question at the theoretical and empirical levels: Samir Amin (1972) and Arthur Lewis (1954b).[2] Development is growth accompanied by a transformation of economic structures (Amin 1972). Economic progress in the agricultural sector is a necessary condition for a process of industrialization of the economy for several reasons. The agricultural sector employs a large part of the active population, is an outlet for industry, allows rural exodus by feeding the

urban population, and avoids a trade imbalance of an economy dependent on imports (Amin 1972: 474). In addition, the agricultural sector provides a surplus that can be reinvested in a domestic industry that cannot emerge if it depends on international investment. Arthur Lewis's contribution (1954a), at the origin of the theory of surplus and inspired by classical political economy, emphasizes the role of the surplus of agricultural labor in generating profits. That surplus favors capital accumulation in a dual economy, where a structural surplus of labor coexists with a capitalist sector in gestation. In this tradition, the economic dynamics depend on the share of profit in relation to wages and ground rent. In an agrarian economy, the agricultural sector is not very productive. Thus, the absorption of labor has no perverse effect on agricultural production. In the process of economic transformation, the agricultural sector becomes more productive and more intensive, and it employs less labor and industry. The tertiary sector becomes the economic engine in terms of production, jobs, and surplus. Insufficient progress in the agricultural sector could slow down or even prevent autonomous national industrialization. For some authors, this is a major cause of persistent underdevelopment (Amin 1972: 474). Amin proposes that structural transformations at the sectoral level depend on the type of agricultural production and on the property system related to it.

Structural change thus involves the evolution of the structures of production (Bosc and Bélière 2015).[3] It also depends on changes in property rights related to land (Lewis 1954b). First, structural change affects agricultural holdings. It is particularly important for rural economists to examine the role of family property in the production system, even in developed countries (Courleux et al. 2017).[4]

One major contribution of this article is to look at this farming dimension in the Middle East and North Africa to ascertain if the countries have experienced structural change in the agricultural sector. Our analysis shows that MENA countries have failed to achieve a structural transition in agriculture, which weakens these economies. Two factors explain this result: geography and institutions. The first explanation is that this region suffers geographically from specific environmental conditions that are not conducive to agriculture. The

second explanation of a weak agricultural sector is the institutional framework. Examining the evolution of that framework raises questions about the types of property rights or land tenure that are in place and the agricultural policies carried out by national authorities (Chang 2009).

The second contribution of our article is to correct some mistaken ideas about the forms of land tenure that can explain the lack of structural change in agriculture. Many commentators have presumed that MENA countries are handicapped by their pre-colonial Islamic traditions because those traditions supposedly failed to assign property rights in ways that would encourage productivity. We investigate this question of inherited institutions to determine whether it is valid. Our findings contradict the mainstream view that Islamic traditions have restricted the development of agriculture in MENA countries. Instead, we find that agriculture suffers from a confusing bundle of property rights in land that are mainly due to the colonial and post-colonial legacies.

We conclude the article with a policy discussion and conclusion that show how the national authorities do not respond to the challenge and structural weaknesses of this region.

The Structural Characteristics of Agriculture in the Middle East and North Africa

Academic and public discussions on the Middle East and North Africa often underestimate, or even omit, agricultural issues since the source of their economic surplus is supposed to come from natural resources, oil and gas in the majority of studies. Yet, the production and commercialization of these resources are the privileges of a minority among the population of the region. As noted earlier, the GCC countries with high GDP per capita encompass less than 20 percent of the regional population. The Arab world is still marked by large rural and peasant populations.

MENA countries have changed some basic features of agriculture, leading to certain improvements (World Bank 2021b). Agricultural land as a share of total land in the region increased from 28 percent in 1981 to 37 percent in 2016. The value added to GDP by agriculture,

forestry, and fishing fell from 10.9 percent in 1990 to 4.6 percent in 2019. Agriculture has dropped in the Arab world from 35.2 percent of total employment in 1991 to 18.7 percent in 2019. The use of capital in agriculture has increased from 60.9 tractors per 100 square kilometers of arable land in 1980 to about 154 in 2000. Quite interestingly, in Egypt, the number of tractors per 100 km^2 increased from 250 in 1990 to about 390 in 2008. In Lebanon, the number grew from 175 in 1990 to 640 in 1999. Despite these recent improvements, the main picture in this region reveals structural weaknesses and heavy constraints. We give four main structural factors related to the agricultural economy of MENA countries. We will focus on the fourth dimension, the property structure, and especially the farming system, that is intimately connected to the first three dimensions.

The first factor appears when we look at the share of rural population (Table 1). In the Arab world as a whole, this share has dramatically decreased from 68.8 percent in 1960 to 40.8 percent in 2019, which testifies to a structural urbanization process (World Bank 2021b). Nevertheless, this combined figure hides a great disparity between highly urbanized countries, mainly located in the Gulf, that have no rural population, and countries like Comoros, Somalia, Djibouti, Yemen, Syria, Mauritania, and even Morocco, all with large rural populations. Two major Arab and African countries, Sudan and Egypt, remain predominantly rural.

The second feature is that agriculture is still an important part of the regional economy. Various North African countries, such as Egypt, Morocco, and Tunisia, are highly reliant on agriculture. In some of them, agricultural production is part of value chains in other economic sectors, such as food processing and retail systems. The contribution of agriculture to overall gross domestic product varies greatly across these nations from about 3 percent in Saudi Arabia to 14 percent in Egypt (Table 1). In most MENA countries, agriculture's value added is less than 10 percent of GDP, while in oil-producing countries, such as Libya and the Gulf countries, it is 2 percent or below.

In the MENA region, agricultural production is dominated by cereals, which, under the impetus of policies that aim to diminish food dependency, represent around 60 percent of cultivated lands, particularly

Table 1

A Selection of MENA Structural Indicators in Agriculture

Countries	Rural population (% of total pop, 2019)	Agricultural land (% of total land area 2014)	Arable land (% of total land area 2014)	Self-sufficiency ratio (2013)	Share in total employment (2010–2014)	Share in GDP (2010–2014)
Qatar	0.8	6	1	3	1.4	0.1
UAE	13.2	5	0		3.8	0.8
Kuwait	0	9	1		2.2	0.5
Bahrain	10.6	11	2		1.1	0.3
Saudi Arabia	15.9	81	2	33	4.7	2.7
Oman	14.6	5	0	5	5.2	1.4
Lebanon	11.2	64	13	41	6.8	3.1
Iraq	29.3	21	12	54	23.4	3.8
Libya	19.6	9	1		19.7	2.2
Iran, I.R.	24.6	28	9	85	18.9	5.6
Algeria	26.8	17	3	64	10.8	11.9
Tunisia	30.7	65	19	75	15.6	9.9
Jordan	8.8	12	3	38	19	3.2
Egypt, A.R.	57.3	4	3	72	28.1	13.7
Morocco	37.0	69	18	80	39.4	15.6

(Continues)

Table 1 (Continued)

Countries	Rural population (% of total pop, 2019)	Agricultural land (% of total land area 2014)	Arable land (% of total land area 2014)	Self-sufficiency ratio (2013)	Share in total employment (2010–2014)	Share in GDP (2010–2014)
P.A./West Bank & Gaza	23.6	50	11	16	11.8	4.5
Sudan	65.1	29	8	85	44.6	37.9
Syrian A.R.	45.2	76	25		19.9	18.8
Yemen, Rep.	62.7	45	2	50	24.7	15.0
Mauritania	45.5	39	0.4		50.4	30.3
Djibouti	22.1	65			74.1	3.8
Comoros	70.8	66			69.6	44.5
Somalia	54.4	70			66.4	63.0

Sources: OECD/FAO (2018); World Bank (2021b). Self-sufficiency ratio in USD$ = (value of gross agricultural production)*100/(value of gross agricultural production + value of imports − value of exports). UAE = United Arab Republics; P.A. = Palestinian Authority; A.R. = Arab Republic; I.R. = Islamic Republic.

in poor Arab countries (Yemen, Sudan, and Mauritania). Yet, horticulture is the most productive sector and the most integrated with global trade. Egypt and Iran provide 50 percent of the total value of MENA agricultural production, followed by Sudan, Morocco, and Algeria (27 percent),while the other MENA countries (excluding Turkey) contribute 23 percent of the total production. Accordingly, Turkey, Egypt and Iran are the three "giants" of the MENA zone in terms of agricultural production. Three other North African countries—Morocco, Tunisia, and Algeria—and one Sub-Saharan country, Sudan, could be seen as intermediary agricultural states.

The third structural feature, as shown in Table 1, is that agriculture still provides a substantial proportion of employment in the region. In several countries—Egypt, Libya, Iran, Syria, Morocco, and the members of the Arab League, namely, Mauritania, Djibouti, Comoros, and Somalia—agricultural employment represents at least 15 percent of the total, and it reaches almost 70 percent in a few cases. In Sudan and Yemen, where more than 60 percent of the population still lives in rural areas, agriculture's contribution to employment and valueadded trails behind (FAO 2017). This points to low productivity and hidden unemployment in the countryside. In a substantially urbanized country like Turkey, for example, 30 percent of the labor force still works in agriculture but contributes only 9 percent of the value added (Lowder et al. 2019).

The fourth feature that characterizes the lack of structural transition in the Middle East and North Africa deals with agricultural tenure. The central message is that agriculture is in the hands of small farms, mainly family farms, that own small pieces of land and rarely employ salaried workers. FAO data provide a detailed picture of property structures in the Middle East and North Africa.[5] In order to determine if a consolidation process[6] has occurred in the MENA countries, we will deal with two features: the size of structures and the distribution of land.

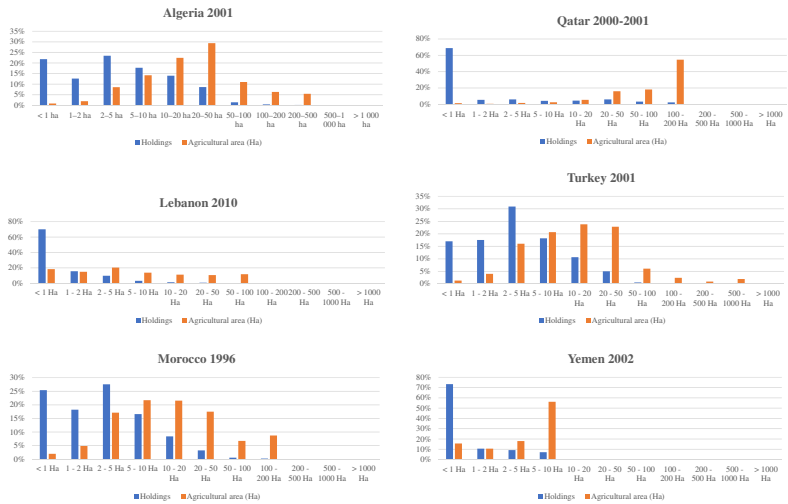
On the Size of Farms

FAO (2014) shows that family farms (not necessarily small farms) produce more than 80 percent of food in the world, a number confirmed

by Lowder et al. (2016). Graeub et al. (2016) estimate that 53 percent of the world's food is produced by family farms.[7] In the Middle East and North Africa, small farming is also crucial, from the point of view of both ownership and labor. According to the most recent observations, made accessible by the Statistical and Economic Department of FAO, there are at least 18 million holdings in Arab countries that represent 3 percent of the total number of holdings worldwide (Lowder et al. 2019). Figure 1 puts together data for the most recent censuses in selected countries. Time series available at the country level (Jordan, Iran, and Egypt) will be examined. We first consider farmland distribution and farm size over time, based on census data, to shed light on possible transformations of agriculture and food systems at the regional and national level.

Considering changes in average farm size as a proxy for structural transitions in agriculture in 11 MENA countries from 1960 to 2010, we observe a sharp decrease in the average farm size from almost 8 hectares per holding to around 3.5 hectares. This trend is not straight over the considered period: a sharp decrease is recorded in the 1980s,

Figure 1
Share of Holding and Agricultural Areas in Six MENA Countries



then a slight decrease in the following period until the 2010s, where a slight increase is then recorded, which may reveal a consolidation process (FAO 2017). We analyze in detail the trends in this indicator over time and give the slope of this change. Tables 2 and 3 present these values at the country level for most of the region. There are only three countries for which we record a positive slope in the average farm size: Algeria and Turkey with very tiny positive changes and Saudi Arabia with a significant positive value. This indicator remains stable over time in Turkey, which may confirm a consolidation process. Saudi Arabia, which passed through several reforms and policies in the agricultural sectors during the period, also shows a consolidation as reflected in this indicator. On the other hand, countries such as Egypt, Iran, Lebanon, and Yemen report a declining trend in average land holdings. These countries show increasing fragmentation and an increasing role of middle-size farms and large farms. A smooth

Table 2

Number of Farms per Country, 1960–2010
(in thousands of farms)

	1960	1970	1980	1990	2000	2010
Algeria		900			1,000	
Egypt	1,600		2,900	3,500	4,500	4,400
Iran, Islamic Republic	1,900			3,600	4,300	3,400
Iraq		591				
Jordan		56	62		92	80
Lebanon	127	143			195	170
Morocco	1,100				1,500	
Saudi Arabia		181	212		242	285
Syrian Arab Republic		524	486			
Tunisia	325				516	
Turkey	3,400		3,700	4,100	3,100	
Yemen			756		1,500	

Source: See Table 3.

Table 3

Average Farm Size: MENA Countries, 1960–2010

	Average Farm Size						Slope best fit change avg. farm size
	1960	1970	1980	1990	2000	2010	
Algeria		6.2			8.3		0.070
Egypt	1.6		1.0	0.9	0.8	1.7	−0.003
Iran, Islamic Republic of	6.0			4.3	4.1	4.9	−0.029
Iraq	31.8	9.7					−2.210
Jordan		7.0	5.9		3.3	3.3	−0.104
Lebanon	2.4	4.3			1.9	1.4	−0.037
Morocco	9.8				5.8		−0.100
Saudi Arabia		6.7	10.1		16.7		0.334
Syrian Arab Republic		9.0	6.5				−0.250
Tunisia	15.4				10.5		−0.123
Turkey	5.0		6.2	5.8	6.0		0.019
Yemen			2		1.1		−0.045

Sources: FAO (1997, 2010, 2019), Government of Algeria (2004), Government of Egypt, the Arab Republic of (1992, 2002, 2012), Government of Iraq (2016), Government of Jordan (1996, 2007, 2017), Government of Lebanon (2012), Government of Saudi Arabia, the Kingdom of (2006, 2016), and Government of Tunisia (2007).

Table 4

Use of Household and Hired Labor (Permanent and Temporary) on Farms in MENA Countries

	Labor			
Country	Census year	Average number of household members engaged in agriculture per farm[a]	Average number of hired permanent workers per farm	Average ratio of household members to hired permanent workers in agriculture
Algeria	2001	3.3	0.1	30.9
Egypt	1999/2000	…	0.0	…
Jordan	1996	…	0.2	…
Lebanon	1998	1.0	0.1	8.2
Morocco	1996	…	0.1	…
Qatar	2000/2001	…	3.4	…
Tunisia	2004	0.9	0.1	9.3
Yemen	2002	2.3	0.2	10.6

[a]May include full time and/or part time work by household members

Sources: FAO (2010, 2019). Government of Egypt, the Arab Republic of (2002), Government of Jordan (1996), Government of Lebanon (2012), and Government of Tunisia (2007).

reduction in farm size is recorded in two middle-size countries—Jordan and Morocco.

Labor force analysis is also a key aspect of the structural analysis of agriculture. Table 4 provides a glimpse. An accurate analysis is difficult because of the lack of data on the region, especially for recent years, so the following features should be interpreted cautiously. The first characteristic is the reliance of farms in MENA countries on family members. The average number of household members employed on the farm is lower than in other developing regions, even if it is higher in Algeria and Yemen, where the presence of household members on the farm is higher than two per holding. The second structural characteristic is the relative absence of hired labor, with the exception of Qatar, where the farming system is based on hired labor.

On Land Distribution

Agricultural production is highly dependent on the structure and distribution of land, in particular via the impact it has on productivity (OECD/FAO 2018). Besides, structural change goes with a transformation of land structures and a change in land distribution. The following analysis of farmland distribution in the MENA region is, again, highly constrained by the availability of data that have been collected in agricultural censuses with the support of the Food and Agriculture Organization of the United Nations.[8] We will first give a broad regional perspective and, where data will allow it, provide a more accurate one for selected countries.

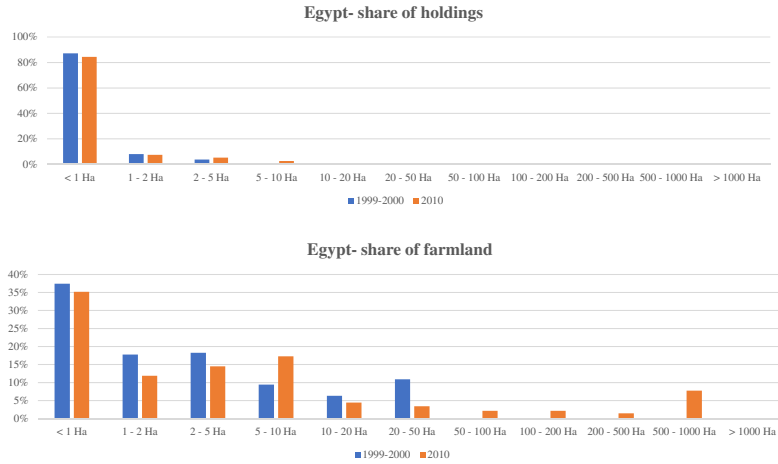
North Africa, Algeria, and Morocco present similar structures in terms of farms and farmland distribution. Figure 1 shows that more than half of holdings belong to size classes smaller than 5 hectares, while medium-size classes up to 50 hectares represent the remaining part. The share of farmland in the smallholder classes—less than 5 hectares—is about 10 percent in Algeria and 20 percent in Morocco. In both countries, medium-size farms are important, especially in Morocco. In the Middle East, Lebanon shows a pretty equal distribution in terms of farmland among the different land classes, but holdings are concentrated among the lowest part of the distribution. Holdings with less than 1 hectare represent more than 70 percent of

the total, and holdings smaller than 5 hectares represent more than 90 percent of all holdings. The 2001 agricultural census of Turkey, one of the main regional agricultural producers and exporters in the region, shows that middle-size farms from 5 to 50 hectares represent more than 30 percent of the total holdings but more than 70 percent of the farmland in Turkey. Large-land-size classes represent a very low share of holdings and around 10 percent of the farmland. In the Arabian Peninsula, Qatar and Yemen present the trend in the share of farmland and of holdings in various size classes: smallholders have most of the holdings, but large holders own most of the farmland.

In order to grasp changes that occurred in the structural transformation processes, time series on the distribution of holdings and farmland are needed, which has been possible in three countries: Egypt, Iran, and Jordan. See Figures 2, 3, and 4.

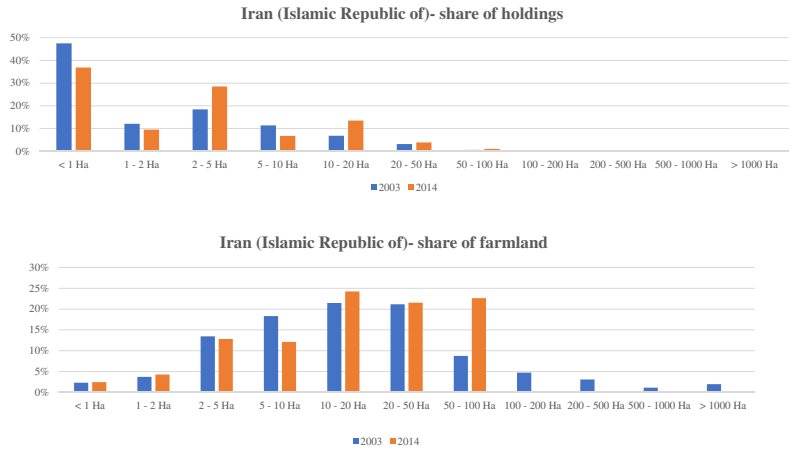
Egypt experienced an intense process of liberalization that started in the mid-1990s and involved the implementation of structural transformation plans under the influence of international institutions (Clément 2000). Figure 2 shows that Egyptian farms are typically owned by

Figure 2
Share of Holding and Agricultural Areas in Egypt in 1999–2000 and 2010



Source: Government of Egypt, the Arab Republic of (2002, 2012).

Figure 3
Share of Holding and Agricultural Areas in Iran in 2003 and 2014

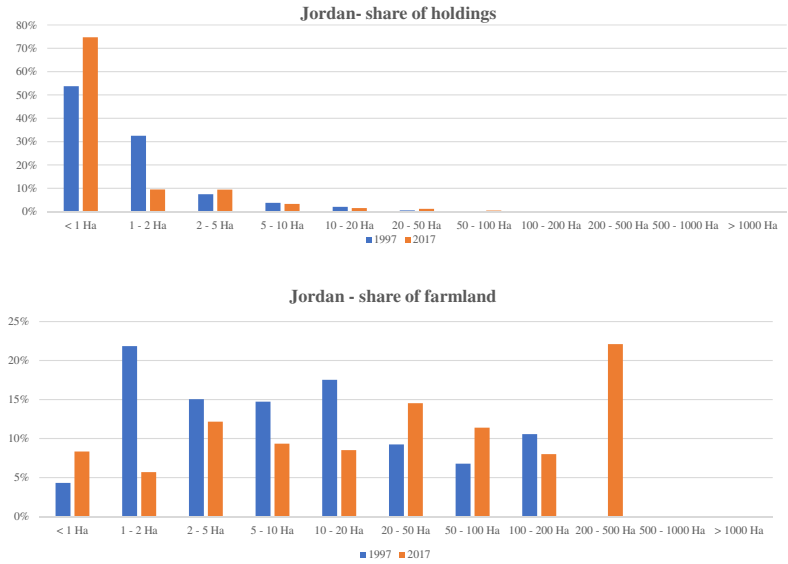


Source: FAO (2010, 2019).

smallholders. A U-shaped trend can be observed in the changes that happened between the periods considered. A structural change began in the distribution of holdings, marked by a slight decline in the share of farms smaller than 2 hectares and a slight consolidation process in farms larger than 2 hectares. More importantly, the share of farmland by land size also changed in the other medium- and large-land-size classes. Ownership became more concentrated.

Agricultural censuses of the Islamic Republic of Iran (2003 and 2014) reveal key changes in the share of holding by land class. Figure 3 shows a sharp reduction of the share of holdings in small farms (less than 2 hectares), an increasing share in the category of 5 to 10 hectares, a reduction in the 10 to 20 hectare class, and an increase in the categories that follow. In the farmland distribution, there are slight changes in the smallholder categories, with some signals of a consolidation process in the upper-middle-size categories of 10 hectares and more. Iranian data thus show a process of slow structural transformation in the agricultural sectors.

Figure 4
Share of Holdings and Agricultural Areas in Jordan in 1997 and 2017



Source: Government of Jordan (2007, 2017).

The Jordanian agricultural system is particularly interesting. Although a large part of the territory is not arable, the country exports agricultural products and is integrated into international markets. Data reveal that Jordan has experienced structural changes in the distribution of holdings and farmland: an increasing share of smallholder units but an increase in the category of upper-middle holdings from 20 to 50 hectares and the introduction of large-scale farms. This probably reveals the influence of international market-oriented farms. Liberalization and international integration seem to have caused changes in the agricultural-export-oriented sector.

In the MENA countries as a whole, however, little structural change has occurred, even though agriculture is still a major sector in some countries, notably in highly populated countries. How can it be explained?

Geography Matters

Part of the explanation for the absence of structural change in MENA countries has to do with the specific constraints that the region experiences. Those constraints help explain the lack of structural change in the agriculture sector and especially low agricultural productivity.

The first issue deals with the nature of land. This issue is obviously "natural" when one is reminded of the geography of the MENA region. It has also an economic and sociological dimension. Less than 5 percent of land is arable in two-thirds of the countries of the region, while many countries (Saudi Arabia, Lebanon, Tunisia, Morocco, Yemen, Mauritania, and Syria) have huge desert pastures for livestock grazing. Of all the land in the area, one-third is agricultural land (cropland and pastures) of which only 5 percent is arable (OECD/FAO 2018: 70). In addition, about 40 percent of the cultivated land requires intense irrigation. Cultivable soils are of very poor quality, mainly due to salinization, which is caused by irrigation practices, erosion, and climatic conditions. Land productivity is generally low compared to other regions, although MENA productivity is higher for fruits than for cereals. In addition, Egypt and Jordan have higher productivity than the MENA average.

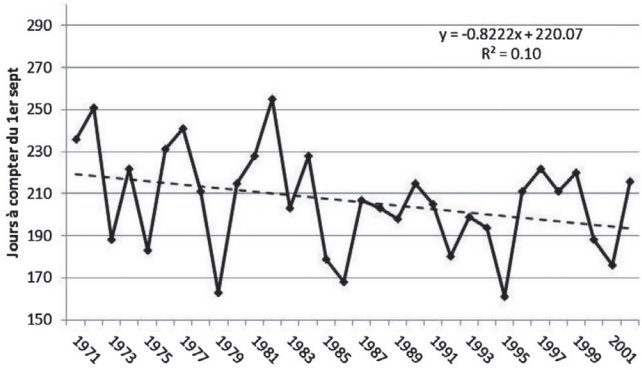
The second issue is related to the water drama in the region. The MENA countries suffer from an enormous level of hydraulic stress, the highest in the world according to several studies. Only Iran, Iraq, and Mauritania exceed the threshold for renewable water resources of 1,000 m^3 per capita per annum (OECD/FAO 2018). (One cubic meter of water is 1,000 liters.) Total water productivity—GDP or other aggregate measure of production per unit of water used—in MENA countries is estimated to be half the world average (OECD/FAO 2018: 74; World Bank 2018: xxxiv). The low agricultural productivity of water is highly problematic, given the extremely arid conditions of the region. According to Al-Otaibi (2015), the average annual per capita availability of renewable water resources in the region is only 1,200 cubic meters, roughly one-sixth the world average of 7,000 cubic meters. Thus, MENA countries have far less water to use for irrigation than in less arid regions.

The Middle East and North Africa thus suffer from extreme natural constraints (Traboulsi 2014). The Near East is characterized by a transitional Mediterranean climate, with low rainfall, the level of which deteriorates as it goes east, and south, with a gradual transition to desert. The MENA region is also located in proximity to the great deserts of Arabia and Africa (the Sahara). The rainy season occurs from October to May, with 50 percent of annual rainfall in the winter (December to February). The climate is also spatially variable, both in terms of temperature and precipitation, due to geography (altitude, latitude, and continentality). Annual rainfall varies between 800 mm on the northern coast of the Near East to 1,800 mm on the peaks of Mount Lebanon; there is less than 50 mm in the Negev and on the edge of the Arabian Desert. The MENA region loses a lot of moisture to evaporation during the summer drought; it peaks in spring and autumn. The rainy areas are located in the land area close to the Black Sea in the north of Turkey, in the land close to the Caspian Sea in Iran, in the costal lands of South Turkey, Syria, Lebanon, and Palestine, in the lands of West South Sudan, and in the Ethiopian highlands (Shahin 1999).

Agriculture is the principal water consumer in the region. Al-Otaibi (2015) indicates that 85 percent of water is consumed by agriculture. In many countries, the supply of water does not come from natural sources but from desalination plants. Al-Otaibi (2015) estimates that the Middle East and North Africa produce more than 75 percent of the global volume of desalinated water: 70 percent for the Gulf countries (Saudi Arabia, Kuwait, Qatar, Bahrain, and United Arab Emirates) and 6 percent for Libya and Algeria.

The situation is not expected to improve in the future because of the growing climatic constraints. The main expected trends point toward warming and increasing aridity of the zone. The International Panel on Climate Change estimates a temperature increase of more than 2 °C by the end of the 21st century, a rainfall decrease to 24 percent of the present level in the most optimistic scenario, and an increase in the number of high-heat episodes (Traboulsi 2014). Figure 5 shows for the Middle East the end dates of the rainy season (number

Figure 5
End Dates of the Rainy Season in the Middle East, 1970–2002
(number of days after September 1)



Source: Traboulsi (2014). Reprinted with permission.

of days after September 1) between 1970–1971 and 2001–2002, as calculated by Traboulsi (2014).

Institutions Are Essential

This section examines the institutional features that might help to explain the difficulty of an agricultural transition in the MENA countries. In the case of structural change in agriculture, key institutions are property rights, land tenure, and the kind of ownership it involves.[9] Accordingly, we have opted for the standard approach in agricultural economics, inspired by original institutional economics. We offer a structural approach to land distribution based on ownership.

The "new" institutional economics proposes that development failures in the MENA countries are due to inefficient institutions inherited from Islam.[10] Those traditional institutions are described as preventing the emergence of a modern and efficient institutional matrix in this region, particularly the establishment of private property rights (Kuran 2011).[11] The prohibition of usury (*riba*) in Islam is theorized

to have a constricting effect on the development of a financial system. Polygamy is thought to pose problems in the distribution of inherited estates, causing land fragmentation. Religious donations (*waqf*), including land donations, have been said to prevent the emergence of a strong state that would ensure the production of public or semi-public goods. The central message is that Islamic law constitutes an obstacle to the development of the MENA countries, insofar as it favors collective institutions and prevents the development of private property. Critics of the Islamic tradition claim that it involves collective ownership of land rather than private ownership.

One obvious implication of that mainstream vision is that it is difficult, even impossible, to analyze land ownership without a concise presentation of the Islamic land tenure system. The reader can refer to John Rae (2002) for a detailed presentation of land tenure in an Islamic context. See also Ben Hounet et al. (2011). Another consequence is that a measure of land ownership, of its distribution among farmers, would be, if not impossible, useless. Cobham and Zouache (2021b) have shown that this culturalist conception of property rights in MENA countries has no theoretical or historical foundations.[12]

Using FAO data, we will, first of all, prove how mistaken this literature is by showing that the system of private property is the rule in Arab countries. We will see, through a set of case studies, that the problem lies rather in the complexity of the land legislation resulting from colonial and post-colonial history. "Islamic and customary law" seems to have favored fragmentation in land holding. It was followed by the colonial presence and, in turn, by post-colonial agrarian revolutions. Finally, the liberalization process of the 1980s aimed at privatizing property rights. The result of that evolutionary process was a property system marked by a legislative *millefeuille* (layer cake), making property rights in land uncertain and insecure.

Land and Private Property in the Middle East and North Africa

Land tenure is a complex topic in the region because of a lack of accurate legal information on the MENA countries. What should be emphasized, in our view, is that private property has gradually become the rule in MENA land tenure systems.

Table 5

Land Property System in Selected MENA Countries Based on Agricultural Census Data

Countries	Census year	Civil Persons		Others[a]	
		Share in number of holdings %	Share in area of holdings %	Share in number of holdings %	Share in area of holdings %
Egypt	1999/2000	99.9	94.2	0.1	5.8
Egypt	2009/2010	99.9	93.3	0.1	6.7
Iran, Islamic Republic of	2003	99.1	…	0.9	…
Morocco	1996	…	75.8	…	24.2
Qatar	2000/2001	99.1	…	0.9	…
Saudi Arabia	1999	99.6	91.3	0.4	8.7
Tunisia	2004	99.9	93.2	0.1	6.8
Yemen	2002	…	87.8	…	12.2

[a]Others include juridical persons like corporation, cooperatives, and government, as well as partnerships (formal or informal) of individuals or households.

Sources: FAO (1997, 2010, 2018b, 2019), Government of Egypt, the Arab Republic of (2002, 2012), and Government of Tunisia (2007).

Table 5 shows land tenure information in seven countries. We have examined the legal status of agricultural land, and the result is that private property is the main way of recording land tenure in the MENA countries. Most agricultural landowners are private farmers regardless of the country. When we look at land distribution, farmland area is still 90 to 95 percent owned by civil/private owners, compared to 99 percent of the holdings. Morocco and Yemen are peculiar cases. The presence of different property and tenure systems as well as the role of other players in the Moroccan agricultural sector, notably the government, and of more traditional tenure systems in Yemen might explain the reported data. The only country for which we have time series is Egypt, where we can observe a slight concentration process towards other types of property systems that are not civil or private. In this country, an increasing share of farmland is owned and managed under other property systems and by actors other than private/family farmers.

Colonial Legacies and the Legislative Millefeuille[13]

We have examined several case studies of MENA countries. Differences and peculiarities exist. However, in general, property rights in land are not secure or stable, and they do not encourage individuals to register. On the contrary, land legislation is complex and unstable. It is confusing because it appears to be a compilation of laws that resulted from three key moments: a colonial legacy based on continued use of colonial laws, a post-colonial moment when several countries declared that agrarian revolutions would lead to true national sovereignty, and the liberalization processes of the 1980s and the 1990s. Land tenures in MENA countries have been influenced by the colonial powers, mainly France, Italy, and the United Kingdom. They expropriated the best land from indigenous people to redistribute to settlers. They seized land either brutally by force or through a legal system that justified the transfer of land from private persons or collective institutions to the state, which, at times, consisted of the army or an administration under the control of the *metropole*. At independence, the emerging nations did not automatically reverse colonial land seizures. The newly independent states also took control of land by means of

nationalization, socialization, or legislation. This was done with the intention of redistributing land to other parts of the population, either to rural residents, in case of agrarian revolution, or to the post-colonial elite. Consider the following examples in MENA countries.[14]

Bouderbala (1999) speaks of complex pluralist systems in North Africa characterized, in the case of Morocco, by the coexistence of minor Islamic or even pre-Islamic practices with the legacy of the institutional framework built during the colonial period. In Morocco, Bouderbala (1999) finds a context of insecure property rights in land, which often leads to insufficient registration, damaging effects on investment, and limitations on the possibility of financing by credit. Ben Hounet et al. (2011) also defend the idea that the analysis of property and its transmission in the Muslim context must depart from a culturalist approach to law. They show, in the Algerian and Sudanese cases, the role of local anthropological dynamics and the weight of the colonial heritage. In Sudan, the 1990 land reform law did not end the British colonial principle that treats non-registered land as state land. In Algeria, the French, after the confiscation of lands, organized land tenures that eventually established the 1897 land tenure system (Bouvier 1898). The Algerian revolution had the objective of redistributing land to the Algerians, but post-colonial legislation suggested the return to former owners of land that was abandoned by French settlers; this process was put under the control of the *walis*, the local representative of the state (Belhimer 2015). Property was collective, not because of the persistence of an Islamic law, but because of the socialist nature of the independent nation. The agrarian revolution, enacted under a 1971 ordinance, gave the possibility of transferring the land to 90,000 peasants (Belhimer 2015). The 1971 law also provided a framework for private property. In the recent period, and especially after the IMF structural adjustment program, the 1996 constitution and the resulting land tenure legislation established private property as the foundation of land tenure in Algeria. But private property in Algeria is confined to the relation between the redistributive state and the entrepreneurial bourgeoisie (Belhimer 2015). Ben Hounet et al. (2011: 4) also assert that the succession of colonial and decolonization land laws has greatly complicated the institutional outline of land ownership. The

insecure nature of property rights in land has a disincentive effect on innovation in the agricultural-production sector, as shown in the case of potato farmers in Algeria (Bouzid et al. (2020).

Leservoisier (1994) defends the thesis that colonization had a significant and often underestimated impact on land ownership in Mauritania. Colonization influenced Mauritanian institutions in various ways: land confiscation and redistribution, local population dynamics, so-called ethnic conflicts, water management, and the *rempeccen*, a system of contracts that allows sharecroppers to keep half of the harvest and thus to share it between the peasant and the landowner. Leservoisier (1994) argues that this institution of the Senegal River Valley appeared during the colonization period.

Local actors in Sudan and Algeria call on local, national, and international legislation to access and legitimize their land rights. Indeed, in a case studied by ElHadary and Obeng-Odoom (2011), the authors found a trend in Africa to secure land tenure, which facilitates the access to credit. However, they also found land grabbing in Ghana and North Sudan, made possible by weak states and by a legislative *millefeuille* that has arisen from overlapping and contradictory forms of regulation.

In Egypt, the land tenure system depended on British rule rather than Islamic law in colonial times. The Egyptian monarchy, under British control, interacted with a parliament composed of many big landowners. A mere 2,145 relatively large landowners (more than 84 hectares per owner) owned 35 percent of the cultivated land, the rest being shared among 2,574,035 small owners (Pissot 1958: 33). The 1952 agrarian reform aimed to redistribute land in order to destroy the political basis of the old regime. That led to a fragmentation of agricultural lands. (The same process occurred in Iraq with the 1958 agrarian reform that aimed to destroy the influence of "imperialist big land owners" [Ishow 1987: 114].)

Private property became the basis for land registration in most nations after independence (Sims 2016). The main issue seems to be not the persistence of Islamic land tenure systems but rather the development of semi-informal or informal land tenure systems (Sims 2016). A recent study (Diab 2020) confirms that Egyptian citizens prefer to

avoid registering property due to the complex legal requirements that are involved. As a result, agricultural land cannot be used as collateral for bank loans for investment and modernization.

In the Middle East, colonialism also explains uncertain and complex property rights in land. Syria and Lebanon still use French legislation for the registration of real estate (Diab 2020). Lebanon still utilizes for agriculture the Ottoman Law on Cultivation and Watering of 1900 and other articles of the Code of Obligations and Contracts of 1932 (Diab 2020). In Iraq, land legislation is a mixture of Ottoman laws, British Mandate laws, revolutionary resolutions, and parliamentary laws and regulations. The distinctive character of land legislation in Iraq would therefore be a fragmentation of the legal framework over time (Diab 2020).

Likewise, land fragmentation in Iran could be explained, at first, by the Islamic law of partible inheritance (dividing land into smaller parcels at death), but the 1962–1971 land reform also had a great impact on the structure of land ownership. Social and economic factors, a social distributive structure, and the lack of a land market also explain the Iranian land tenure system (Barati et al. 2021).

Policy Discussion and Conclusion

The MENA region has not experienced a transformation in the agricultural sector that would provide one key element of a structural transformation and promote industrialization. Why? This article does not aim to offer a singular response. We have rather chosen to offer two main explanatory paths that open the route to other research on agriculture in the MENA region.

First, we have shown that the MENA region suffers from structural constraints: scarcity of arable land, an arid climate, and low agricultural productivity in countries where a large part of the population works in agriculture without contributing much to the GDP. Second, we have established that the institutional land structure in MENA countries has not radically changed. The lack of evolution of land tenure is not due to the domination of a traditional culture, inhibited by Islamic laws and customs. On the contrary, since independence, MENA countries have adopted land tenure systems based on private

property, and the collective dimension has come from the state, which controls the rules of land possession and distribution. Farms are still characterized by smallholders who do not use hired labor. Turkey seems to be an exception. Fragmented ownership and small farm units remain a big problem; they constrain productivity growth in agriculture. One main institutional blockage is the slowness of the evolution of landholding systems toward consolidation of ownership, a problem that can be explained by colonial and post-colonial legacies in the MENA countries. Consolidation is occurring in some countries, such as Iran, Jordan, and Algeria, but the evolution is very slow. The agricultural sector faces an insecure, complex, and unstable institutional context relating to land tenure. Those features of tenure stifle the consolidation process.

Since MENA political actors are haunted by concerns about food security, food sovereignty, and political stability, they have not adopted agricultural policies that would respond to these structural weaknesses (Obeng-Odoom 2011). They prefer commercial policies and social programs that prevent widespread hunger from being transformed into political uprisings. To put it in simple words: in the MENA region, *land is not friendly, but it is also badly exploited*.

MENA agricultural policies are an essential part of the post-colonial state-led development strategy. In particular, in formerly socialist Arab states, namely, Egypt, Algeria, Sudan, Yemen, Syria, and Iraq, a main challenge was to modify the national production system to facilitate the transfer of land from the landed bourgeoisie to the revolutionary peasant and rural populations (on Algeria, [Bessaoud 1980]; on Egypt, [Abdel-Malek1962]). MENA states also intervened directly in the commercialization of cereals, oil, and sugar and provided support to farmers and agro-industries (FAO 2018a: 30). Despite the policy reforms in the 1980s and 1990s, the MENA countries still strongly support the agricultural sector via two kinds of policies: first, standard protectionist policies (guaranteed prices, import tariffs) that seek to lower domestic prices and to increase import prices and, second, social policies that aim to provide the essential needs of the population (water, bread, oil, sugar, wheat, and energy products). These policies should also be interpreted politically, since their purpose is to avoid hunger riots that

could endanger political stability. Thus, they are basic components of the MENA welfare state (Malik and Awadallah 2013).

MENA agricultural policies are inappropriate for different reasons. The first policy problem is the inconsistency between subsidy policies and the availability of land and water. Despite water scarcity, the region has the lowest water prices in the world and spends massive resources on water subsidies (about 2 percent of GDP). While fruits and vegetables consume less water and provide higher economic returns, about 60 percent of cultivated land remains in water-consuming cereals. This situation persists even though most countries in the region have a comparative advantage in the export of fruits and vegetables. A key reason for the seeming inconsistency between policy and water scarcity is political—the concern for both food security and food sovereignty involves reducing dependence on imports, particularly cereals.

The second problem area involves the cost of social programs in MENA countries that are mainly composed of energy and food subsidies and that impose a fiscal burden (Sdralevich et al. 2014). Countries in the region spend 5.7 percent of their GDP on subsidies, compared with 1.7 percent in the Global South (Ramadan 2019). There are differences between countries. Food subsidies are less costly than electricity and fuel subsidies: in 2011, in nine MENA countries, food subsidies represented less than 1 percent of GDP, but more than 2 percent in Egypt, Syria, and Iraq (Sdralevich et al. 2014: 12). Gulf countries spend less on food subsidies than North African and Levant countries (Syria, Iraq, Lebanon). According to Sdralevich et al. (2014: 18), food subsidies are better targeted than energy subsidies and thus have a better social impact by benefiting the poor than fuel subsidies, which, in addition to aggravating distribution problems, tend to institutionalize ecologically destructive development. Food subsidies diminish undernourishment and the prevalence of anemia among children under five years old (Ramadan 2019). They also benefit the middle class and the rich population (OECD/FAO 2018).

More research is needed on agricultural issues in the MENA region. There are many dimensions of this topic that we have not explored in this article. We do not consider the social composition of

the farming unit, in terms of both gender contribution and women's access to farmland. We do not adequately address inequality issues that are crucial in the political economy of development, according to Harrison (1983) and Obeng-Odoom (2020). The relationships between agriculture, land, and the formation and persistence of political power need to be addressed. For example, in a special issue of a journal introduced by Baduel (1987), two authors directly consider how political power distorts agriculture. Ishow (1987) points out the role of the state, which is motivated by political and ideological factors, in the disequilibrium of agrarian structures in Iraq. Swearingen (1987: 53) shows how "agrarian issues in Morocco have their roots in the colonial past." Further work is needed to integrate these elements in our analysis. Finally, our results are very dependent on the available data. Local, regional, and national surveys and case studies are absolutely needed in order to appreciate the heterogeneous features of the MENA countries that make each of them distinctive. We hope that our contribution might inspire both authors and state officials to develop the data and models needed for a richer understanding of the MENA region.

Acknowledgments

We thank two anonymous referees whose reports helped us substantially improve the previous version. We also thank the participants in the Webinar/Seminar on the *Economies of the Muslim World* (Economix/CRESPPA) that occurred November 27, 2020. The authors remain responsible for remaining errors and weaknesses.

Notes

1. The definition of the Middle East and North Africa differs between institutions, and research on MENA countries depends on data availability. We adapt the World Bank's classification, which includes Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, West Bank and Gaza, and Yemen, to which we add Turkey. We also include in the global overview members of the Arab League (Mauritania, Comoros, Djibouti, Somalia) (World Bank 2021a).

2. The reference to these authors means not only that we pay tribute to their contributions but also that the observations they made are still valid, despite the failed industrialist strategies of MENA countries, especially in Egypt, Iraq, and Algeria (Corm 2014).

3. Our article does not deal with the financial dimension of land. Indeed, as Haila (1988) shows, land is a financial asset, the management of which has consequences for the structural transformation of societies, and particularly in the spatial relation of economic activities.

4. International institutions focus on the role of agrarian systems in world agriculture. According to the United Nations, globally, 500 million family farms represent 40 percent of the working population and 80 percent of food production (FAO/IFAD 2019).

5. Our analysis is highly dependent on the definition we adopt of possession and ownership, which is related to the use of FAO data, the main source of information in the region. Following the FAO (2015), we use the terms agricultural holding and farm interchangeably. Thus, landed property refers to a wide range of tenure types, including agricultural holdings, that here refer to farm ownership. Indeed, according to FAO (2015), the agricultural holder is the person who makes strategic decisions regarding the use of the farm resources and who bears all risks associated with the farm. Agricultural holdings and agricultural area reported by the censuses generally include crop and livestock production. Communal lands are generally not included in the agricultural census. The exclusion of forests and communal lands means that the farm sizes are smaller than they would be were forests and communal lands included, especially in countries where these forms of ownership are present.

6. A consolidation process in agricultural economics is the process of enlargement of land holdings due to acquisition of others' land or other merging processes. It generally refers, as in our case, to the increasing number of middle-sized holdings, which is generally reflected in a larger share of land that is owned by farmers of this class size.

7. Family farms are here defined on a country-specific basis, so that country-specific size limitations are considered.

8. FAO has promoted the Program for the World Census of Agriculture (WCA) since 1950 by providing governments with guidance on standard methodology and contents for their agricultural census. Agricultural holdings and agricultural area reported by the census include only crop and livestock production.

9. Daoudi and Colin (2017: 2) note that the term "property rights," in particular when applied to land, refers to a bundle of several rights (rights of use, rights to gain from this use, fallow rights, investment rights, rental rights, sale rights, and administration rights). The right of private property corresponds to the case where an individual (actor) owns the whole bundle.

Talahite (2019) also addresses the nature of property rights. Since Alchian (1965), property rights refer to the use of resources in a society. A system of property rights is seen as a method of assigning to particular individuals the authority to select any use from a non-prohibited class of uses (Alchian 1965: 818). One major contribution of Haila (2008) is to highlight the political aspect of property rights, especially in the politics of creating and distributing development rights and use rights.

10. On institutionalism, see Zouache (2014). New institutional economics attempts to explain institutional factors, such as property rights and organizational rules, that were considered as given in standard neoclassical economics (Rutherford 2003). New institutional economics contains a biased assumption that institutions will be stable only if they are based on a narrow, individualistic view of self-interest, thereby denying the possibility that institutions may be effective if they are based on socially embedded practices of cooperation.

11. See Cobham and Zouache (2021b) for a comparative analysis of development in the Arab countries by Islamic economics and mainstream institutionalism.

12. Other arguments can be employed. For instance, the distinction between collective and private goods in the Quran does not hold in a period of conflict. Thus, private property was transferred to the collective management (*habous*) in Algeria to avoid expropriation. Likewise, in Kabylia, an Algerian region, land was confiscated relatively less because it was considered less fertile, but after the revolt of 1871, the confiscation of land around Kabyle villages was used as a punishment by the colonial authorities.

13. A *millefeuille* is a French cake made of several thin layers of pastry sheets.

14. We have focused on the agricultural countries, and they are located in the Levant and in North Africa.

References

Abdel-Malek, Anouar. (1962). "La Question Agraire en Egypte et la Réforme de 1952." *Tiers Monde* 3(9–10): 181–216.

Alchian, Armen Albert. (1965). "Some Economics of Property Rights." *Il Politico* 30(4): 816–829.

Al-Hussami, Fares, and Hélène François. (2018). *Making Global Value Chains More Inclusive in the MED Region: The Role of MNE-SME Linkages*. Prepared for the Workshop "Business Linkages in the MED Region: Policies and Tools." Beirut: Lebanon, April 17–18.

Al-Otaibi, Ghanimah. (2015). "By the Numbers: Facts About Water Crisis in the Arab World." *Arab Voices* March 19. Washington, DC: World Bank.

https://blogs.worldbank.org/fr/arabvoices/numbers-facts-about-water-crisis-arab-world

Amin, Samir. (1972). "Développement et Transformation Structurelle." *Tiers Monde* 13(51): 467–490.

Baduel, Pierre Robert, ed. (1987). "Monde Arabe. La Société, la Terre, le Pouvoir." *Revue de l'Occident Musulman et de la Méditerranée* 45(1).

Barati, Ali Akbar, Hossein Azadi, and Jürgen Scheffran. (2021). "Agricultural Land Fragmentation in Iran: Applications of Game Theory." *Land Use Policy* 100.

Belhimer, Ammar. (2015). "Land Tenure and Capital Property in Algeria." *L'Année du Maghreb* 13: 17–37.

Ben Hounet, Yazid, Barbara Casciarri, Baudoin Dupret, François Ireton, and Alice Wilson. (2011). "Pratiques de l'Appropriation Foncière en Contexte Musulman." *Transcontinentales* 10(11): 1–14.

Bessaoud, Omar. (1980). "La Révolution Agraire en Algérie: Continuité et Rupture dans le Processus de Transformations Agraires." *Tiers Monde* 21(83): 605–626.

Bosc, Pierre Marie, and Jean François Bélière. (2015). "Transformations Agricoles: Un Point de Vue Renouvelé par une Mise en Perspective d'Approches Macro et Microéconomiques." *Cahiers Agricoles* 24(4): 206–214.

Bouderbala, Negib. (1999). "Les Systèmes de Propriété Foncière au Maghreb. Le cas du Maroc." *Cahiers Options Méditerranéennes* 36: 47–66.

Bouvier, Emile. (1898). "La Propriété Foncière en Algérie. D'après la Loi du 16 février 1897." *Revue d'Economie Politique* 8–9: 711–733.

Bouzid, Amel, Karima Boudedja, Foued Cheriet, Mehdi Bouchetara, and Ahmed Mellal. (2020). "Facteurs influençant l'Adoption de l'Innovation en Agriculture en Algérie. Cas de Deux Cultures Stratégiques: le Blé Dur et la Pomme de Terre." *Cahiers Agriculture* 29(15): 1–10.

Chang, Ha-Joon. (2009). "Rethinking Public Policy in Agriculture." In *Lessons from Distant and Recent History*. Rome: FAO.

Clément, Françoise. (2000). "Libéralisation Economique et Nouvelles Configurations de l'Emploi en Egypte." *Tiers Monde* 41(163): 669–691.

Cobham, David, and Abdallah Zouache. (2021a). "The Arab Spring, and After: Economic Features and Policy Challenges." In *Handbook of the Middle East Economy*. Ed. H. Hakimian. London: Routledge.

_____. (2021b). "Islam and Economic Development." In *Handbook of the Middle East Economy*. Ed. H. Hakimian. London: Routledge.

Corm, Georges. (2014). "L'Influence Ottomane dans les Structures Socio-Economiques des Pays Arabes et leur Mode de Développement." *Anatoli* 5: 217–232.

Courleux, Frédéric, Marie Sophie Dedieu, Alexis Grangean, and Anne Sophie Wepierre. (2017). "Agriculture Familiale en France Métropolitaine.

Eléments de Définition et Quantification." *Economie Rurale* 357–358: 87–99.

Daoudi, Ali, and Jean-Philippe Colin. (2017). "Construction et Transfert de la Propriété Foncière dans la Nouvelle Agriculture Steppique et Saharienne en Algérie." In *Propriété et Société en Algérie Contemporaine. Quelles Approches?* Institut de Recherche et d'Etudes sur le Monde Arabe et Musulman. France: Aix-Marseille.

Diab, Razi. (2020). "Land Legislation in the Middle East and the Need for Modernization Serving the Needs of Lebanon and other Middle Eastern Countries." *Webinar Towards a Post Graduate Program in Land Governance*, pp. 34–39. Beirut: Lebanon.

ElHadary, Yasin Abdalla, and Franklin Obeng-Odoom. (2011). "Conventions, Changes, and Contradictions in Land Governance in Africa: The Story of Land Grabbing in North Sudan and Ghana." *Africa Today* 59(2): 59–78.

Food and Agriculture Organization of the United Nations (FAO). (1997). *World Programme for the Census of Agriculture 1990: Main Results and Metadata by Country (1986–1995)*. Rome: FAO. http://www.fao.org/world-census-agriculture/wcarounds/wca1990/main-results/en/ and http://www.fao.org/3/w6778e/w6778e.pdf

_____. (2010). *2000 World Census of Agriculture: Main Results and Metadata by Country (1996–2005)*. Rome: FAO. http://www.fao.org/3/i1595e/i1595e00.htm

_____. (2014). *The State of Food and Agriculture in the World 2014: Innovation in Family Farming*. Rome: FAO.

_____. (2015). *World Programme for the Census of Agriculture 2020: Volume 1: Programme, Concepts and Definitions*. FAO Statistical Development Series 15. Rome: FAO.

_____. (2017). *The State of Food and Agriculture 2017: Leveraging Food Systems for Inclusive Transformation*. Rome: FAO. http://www.fao.org/state-of-food-agriculture/2017/en/

_____ (2018a). *Agriculture and Economic Transformation in the Middle East and North Africa*. Food Policy Report. Rome: IFPRI/FAO.

_____. (2018b). *World Programme for the Census of Agriculture 2020: Volume 2: Operational Guidelines*. FAO Statistical Development Series 16. Rome: FAO.

_____. (2019). *World Programme for the Census of Agriculture 2010: Main Results and Metadata by Country (2006–2015)*. Rome: FAO. http://www.fao.org/3/ca6956en/ca6956en.pdf

Food and Agriculture Organization of the United Nations and International Fund for Agriculture and Development (FAO/IFAD). (2019). *United Nations Decade of Family Farming 2019–2028. Global Action Plan*. Rome: FAO. http://www.fao.org/3/ca4672en/ca4672en.pdf

Government of Algeria. (2004). *Agricultural Census Report 2002, Detailed Results*. Algiers: Department of Agriculture and Statistics.

Government of Egypt, the Arab Republic of. (1992). *Eighth Agricultural Census 1990*. Cairo: Department of Agricultural Economics.

_____. (2002). *Eighth Agricultural Census 2000*. Cairo: Department of Agricultural Economics.

_____. (2012). *Eighth Agricultural Census 2009–2010*. Cairo: Department of Agricultural Economics.

Government of Iraq. (2016). *Eighth Agricultural Census 2014–2015*. Baghdad: Department of Agricultural Economics.

Government of Jordan. (1996). *Agricultural Census 1996. Provisional Tables*. Amman: Department of Statistics.

_____. (2007). *Agricultural Census 2007. Provisional Tables*. Amman: Department of Statistics.

_____. (2017). *Agricultural Census 2017*. Amman, Department of Statistics: Provisional Tables.

Government of Lebanon. (2012). *Résultats Globaux du Module de Base du Recensement de l'Agriculture 2010*. Beirut: Ministry of Agriculture.

Government of Saudi Arabia, the Kingdom of. (2006). *Detailed Results of the Agricultural Census*. Riyadh: General Authority for Statistics.

_____. (2016). *Detailed Results of the Agricultural Census*. Riyadh: General Authority for Statistics.

Government of Tunisia. (2007). *Agricultural Census Report: Detailed Results*. Tunis: Department of Agriculture and Statistics.

Graeub, Benjamin Ernst, Michael Jahi Chappell, Hannah Wittman, Samuel Ledermann, Rachel Bezner Kerr, and Barbara Gemmill-Herren. (2016). "The State of Family Farms in the World." *World Development* 87: 1–15.

Haila, Anne. (1988). "Land as a Financial Asset: The Theory of Urban Rent as a Mirror of Economic Transformation." *Antipode* 20(2): 79–101.

_____. (2008). "From Annankatu to Antinkatu: Contracts, Development Rights and Partnerships in Kamppi, Helsinki." *International Journal of Urban and Regional Research* 32(4): 804–814.

Harrison, Fred. (1983). *The Power in the Land: An Inquiry into Unemployment, the Profit Crisis and Land Speculation*. London: Shepheard-Walwyn Publishers.

Ishow, Habib. (1987). "Etat et Paysannerie en Irak." *Revue de l'Occident Musulman et de la Méditerranée* 45: 113–126.

Kuran, Timur. (2011). *The Long Divergence. How Islamic Law Held Back the Middle East*. Princeton: Princeton University Press.

Leservoisier, Olivier. (1994). "L'Evolution Foncière de la Rive Droite du Fleuve Sénégal sous la Colonisation (Mauritanie)." *Cahiers d'Etudes Africaines* 34(133–135): 55–83.

Lewis, Arthur. (1954a). "Economic Development with Unlimited Supplies of Labour." *Manchester School* 22(2): 139–191.

_____. (1954b). "Thoughts on Land Settlement." *Journal of Agricultural Economics* 11(1): 3–19.

Lowder, Sarah K., Jakob Skoet, and Terri Raney. (2016). "The Number, Size, and Distribution of Farms, Smallholder Farms, and Family Farms Worldwide." *World Development* 87: 16–29.

Lowder, Sarah, Marco Vinicio Sánchez, and Rafaelle Bertini. (2019). *Farms, Family Farms, Farmland Distribution, and Farm Labour: What Else Do We Know Today?* FAO Agricultural Development Economics Working Paper 19-08. Rome: FAO.

Malik, Adeel, and Bassam Awadallah. (2013). "The Economics of the Arab Spring." *World Development* 45: 296–313.

Obeng-Odoom, Franklin. (2011). "Review of 'Food Security in Africa and Asia: Strategies for Small-Scale Agricultural Development'." *African Review of Economics and Finance* 3(1): 80–81.

_____. (2020). *Property, Institutions and Social Stratification in Africa*. Cambridge, UK: Cambridge University Press.

Organization for Economic Cooperation and Development and the Food and Agriculture Organization of the United Nations (OECD/FAO). (2018). "The Middle East and North Africa: Prospects and Challenges." In *Agricultural Outlook 2018–2027*. Chapter 2: 67–107. Rome and Paris: OECD/FAO. http://www.fao.org/3/i9166e/i9166e_Chapter2.pdf

Pissot, Paul (1958). "La Réforme Agraire en Egypte." *Economie Rurale* 38: 33–38.

Rae, John. (2002). *An Overview of Land Tenure in the Near East Region*. Rome: FAO.

Ramadan, Racha. (2019). "How to Protect the Poor Food Insecure in the MENA Region?" *Topics in Middle Eastern and African Economies* 21(1): 50–67. https://ecommons.luc.edu/cgi/viewcontent.cgi?article=1274&context=meea

Ross, Michael, Kai Kaiser, and Nimah Mazaheri. (2011). *The Resource Curse in MENA? Political Transitions, Resource Wealth, Economic Shocks, and Conflict Risks*. Policy Research Working Paper WPS 5742. Washington, DC: World Bank.

Rutherford, Michaël. (2003). "Institutional Economics: Then and Now." *Journal of Economic Perspectives* 15(3): 173–194.

Sdralevich, Carlo, Randa Sab, Younes Zouhar, and Giorgia Albertin. (2014). *Subsidy Reform in the Middle East and North Africa*. Washington, DC: International Monetary Fund.

Shahin, Mamdouh. (1999). "Ressources Hydriques et Modification du Climat au Moyen-Orient." *Bulletin de la Société Géographique de Liège* 37(2): 75–90.

Sims, David. (2016). "Securing Land Tenure in Egypt: Who Needs Registered Titles?" *Metropolitics* 14: 1–6.

Swearingen, Will Davis. (1987). "Terre, Politique et Pouvoir au Maroc." *Revue de l'Occident Musulman et de la Méditerranée* 45: 41–54.

Syrquin, Moshe. (1988). "Patterns of Structural Change." In *Handbook of Development Economics, Volume 1*. Eds. Hollis Chenery and T. N. Srinivasan, pp. 203–273. Amsterdam, Netherlands: North Holland Publishing.

Talahite, Fatiha. (2019). "Industrialisation de l'Algérie. L'obstacle des Droits de Propriété." *Afrique Contemporaine* 266: 131–150.

Timmer, Charles Peter. (1988). "The Agricultural Transformation." In *Handbook of Development Economics, Volume 1*. Eds. Hollis Chenery and T. N. Srinivasan, pp. 203–273. Amsterdam, Netherlands: North Holland Publishing.

Traboulsi, Myriam. (2014). "Le Réchauffement Climatique au Proche Orient: une Evolution Inquiétante?" *ArchéOrient-Le Blog* (Hypothèses.org). http://archeorient.hypotheses.org/3411

World Bank. (2018). *Beyond Scarcity: Water Security in the Middle East and North Africa*. MENA Development Report. Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/27659

_____. (2021a). "World Bank Country and Lending Groups." *Data Help Desk*. Washington, DC: World Bank. https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

_____. (2021b). *World Development Indicators*. Washington DC: World Bank. https://databank.worldbank.org/source/world-development-indicators

Zouache, Abdallah. (2014). "De la Question Coloniale chez les Anciens et Néo-Institutionnalistes." *Revue d'Economie Politique* 124(1): 129–149.