



Food and Agriculture  
Organization of the  
United Nations



# ARE IRAQI DISPLACED FARMERS RETURNING TO AGRICULTURE?



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by

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# Abbreviations and acronyms

DTM	displacement tracking matrix
FAO	Food and Agriculture Organization of the United Nations
GDP	gross domestic product
HH	household
IDP	internally displace person
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
IOM	International Organization for Migration
ISIL	Islamic State in Iraq and Levant
UN	United Nations
WFP	World Food Programme



# Abstract

The Islamic State of Iraq and the Levant (ISIL) occupation of large portions of Iraq in 2014 worsened economic, environmental and security conditions. In 2017, the Government of Iraq declared that ISIL was defeated. However, despite increased numbers of returnees since 2018, the return process has slowed down especially among the households who were involved in farming before 2014. This study aims to answer the following questions: 1) Why have many farming families not yet returned to their areas of origin despite the defeat of ISIL two years ago? 2) Why have some of the farming families who have returned not yet resumed farming? 3) Why have some of those who have resumed agriculture farming intensively i.e. growing only part of their farmland area? In answering these questions the study relies on data collected in January 2020 from 774 households who were farming before 2014 but were subsequently displaced due to the conflict. The study also draws from data and information on the same households from a longitudinal study that targeted 3 383 households since 2016.

Descriptive statistic techniques and econometric estimation are used to analyse the data. Results indicate slow rates of return of farming households to areas of origin, and also indicate a declining contribution of agriculture to households' incomes. Massive destruction of farm assets and lack of access to productive assets and finance are hindering household returns and the resumption of agricultural livelihoods. The regression results indicate that financial constraints, access to property and security concerns are the key factors differentiating displaced farming households who have returned from those who have not. Furthermore, among returned households, access to agricultural land, liquidity

constraints and interest in agriculture seem to be the four most important factors influencing the decision whether to resume agriculture or not. Finally, among those who resumed farming, the availability of surface irrigation in the farm and the age of the household head appear to be the two most important factors associated with the proportion of farmland allocated to cropping. Young farmers seem to have a lower propensity to intensify farming, probably due to less experience or lower interest in farming.

These results imply that restoring security and reconstructing agricultural assets and infrastructure are pressing requirements for farmers to resume their agricultural activities. Policies should give attention to the range of difficulties that farming households face, including giving high priority to public investments in agriculture and improving access to credit and financial services. Enabling the development of non-farm rural economy must also accompany agriculture rehabilitation. Reconstructing rural services and investing in off-farm employment generation can foster income diversification and improve rural living conditions especially when implemented in tandem with social safety nets to increase food security of both returned and displaced households .







# 1. Introduction and purpose of the study

Iraq has been suffering from a protracted crisis driven by conflicts that started with the American occupation in 2003. More recently (in 2014), the Islamic State of Iraq and the Levant (ISIL) occupation of a large portion of the country has caused huge destruction and human displacement. In 2015, 11 million of the country's population of 36 million lived in conflict-affected areas (UNOCHA, 2019), with 6.7 million requiring humanitarian assistance. As of October 2020, nearly 1.3 million people remain displaced within Iraq. This number does account for Iraqi citizens who left the country due to the conflict (IOM DTM, October 2020), over half of whom have been displaced for more than three years, with the prospect of protracted displacement particularly for those living in camps.

The conflict has worsened the already existing adverse economic, environmental and security conditions through massive destruction of infrastructure and economic activities including the agricultural sector. As a result, Iraq has become more dependent on costly food imports from international markets putting huge pressure on the country's national budget. According to a recent study, the gross damage incurred in the seven directly affected governorates (Anbar, Babel, Baghdad, Diyala, Kirkuk, Ninevah and Salaheddin) totals USD 45.7 billion, of which USD 2.1 billion was incurred in the agriculture sector (World Bank, 2018).

Agriculture is very important for the Iraqi economy. While its contribution to GDP is small (2-4 percent), it is a major source of livelihoods and employment for the rural population who account for 30 percent of the country's population. Nearly 87 percent of rural households were engaged in agricultural production and related activities prior to the crisis (FAO, 2017). However, the damage and losses incurred within the sector are threatening the prospects of agriculture as a source of income and livelihoods for the rural population in the conflict-affected areas.

In addition to causing massive damage and losses the crisis has multiplied the fiscal burden on the government budget making public investment in agriculture very challenging as the government has been providing huge levels of assistance to internally displaced persons (IDPs). However, the country's past history could provide some indications of the possible consequences of not addressing the needs of the agricultural sector in a timely manner. In the Kurdistan Region of Iraq (KRI), the neglect of agriculture has led rural populations to abandon farms and migrate to cities in search of jobs, though low-skilled they offer more regular income. Recently, however, diminished opportunities in other sectors, coupled with some investments in agriculture, have induced rural households to remain engaged in agriculture and encouraged those who abandoned farming to return (RFSAN, 2016).

Findings from a recent study on ISIL crisis, suggests that displaced populations who were previously farming face challenges in resuming their agricultural livelihoods. They tend to rely more on off-farm sources of income as income from agriculture is either absent or not reliable enough to sustain their needs (IOM, 2019d). In an effort to assist the Iraqi Government in addressing the challenges currently faced by the displaced farming population in their return to farming, the International Organization on Migration (IOM) and the Food and Agriculture Organization of the United Nations (FAO) have agreed to collaborate on a joint study to identify the needs of displaced population and strategies for restarting agricultural production in conflict-affected rural areas. The study aims to 1) Identify the role that agriculture plays as a source of livelihood for IDPs and returnees; 2) Understand the drivers, constraints and challenges confronted by displaced and returnee households regarding return to areas of origin and resumption of farming; and 3) Investigate how best to rehabilitate the agricultural sector to create opportunities for resilient and robust agricultural livelihoods for returnees and prospective returnees.

This joint effort falls within a broader ambition of the Iraqi Government to address the challenges associated with the displacement crisis. To respond to the current humanitarian needs of IDPs, the government has taken important actions including a Plan for Relief, Shelter, and Stabilization of Displaced People; the Reconstruction and Development Framework; and a Strategy for the Reduction of Poverty 2018—2022, which aims to reduce the national poverty rate — including for IDPs — by at least 25 percent (IPI, 2018). The government has also dedicated a special institution, the Ministry of Migration and Displacement, as a cross-cutting body to support displaced populations in Iraq by collaborating and coordinating with other relevant institutions in the country such as

the Ministry of Planning and the Ministry of Agriculture.

The Iraqi Government's political will and the policies it has developed to assist IDPs and address the major challenges they face are promising and it has made important steps toward implementing the 2030 Agenda for Sustainable Development. However, the country faces enormous financial challenges to translate these policies into action. The World Bank estimates that Iraq will require USD 88 billion for reconstruction over a period of ten years (World Bank, 2018). In addition, the current crisis of COVID-19 and the sharp decline in oil prices have further complicated and constrained government efforts in responding adequately to the needs of returnee and displaced households. This highlights the importance of prioritization of funding and investments which should be based on evidence and inclusive participatory approaches. This study hopes to inform policy makers on identifying durable solutions for the displaced population previously involved in agriculture, especially for those who have returned to their areas of origin or are willing to return.

The study relies on analysing primary data on households who were involved in farming before 2014 and originating from the directly affected governorates by the ISIL crisis, namely: Anbar, Babel, Baghdad, Diyala, Kirkuk, Ninevah and Salaheddin. In 2014, these households were displaced to one of the following four governorates: Baghdad, Basra, Kirkuk, and Sulaymaniyah. After the defeat of ISIL some of them returned to their areas of origin. The majority, however, has not. In addition, initial evidence has shown that among those who have returned there has been slow or no resumption of farming. Therefore, the study has posed the following questions:

Firstly, given the defeat of ISIL why have



many farming families not yet returned to areas of origin? Secondly, for those who have returned, how have their livelihood systems changed? Why have some not yet resumed farming? Why are others only farming only part of their land?

These questions are analysed considering the overall challenges and constraints facing agricultural and rural development in the country using secondary data and evidence from literature.

The rest of the report is organized as follows: Section 2 provides a sectoral review on Iraqi agriculture and the main trends and challenges related to displacement. Section 3 describes the data and provides brief descriptive statistics. Section 4 presents the methodology of analysis and discusses the main results, while section 5 concludes with a summary of main findings and a few policy implications and recommendations.



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## 2. Agriculture and displacement in Iraq: an overview of recent developments

### 2.1 Overall macro challenges: economy-wide overview

The double shock of ISIL and decreasing oil prices has severely reduced growth, diverted resources away from productive investments and increased poverty and unemployment. Investments remain constrained due to fragile security, political instability and a poor business environment (IFAD, 2017).

Oil extraction is the most important sector of the economy. In 2015, oil accounted for 99 percent of exports and over 90 percent of government revenue (World Bank, 2017), while in 2019 it accounted for 55.8 percent of Iraq's GDP (World Bank, 2020). The services sector comes second in terms of contribution to the GDP making 42.2 percent of it in 2019. Recent data on agriculture contribution to GDP shows a declining trend, from 4.9 percent in 2014 to only 2 percent in 2019, indicating that ISIL conflict has reduced agriculture contribution to the economy by half.

A recent study by the World Bank estimated the real GDP to have grown by 0.6 percent in 2018 due to improvement in security conditions and increased oil prices. It also expected growth to accelerate across the three sectors with

agriculture being the fastest. On average, the study estimated that agriculture real GDP growth rate would be at 5.8 percent during 2019—2021, compared to 4.4 percent for industry and 4.6 percent for services (World Bank, 2019). However, it is very likely that these projected growth rates would not be achieved given the economic contraction associated with COVID-19 and the decline in oil prices.

The Iraqi population has steadily grown at a rate of almost 2.8 percent, reaching 39.3 million in 2018. It is predominantly urban with the rural population accounting for almost 30 percent (UNDESA, 2019). This fast population growth creates increasing pressure on resources including agriculture which is creating major challenges in feeding the country's population. The country is currently significantly dependent on imports to meet the growing demands for food. The highly subsidized "food baskets" provided by the Public Distribution System (PDS) has been an essential policy measure to ensure food security. However, dependency on imports for food has had a negative impact on the local grain market with consequent depressing effects on producer prices and on agricultural sector investments (World Bank and FAO, 2012). The International Monetary Fund (IMF) estimates that direct subsidies of food,

electricity and fuels amount to approximately 9 percent of Iraq's GDP (Gunter, 2018).

Most recent estimates of unemployment indicate an increasing trend from 8 percent in 2012 to 10.6 percent in 2014 to reach 13 percent in 2017 (World Bank, 2020). A World Bank source also indicates that underemployment is high reaching 17 percent in 2017-2018. According to a study by WFP, the unemployment rate in Iraq was at 10.8 percent nationally (8.5 percent of males and 22.2 percent of females) in 2015-2016. Unemployment used to be more concentrated in rural areas but the massive rural-urban displacement has reversed the shares. In 2016 unemployment became higher in urban areas with 11.5 percent compared to 8.8 percent in rural areas. In both cases, unemployment is highest among the IDPs and was estimated to be 15.7 percent and 16.5 percent in urban and rural areas respectively. Youth (15—24 years) unemployment is also very high and recorded at 34.6 percent (WFP, 2016).

The multidimensional poverty in Iraq is estimated at 35 percent, with IDPs, refugees, and Iraqi youth suffering disproportionately from a lack of access to basic services and jobs (Tull, 2018). Indeed the crisis has impacted poverty and caused a significant deterioration post 2014. Furthermore, poverty is higher among rural households which account for 50 percent of Iraq's rural population. Low agricultural productivity, limited rural non-farm opportunities and low-quality and limited rural services are major drivers of rural poverty.

The poverty rate (measured by monetary national poverty line) was expected to decline from 19 percent in 2012 to 15 percent in 2014, but instead the rate increased to approximately 23 percent. It rose in the Kurdistan region from 3.5 percent to 12.5 percent predominantly due to large waves of displacement. In 2014, the poverty rate nearly doubled to 41.2 percent (compared with 25.7 percent in 2012) in governorates occupied by ISIL (World Bank, 2019). Although the direct impact of ISIL was limited in the rest

of Iraq, poverty increased in all governorates, especially in the South where it got substantially high, to more than 30 percent in 2014 due to the economic crisis associated with the conflict. Per capita consumption expenditures declined by 40 percent in the occupied governorates, compared with a 15 percent decline in the rest of Iraq in 2014 to 2015. Furthermore, the poverty rate among displaced persons rose from 23 percent to 38 percent — this is almost twice the rate for the rest of the population (MoP, World Bank and UN, 2018).

Nearly 8.3 million people needed some form of humanitarian assistance during 2018. It is estimated that about 60 percent of the total number of people in need are in conflict displacement and return areas across Al-Anbar, Diyala, Kirkuk, Ninevah and Salah Al-Den governorates. Of the 8.3 million people in need of humanitarian assistance across Iraq, 2 million people are estimated to be food insecure with the majority (77 percent) women, children and elderly, including female-headed households. Most returnees were found food insecure or at an elevated risk of becoming food insecure following the loss of their food reserves and various productive assets/resources through looting and/or damage during their displacement. In liberated areas, people continue to rely upon humanitarian assistance but markets have once again emerged as the main source of food (FAO, 2018; FAO and WFP, 2018).

## 2.2 A brief description of Iraq's agriculture: major challenges and constraints

Agriculture is very important for Iraq's economy as the sector is a major source of employment and livelihoods for the rural population. At the national level, it is the third largest provider of employment in the country, after the public services and

industry sectors, representing an average of 21.3 percent from 2000 to 2018. In addition, it is the major source of livelihoods for women, with female participation in the agriculture labour market rising steadily from 30 to 50 percent between 1980 and 2010. As of 2015, women's participation in the labour force reached 53 percent in 2015 (World Bank, 2018).

About 16 percent of Iraq's total area, about 7 million hectares, is classified as arable land of which about 5.9 million hectare is used for crops. Agricultural production in Iraq is produced under two major farming systems: rainfed and irrigated systems, with some supplemental irrigation in rainfed farming. About 64 percent of cultivated land is classified as irrigated. Most of the country's irrigated agriculture is found in the central and southern governorates and is dependent on the Tigris and Euphrates rivers for most of its water source. The total irrigated area is estimated at around 3.5 million hectares with all of it equipped for full or supplemental irrigation. The agriculture sector is the main consumer of water, amounting to 85 percent of Iraq's total water consumption (World Bank and FAO, 2012). Major irrigated crops in Iraq are wheat, barley, rice, dates, cotton, vegetables, fruits, legumes and alfalfa.

Agriculture is mostly practiced on small farming units that are privately owned by households but due to lack of adequate investments and incentives it is dominated by a low input–low output system. Although data is lacking on farm size in Iraq, various publications indicate that the sector suffers from land fragmentation as farms are small and mostly scattered over several different locations. Land fragmentation is hindering the agricultural sector's development, threatening the capacity of farmers to adopt high productivity technology and achieve scale. Weak agricultural extension

services are further hindering technology transfer, while lack of post-harvest facilities are leading to massive output losses. Farm yields are low by any comparative standard and due to liquidity constraints farmers minimize costs of land preparation, planting, weeding and harvesting (Lucani and Saade, 2012; IFAD, 2017; World Bank, 2018). Therefore, it is at no surprise that agricultural output reached minimal growth in the recent decades. For example, production of cereals grew by only 0.68 percent during the past five decades (1961-2017). Similarly, livestock population have shown little growth or declined over the last five decades. As data shows, the numbers of goats and sheep decreased while cattle population grew at a very low rate (0.1 percent) (FAO, 2020).

Public policies in the agricultural sector have been historically characterized by state control and subsidization of farm inputs (fertilizers, seeds, pesticides, farm equipment, and machinery) and of the prices of strategic crops (World Bank and FAO, 2012; Telleria, *et al.*, 2014; World Bank, 2018). The most important crop, wheat, has been the most controlled and the most affected by the lack of open markets. Access to credit is difficult outside government ad hoc subsidized credit programmes. Furthermore, the capacity for the provision of services to the sector has remarkably deteriorated over the past two decades. In addition, budget cuts have reduced the level of public services, resulting in the departure of skilled human resources in agriculture support services such as research, extension, animal health, artificial insemination, plant quarantine and disease control (IFAD, 2017).

Iraq is facing a serious water shortage problem which is expected to be more severe in the future due to climate change, inefficient irrigation practices and poorly maintained distribution system. Water scarcity is exacerbated by severe inefficiencies in irrigation where on-farm



water use efficiency is extremely low and estimated to be less than 20 percent with the dominant traditional gravity irrigation method (Cordesman, 2018). Further, approximately 75 percent of the country's water resources originate from outside the country. With no existing, well-established river basin agreements the country's water supply is at risk of annual fluctuations especially that the storage capacity of Iraq's major dams (constructed between the 1950s and 1980s) has deteriorated due to poor or lack of adequate maintenance (World Bank and FAO, 2012).

Salinity is the primary cause of degradation and desertification of irrigated areas in Iraq. Irrigated agriculture in the Mesopotamian plain has poor drainage and large stores of salt due to the deteriorating drainage infrastructure. Soil salinity is now more widespread and possibly more severe than any previous assessments indicated with virtually all areas affected by salinization. Declining water quantity and deteriorating quality have put almost 40 percent of historically irrigated agricultural areas out of production, while 70 percent of cropland is affected by high soil salinity, which significantly limits crop yields (Cordesman, 2018). Lowering crop yields due to poor drainage and soil salinity is widening the already wide yield gaps (Evans, *et al.*, 2013). Agricultural development in Iraq is also threatened by an alarming increase in the number of outbreaks of transboundary pests and diseases of plants and animals. These pests and diseases jeopardize food production and have broad economic, social, and environmental impacts. The risk of serious outbreaks is increasing as more people, animals, plants, and agricultural products move across international borders (FAO, 2017).

## 2.3 Extent of damage and losses in agriculture due to the ISIL crisis

The impact of conflict caused by ISIL on the agriculture sector has been devastating. It has caused huge population movements, destruction or damage to water systems, irrigation facilities, disruption of value chains, losses of farm and personal assets, crop and livestock production and food supplies (FAO, 2018). Although the losses and destructions occurred only in the seven governorates directly affected by the conflict, the impacts on national agriculture were considerable due to the high contributions of these governorates to the national level (see Box 1). For example, the ISIL crisis was estimated to have reduced Iraq's agricultural production capacity by 40 percent, as subsidies and input provisions have been disrupted and infrastructure and resources destroyed in ISIL-controlled areas.

Looting, and destruction of agricultural infrastructure (silos, storage facilities, pumps, irrigation systems, electrical transformers, machinery and greenhouses) in many areas have caused long-term damage to the sector, which may take years to recover. For example, damage to the irrigation infrastructure caused the share of farmers with access to irrigation to fall from 65 percent (prior to the crisis) to 20 percent. In Ninevah, ISIL looted and destroyed over 90 percent of pipes, sprinklers, water pumps and their channels, as well as blocking some of the wells. Other essential machinery and tools have either been looted or damaged with most farmers unable to repair or replace their equipment and tools (RFSAN, 2016).

According to an assessment by FAO, in the liberated areas of Kirkuk, Ninevah and Salaheddin, 70 to 80 percent of the cultivated areas with corn, wheat and barley were subject to damage or completely lost, while farmers' access to agricultural inputs has been severely affected. In Salaheddin, for example, farmers' access to seeds was reduced from 70–90 percent to 30–50 percent due to the crisis while their access to fertilizers declined from 90 percent to 20–30 percent. Similarly, access to credit declined considerably and in most districts went from 60–70 percent to 0–5 percent (FAO, 2016).

The livestock sector, which generated one-third of the total value of agricultural production prior to the crisis, also incurred major damage and

losses. The conflict has substantially limited the public provision of medicine, vaccines and other veterinary services. Engagement in fisheries and aquaculture, which is noticeably important in Babel, Baghdad and Salaheddin, has fallen by 50 to 75 percent. The conflict has also heavily restricted access to local markets which in some cases disappeared due to lack of security. In addition, a significant number of livestock was lost, dead or injured due to the conflict. On average, as much as three-quarters of cattle, sheep, goats and buffalo were lost with figures in some areas reaching as high as 85–9 percent (FAO, 2017).

#### Box1. Farming systems and agricultural importance of targeted governorates

The directly affected governorates (Anbar, Babel, Baghdad, Diyala, Kirkuk, Ninevah and Salaheddin) are very important for the food basket of Iraq. They include almost two thirds of the total cropped area of the country (68 percent in 2013). They have mixed production systems, with Ninevah being pre-dominantly rainfed with some supplemental irrigation, whereas the other governorates have both irrigated and rainfed farming systems. Only Salaheddin relied heavily on irrigations systems as it was home to 41 percent of privately owned wells in the country. As for the cropped area distribution, the majority is located in Ninevah, which included 32 percent of the total planted area of the country in 2013. These seven governorates are also the breadbasket of Iraq as they produced 72 percent of national wheat production in 2013, with nearly 27 percent produced in Ninevah governorate alone.

The seven governorates are also very important producers of barley, date palm and vegetables. Data from 2013 indicates that they produced 62 percent of barley but the bulk of barley production is in the Ninevah which produced 49 percent of Iraq total barley production in 2013.

The seven governorates also produced 54 percent of date palm production and they were home to 77 percent of total of vegetable greenhouses, 72 percent of the greenhouse growers, 80 percent of low tunnels of vegetable production, and 79 percent of low tunnel growers in 2013. Baghdad, Salaheddin and Anbar were home to the largest number of greenhouses (35 percent, 16 percent and 10 percent, respectively), while Salaheddin was the main home for the low tunnels, with nearly 44 percent of total low tunnels in Iraq, followed by Baghdad with 20 percent. Further, Diyala was an important producer of date palm being home to 18.5 percent of the total date palm trees and producing 13.7 percent of the total date production in Iraq.

These seven governorates are also important for livestock production as they were home to about 50 percent of cattle and sheep and at least 40 percent of goats and buffaloes. Aquaculture and fishing were also practiced in Baghdad, Babel and Salaheddin by about 20 percent of farmers. They mainly used ponds for fish farming, and to a lesser extent they would venture out on lakes and rivers to catch fish.

Source: Iraq Ministry of Agriculture. 2018. *Annual Statistical Data for Agricultural Activities*. Baghdad.

The World Bank (2018) has indicated that the ISIL conflict resulted in a total damage of USD2.1 billion in agriculture. This damage refers to the value of fixed assets such as machinery and greenhouses, as well as livestock assets (among others) which were destroyed or massively damaged in the conflict. Reconstruction would need around USD 2.4 billion from the public sector and USD 896 million from the private sector. The most pressing constraints and requirements of the agricultural sector are the restoring of farm machineries and other input delivery systems (access to roads, marketplaces, and irrigation systems) to allow farmers to resume their agricultural activities. Overall, the total sector recovery and reconstruction needs are estimated at USD 3.4 billion (World Bank, 2018). Ninevah has suffered the largest damage and loss, followed by Salaheddin (World Bank, 2018). The damage and losses in Diyala and Anbar came in the 3rd and 4th rank, respectively.

## 2.4 Displacement, return and recovery of agriculture

Iraq has amongst the highest numbers of IDPs in the world. Heavy fighting between ISIL and Iraqi security forces caused the forced displacement of over 6 million people in 2014 (about 6 percent of the country population). The conflict has negatively affected the livelihoods of millions of people and driven the country into a deep

humanitarian crisis (IPI, 2018). Overall, 92 percent of the IDPs are currently considered to be in protracted displacement (more than 3 years) with those living in camps more likely to face this problem (IOM Iraq, DTM round 119, Nov—Dec, 2020).

Anbar and Ninevah governorates are the major areas of origin of Iraqi IDPs. Most IDPs (59 percent) are displaced outside their governorates of origin, and 38 percent are displaced within their governorates of origin, with around 38 percent of all IDPs living in camps (IOM Iraq, DTM round 119, Nov—Dec, 2020). The Kurdistan Region of Iraq (KRI) and the governorates of Baghdad, Anbar and Ninevah have hosted large numbers of IDPs during the crisis (IOM, RWG and Social Inquiry, 2018).

According to IOM, IDPs started returning to their communities of origin around April-May 2015. More recently, IOM has reported an increased number of returnees. As of 31 December 2020, DTM identified 4 831 million returnees across 8 governorates, 38 districts and 2 121 locations (IOM Iraq, DTM round 119, Nov—Dec, 2020). As Figure 1 shows the trend of return accelerated in 2017, but then has slowed in 2018 and 2020.

Figure 1. Internally displaced persons and returnees as of December 2020



Source: IOM. 2020. *DTM Iraq Master List Report Round 119*. IOM. November-December 2020.

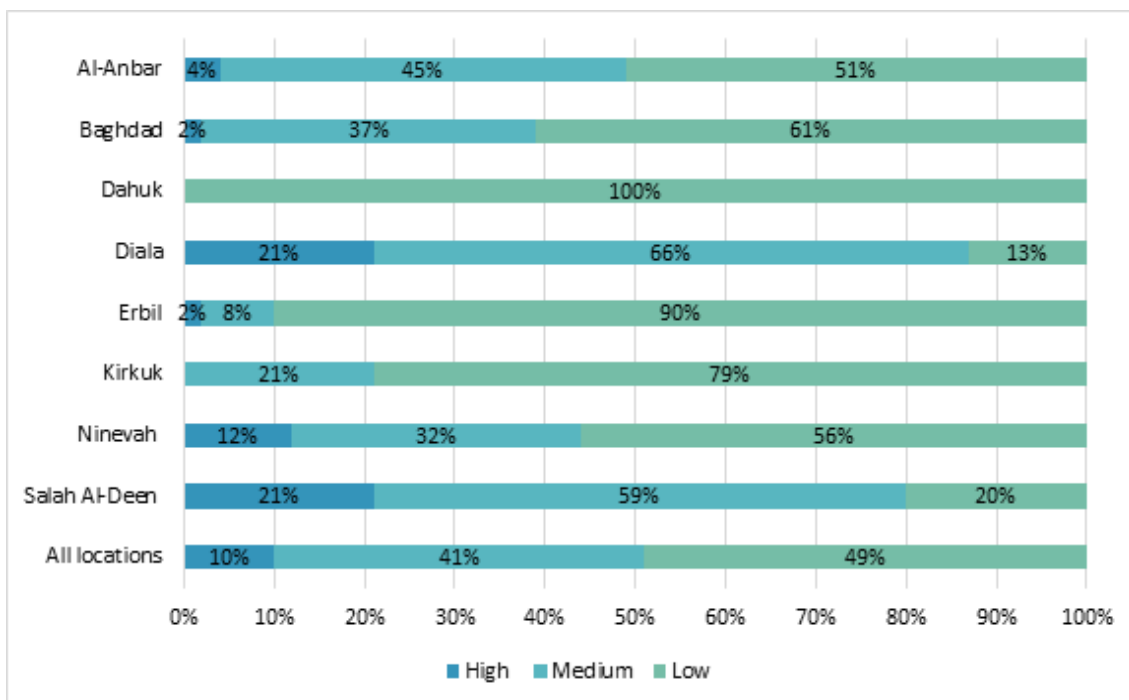
As of December 2020 (Figure 1), there were still almost 1.24 million people who were still internally displaced in Iraq. Although return trends continue, the slow rates may be an indication of a reluctance or impossibility of return by many households due to a combination of security and livelihood reasons. In addition to the damage and losses incurred by agriculture that were reported above, a recent study by IOM (2020) revealed substantial damage on small and medium enterprises as a result of the conflict between 2014 and 2017 (IOM, 2018b). About 75 percent of surveyed employers had frozen or stopped their business for reasons ranging from drop in demand, lack of security, lack of electricity, displacement, confiscation of property by ISIL and the inability to export goods and services.

This substantial damage means that life conditions in many areas of origin are still far

from normal. For example, IOM's Return Index indicates that of the assessed returnees living in areas of origin across 423 locations, 10 percent are living in conditions of high severity, although the severity level varies across locations (Figure 2). Ninevah and Salaheddin governorates host the highest number of returnees living in these conditions (235 302 and 143 682 respectively). Most of these returnees are found in three districts: Al-Ba'aj and Sinjar districts in Ninevah and Tooz District in Salaheddin (IOM DTM round 119, November-December 2020).



Figure 2. Severity index of returnees per governorate



Source: IOM Iraq, December 2020. *DTM Return Index. Round 11*. IOM.

If local conditions in areas of origin are not improved, returns may not be sustainable. Between March 2020 and December 2020, IOM DTM identified 310 locations where families had been re-displaced after having returned (IOM DTM & RWG, December 2020). The indicator explaining the most why locations experience re-displacement is the lack of appropriate housing due to destruction caused during the conflict. Other three indicators were important but had a lesser impact: 1) involuntary return as reported by some households, 2) lack of adequate security conditions and 3) tension in community driven by ethnic diversity. Lack of essential services and livelihoods had also an impact but was found to be low compared to the other factors (IOM DTM & RWG, December 2020).

Agriculture is a major source of livelihoods in rural areas, where most IDPs and returnees originate. However, findings from a study conducted by IOM and Georgetown University suggest that returnees who were previously farming face challenges in resuming their agricultural activities (IOM, 2019d). Data from IOM DTM Return Index as of December, 2020 (IOM, 2020), indicate that some returnees have restarted their agricultural activities but the extent and intensity of these activities have not yet returned to their pre-2014 levels (Table 1).

Table 1. Recovery of agricultural activities in conflict-affected areas in Iraq

Governorate and district	Return rate (%)	Recovery of agriculture
Anbar		
Al-Ka'im	92	Some activities have restarted, some remain inactive
Babel		
Al- Musayab	0	
Baghdad		
Mahmoudiya	82	Some activities have restarted, some remain inactive
Diyala		
Al-Khalis	90	Most activities have restarted, a small proportion remain inactive
Al-Mugdadiya	73	Some activities have restarted, some remain inactive
Khanaqin	77	Some activities have restarted, some remain inactive
Kirkuk		
Al-Hawiga	78	Some activities have restarted, some remain inactive
Daquq	74	Most activities have restarted, a small proportion remain inactive
Ninevah		
Al-Ba'aj	33	Some activities have restarted, some remain inactive
Al-Hamdaniya	88	Most activities have restarted, a small proportion remain inactive
Sinjar	35	Some activities have restarted, some remain inactive
Telafar	81	Most activities have restarted, a small proportion remain inactive
Tilkaif	90	Most activities have restarted, a small proportion remain inactive
Salaheddin		Most activities have restarted, a small proportion remain inactive
Al-Shirqat	95	Most activities have restarted, a small proportion remain inactive
Baiji	81	Most activities have restarted, a small proportion remain inactive
Balad	70	Most activities have restarted, a small proportion remain inactive
Samarra	87	Most activities have restarted, a small proportion remain inactive
Tikrit	90	Most activities have restarted, a small proportion remain inactive
Tooz	57	Some activities have restarted, some remain inactive

Source: IOM DTM, 2019. Reasons to Remain: An in-depth Analysis of the Main Districts of Origin. IOM-Iraq.

Note: districts of Falluja and Ramadi in Al-Anbar, Kirkuk and Mosul in Ninevah were not included in the table as agriculture was not practiced by residents of these districts before the crisis.









## 3. Data sources and findings of exploratory analysis

### 3.1 Brief description of data sources

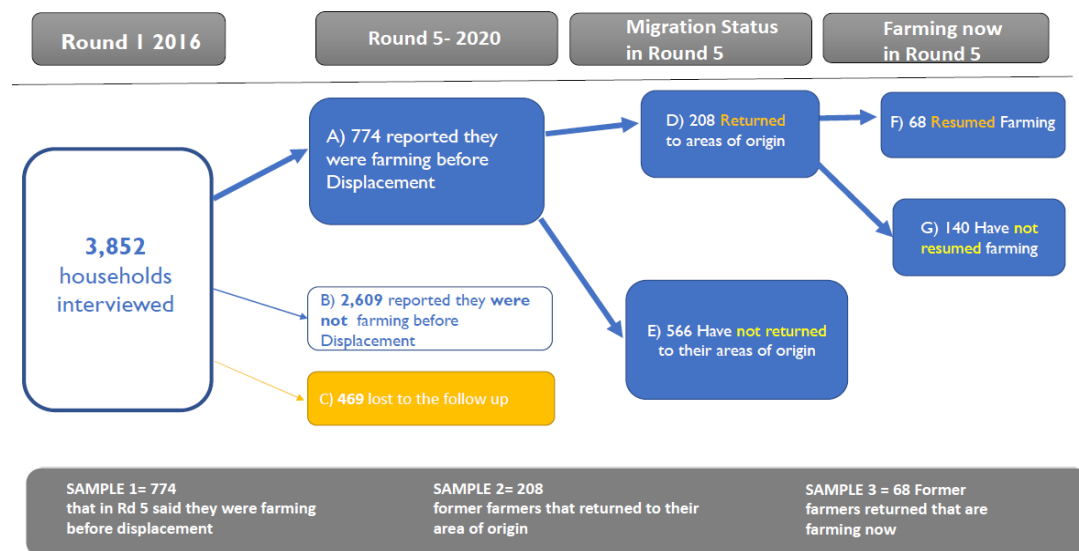
Georgetown University and the International Organization of Migration (IOM) have partnered to conduct a longitudinal study of 3 852 Iraqi households who were forcibly displaced by ISIL forces between January 2014 and December 2015. The study is aimed at assessing progress towards durable solutions of Iraqi IDPs as spelled in the IASC Framework for Durable Solutions (REF). The project collects both survey and qualitative interview data from these families. To determine the sampling frame, the longitudinal study relied on IDP stock estimates at the governorate level as reported routinely in IOM's Displacement Tracking Matrix (DTM), a system used to monitor and track the movement of IDPs. Specifically, DTM provided information on two geographic variables that were used in determining the sample frame: The Governorate of Displacement- the physical location to which households were displaced; and the Governorate of Origin- the physical location where households were living just prior to being displaced.

The IDP population density coupled with operational considerations guided the selection

of four governorates which received high numbers of displaced households, hosting nearly 34 percent of all displaced families in Iraq in 2016, where the survey was fielded: Baghdad, Basrah, Kirkuk, and Sulaymaniyah. Collectively, these four governorates of displacement were home to 180,495 Iraqi IDP families who came from one of seven governorates of origin: Anbar, Babel, Baghdad, Diyala, Kirkuk, Ninevah, and Salaheddin, and were displaced to one of the four governorates mentioned right above. The target sample was stratified by either governorate of displacement or governorate of origin.

In January 2016 Round 1 survey enumerators enrolled 3 852 randomly selected households in the study of whom 3 383 participated in Round 5 in November- December 2019. The survey tool in Round 5 included a module on agriculture. The questions in the agricultural module were designed to understand why IDPs who worked in agriculture before displacement have or have not (yet) resumed farming. In this exercise, our reference sample is composed of the households (HHs) who were farming prior to the 2014 crisis and amount to a total of 774 HHs out of the 3 383 households who participated in Round 5.

Figure 3. Evolution of farmer households' return to areas of origin and agriculture, 2016—2019



Source: Authors' elaboration of survey data.

Figure 4 presents the different groups that were considered in the data collection process in the context of a longitudinal study used in this report between rounds 1 and 5. The figure also mimics the three steps of the analysis that was described above and states the number of observations used in each step. In other words, we use the 774 sample (box A) to explore why some HHS returned to areas of origin while others have not; we use the 208 sample (box D) to analyse why some returned HHS resumed farming while other have not; and we use the 68 sample (box F) to understand why some HHS resumed farming fully while others adopted part-time farming.

### 3.2 Trends of the farming households: findings from the longitudinal study

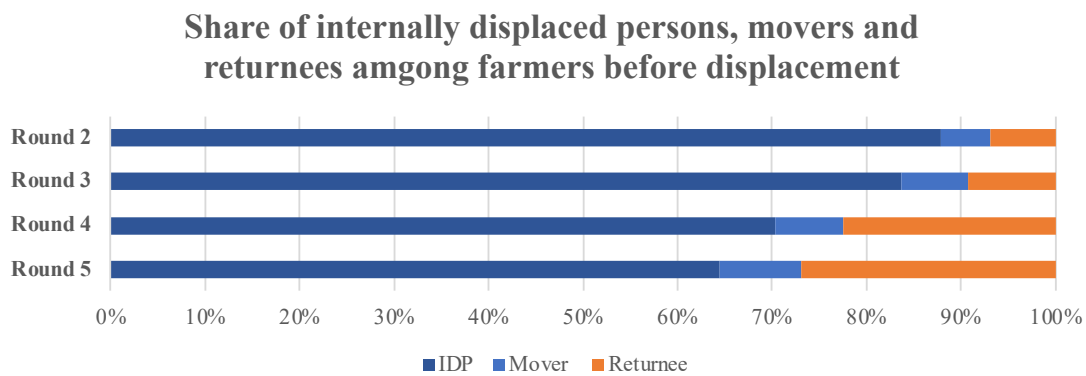
In this section we present and trends of the 774 farming households based on the data of the five rounds of the longitudinal study. The analysis aims at exploring their trends of return and how their livelihoods have evolved since return to areas of origin started in Round 2. The section also presents a cross-cutting picture of how returnees are distributed across governorates of origin in Round 5 and presents a brief description of the difficulties faced by returnee households in resuming their farming activities.

### Farming households have a slower rate of return compared to non-farming households

Using the data available from Rounds 2, 3, 4, and 5, Figure 4 tracks the evolution of the status of return to their areas of origin. The data recognises three categories: Displaced, movers and returnees. The category of movers is composed of displaced households who changed their displacement area at least once after the first displacement from areas of origin and therefore

they are a subset of displaced. As of Round 5, the percentage of farmers who returned to their areas of origin had increased to 27 percent (compared to only 7 percent in Round 2). However, this is lower than the share of returnees in the total sample (of 3383) where the share in Round 5 is 37 percent (compared to 12 percent in Round 2).

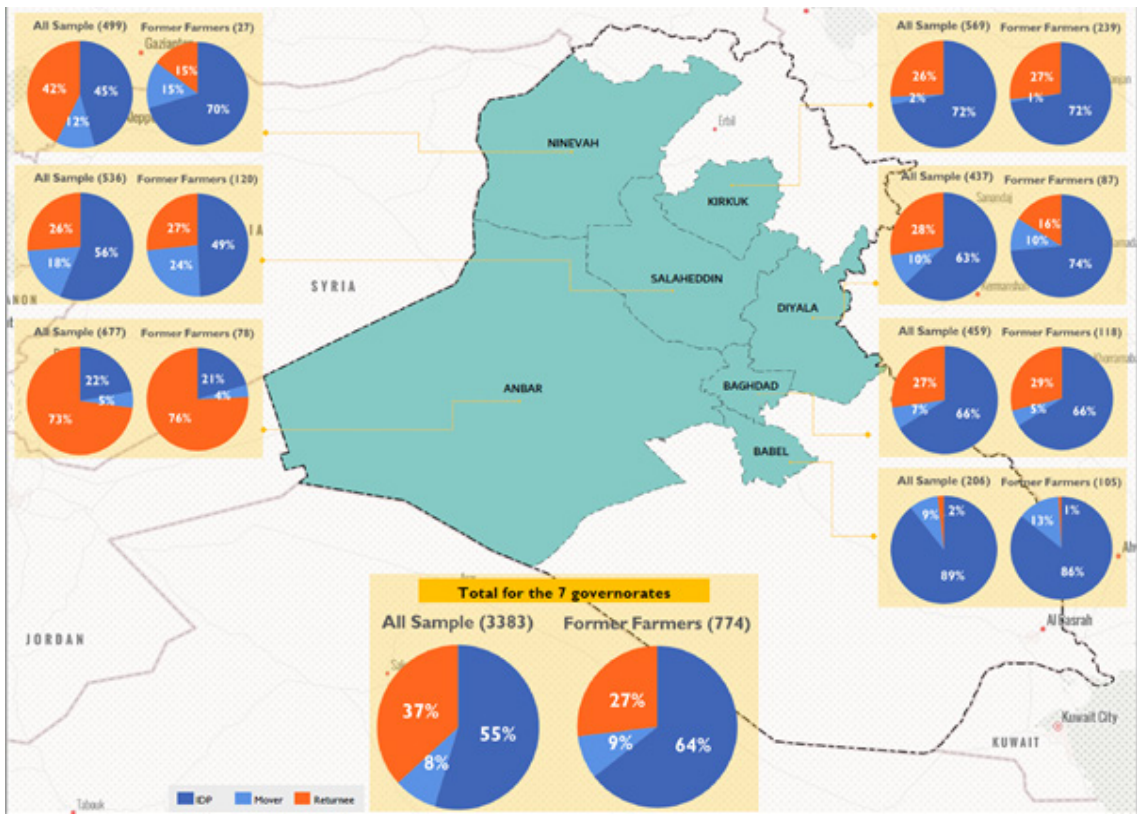
Figure 4. Evolution of internally displaced persons, movers and returnees' shares among farming households in the sample



Source: Authors' elaboration of survey data.



Figure 5. Snapshot of the status of internally displaced persons, movers and returnees among total and farming households in the sample based on Round 5



Source: Authors' elaboration of survey data.

Figure 5 provides a comprehensive picture of the situation of returns and displacement as it was in January 2020 (Round 5). It shows that the slower rate of return of farming households shown in Figure 4 is driven by differences in conditions across the areas of origin. When looking at the differences at the governorate level, although the differences in the return rates between the farming households and all households are statistically significant in all governorates except in Babel (where the return rate is very low), it is noted that only Ninevah and Diyala witness high differences with return rate of farming households being clearly lower. This is a clear indication that farming households in Ninevah and Diyala face more challenges in returning compared to non-farming households which indicates the importance of accounting for differences in local

conditions across areas of origin when analysing the determinants of return.

**Agriculture is declining as a major source of income for returned farmers** although its importance has been slowly recuperating. The analysed data shows that the share of households who depend on agriculture as a main source of income declined from 25 percent prior to the crisis, to 2 percent in 2019. This decline is in part driven by a lower rate of return to areas of origin by farming households compared to non-farming ones as we saw above.

This decline is also driven by constraints faced by returned farming households to resume their agricultural activities. In fact, the data indicates

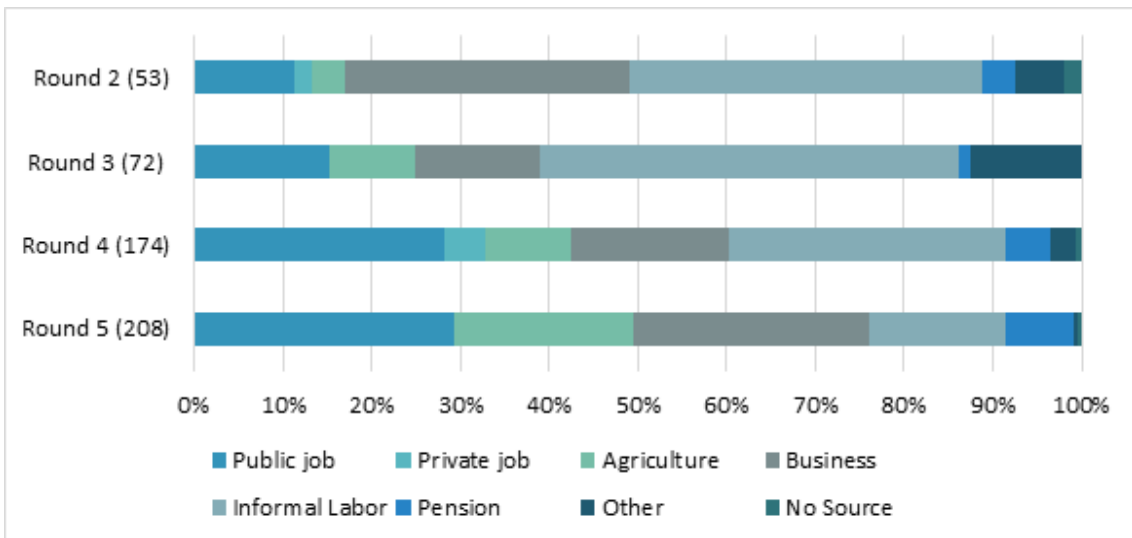
that many of farming households sought new sources of livelihoods while in displacement as well as upon return. Currently, informal labour, business, and public jobs are the three most important sources of income and cover more than 80 percent of their income.

households that returned to agriculture is still far below pre-displacement levels.

The data also indicates that while public jobs have become the primary source of income for many households after displacement, an increasing number of returned households indicate agriculture as their most important source of income. This observation, when coupled with decreased importance of informal labour and increased importance of business indicates a progressive improvement and stability in households' livelihoods when moving from Round 2 to Round 5.

Figure 6 illustrates how income sources of returned farming households evolved between Round two and Round 5 of data collection. It is based on reporting the main sources of income by economic activity and shows that public jobs, private businesses, agriculture, and informal labour are the four primary sources of income. Although the share of returned farming households with agriculture as the primary source of income has increased from nearly 4 percent in Round 2 (accounting for two households out of 53) to more than 20 percent in Round five (42 households out of 208), the number of

**Figure 6. Main economic activities of returned farming households**



Source: Authors' elaboration of survey data.

Note 1: Numbers of returnee households are indicated in parenthesis.

Note 2: Data for Round one on main economic activity are not presented due to limitations on the phrasing of the question

In Round 5 a question was asked to all farming households on the share of their income which had derived from agriculture (even when it is not the main source of income). Data shows that a total of 68 households (out of 208 returned households) have started resuming their farming activities/agricultural livelihood activities. These households reported that, on average, 50 percent of their income came from agriculture in the past 12 months. However, only 18 percent of these households earned 100 percent of their income from agriculture.

#### Returned farmers who resumed agriculture are not operating at full capacity.

Crop production was the major agricultural enterprise before displacement as was reported by 96 percent of returned farming families operating with an average farm size of 20.66 donums. Most of the farmers are small holders and operate on less than 10 donums. For returned farmers who farm on their owned land, more than 50 percent of them generate most (at least 80 percent) of their income from agriculture. For sharecroppers agriculture only partially contributes to the households' income.

Crop production was supported by adequate access to irrigation as 97 percent of returnees indicated that they had access to irrigation on their land before displacement. Surface irrigation was reported as the dominant source for most of the farmers (85.6 percent), while groundwater was the main source of irrigation for nearly 13 percent of the farmers. Wheat is the first most important crop produced by 77.5 percent of returned farmers, whereas barley was the second most important crop for nearly 37 percent of farmers. Other crops, such as maize, dates, grapes and others were of minor importance. As for livestock production, about 63.5 percent of returned farmers were involved in livestock production (cattle, sheep and goats, poultry) before displacement. The livestock production is concentrated in small farms (< 5 donums

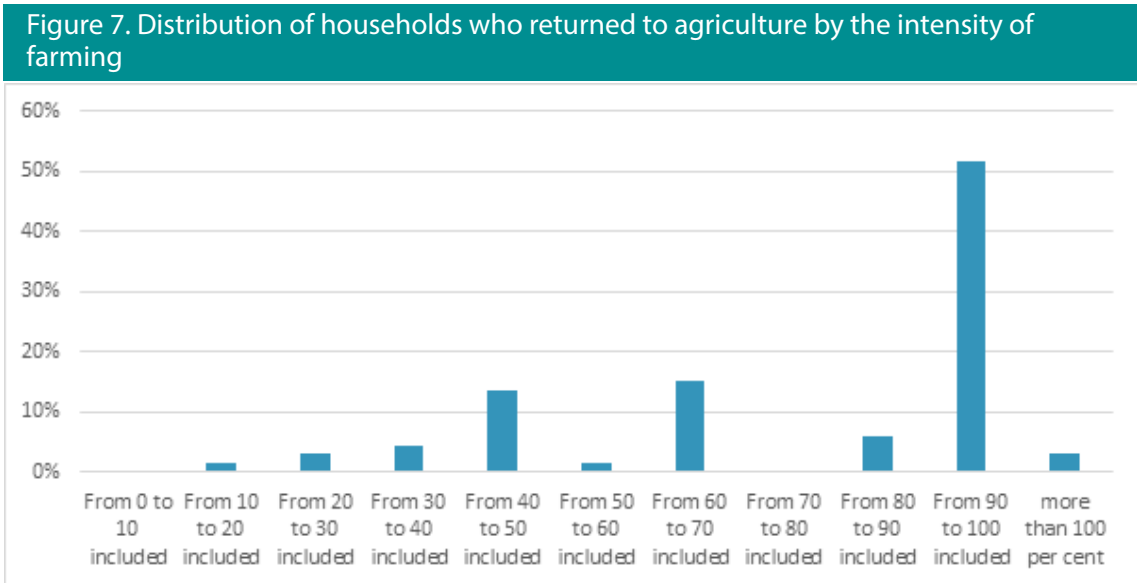
reflecting a livelihood diversification strategy to generate enough and more stable income.

Crop production was the main agricultural enterprise for all farmers who returned to agriculture after displacement. They operated on an average farm size of nearly 17 donums. More than one-half (57 percent) of the farmers have a small farm size of  $\leq 10$  donums. Most of the farmers (94.1 percent) had adequate access to irrigation after displacement, with surface water as the main source of irrigation for nearly 70 percent of the farmers. Groundwater is the main source of irrigation for 30 percent of the farmers who have returned to agriculture and have farmed their lands in the past 12 months. Wheat was the most important crop for nearly 71 percent of the farmers, followed by barley as the second most important crop for 9 percent of the farmers, grapes as the third with 7.35 percent of farmers and maize as the fourth at 4.41 percent of the farmers. For livestock production, less than one-half (44.12 percent) of the returned farmers were involved in livestock production with an average herd size of 10 heads of sheep and goats and 3 heads of cattle. The majority of the farmers, 55.88 percent, did not raise livestock and relied only on crops' production as their main agricultural enterprise. An important part of agricultural production, 57.7 percent, was sold in the local market (by 57 percent of farmers) and in the wholesale markets of the city (by 35 percent of farmers). On average, farmers travelled 28 km to sell their products in different markets.

To better understand the diversity of farmer households (HHs) who have returned to agriculture we analysed how intensive their farming has been thus far. To this effect, the share of cropped land in the last 12 months relative to total farmland (as a proxy for intensity of return to agriculture/intensity of farming) is drawn against the number of farmers in each percentile of the farming intensity (Figure 7). It shows how HHs are distributed in terms of the intensity of resuming farming and indicates a considerable diversity

as shown in Figure 8. However, two farming groups can be recognised. The first is the group of households operating at low capacity growing on up to only 70 percent of the farmland area. The second group is composed of households operating at full or almost full capacity growing on at least 80 percent of their farmland area. The figure shows that there are no households

operating within the range of 70 to 80 percent of the farmland area.



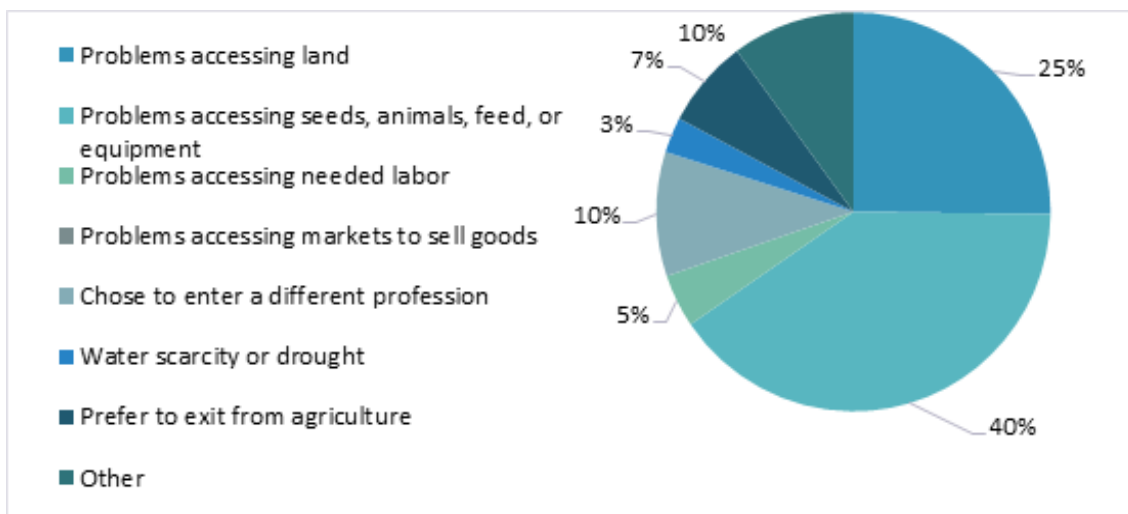
Source: Authors' elaboration of survey data.

### Challenges and constraints reported by farmers regarding resuming agriculture

In Round 5, returned households were asked directly why they did not resume their agricultural activities. As Figure 8 shows, lack of access to productive inputs (seeds, animals, feed or

equipment) was the major constraint reported by 40 percent of the households while a significant number of households (25 percent) stated they faced problems of accessing their land.

Figure 8. Reasons for not returning to agriculture for returned farming households



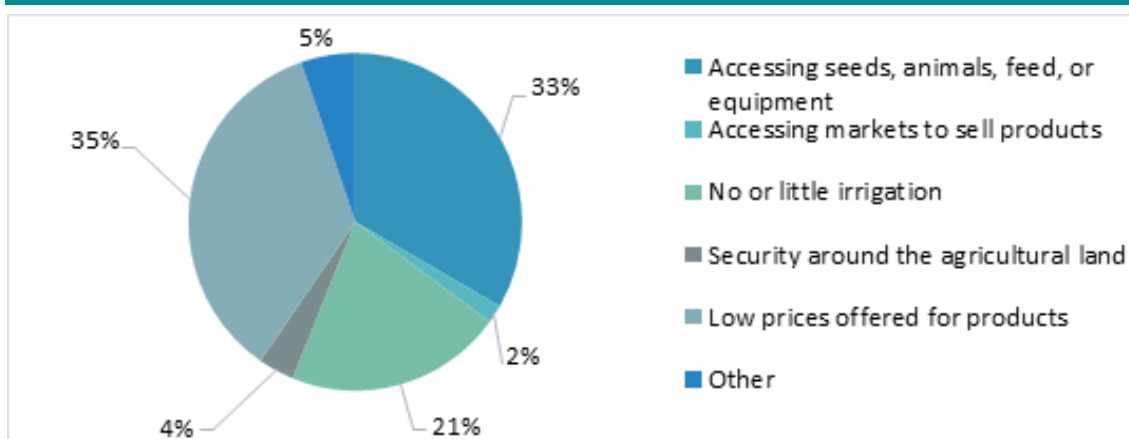
Source: Authors' elaboration of survey data (number of observations: 139)

In Round 5, households that had resumed their agricultural activities were also asked to describe the challenges they face (Figure 9). About 85 percent reported challenges in practicing their agricultural livelihood activities, with “low prices offered for agricultural products” (35 percent), “lack of access to seeds, animals, feed or equipment” (33 percent), and “little or no access to irrigation” (21 percent) being cited as major challenges. These are evidently related to the destruction and damage caused by the ISIL's crisis. However, they are also related to structural factors pervasive in a public policy arena that has

long neglected agriculture in Iraq. Compared to the situation before displacement, “low prices offered to agricultural products” emerged as a new challenge experienced by farmers who now face fierce competition from imported products. The lack of access to inputs (seeds, animals feed or equipment) remains one of the three most important challenges constraining agriculture production in pre- and post- displacement eras mainly due to such as lack of market's infrastructure that connects farmers to input providers.



Figure 9. Main challenges faced by farmers who returned to agriculture



Source: Authors' elaboration of survey data (number of observations: 58)



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## 4. Methodology and descriptive statistics

As shown in Figure 4, the survey design that targeted the farming households – i.e. those involved in farming before displacement in 2014 – initially compels two levels of analysis: first, the status of the households as returnees vs displaced; and second, the status of households regarding resuming agriculture. However, as shown in the exploratory analysis, we note that among the households who resumed their farming activities a large share is operating at low capacity allowing for a third level of analysis which is the intensity of resumed farming.

First, we consider the return to areas of origin as a first step in the process. Based on whether respondents have already returned or still in displacement they will or will not be included in the following step as the question on return to agriculture considers only those who returned to areas of origin. Likewise, only respondents who reported returning to farming will be included in the third step that investigates the intensity of resumed farming. In brief, resuming agriculture and the intensity of resumed farming are only observed when households are returnees and resumed farming, respectively. For this reason, we adopt a triple-hurdle model of econometric estimation method with sample selection following a similar approach to those of Jensen *et al.* (2015) and Burke. (2015). For details on the model structure, refer to the technical note in the annex.

### 4.1 Dependent variables

Given the above, the analysis involves three dependent variables, one for each step of analysis. For the first step the dependent variable is binary taking the value of 1 if a farming household returned to area of origin and zero otherwise. Similarly for step two, the dependent variable is binary taking the value of 1 if a returned household resumed agriculture and zero otherwise. However, in the third step, we use as a proxy of the intensity of resumed farming the proportion of the cropped in the 12 months preceding the survey relative to the total farmland area.

### 4.2 Explanatory variables

The explanatory variables included in the three equations slightly differ for both to some extent for theoretical and econometrical reasons. First, drivers that may lead households to resume agriculture after returning to areas of origin may be different from those which drove the household back to area of origin in the first step. Second, the identification of the decision sequence typically requires differentiating some variables to avoid collinearity or nonconvergence (Jensen *et al.*, 2015).

Based on theory, logical intuition and the available data, Table 2 presents in the explanatory variables that are relevant for each step. The first step in the analysis is a typical migration problem where households' decisions are driven by pull and push factors between areas of origin and areas of displacement. In addition to the gender and age of household head, typically relevant to any migration analysis, we consider the following variables as important in understanding the return decision. The ability to cover basic needs (housing, health care, education, food and water) is taken as a proxy of a household wealth which may motivate or constraint the return. We expect higher wealth to have a positive impact on return because being able to cover basic needs means the household can overcome the costs associated with the return. Having children in the household going to school is relevant because it may increase the attachment a household has to its place of residence, but it may also be a push factor to return if access to school is difficult in areas of displacement. Moreover, perceived level

of security conditions in area of origin, access to property and farmland in the area of origin and interest in agriculture are all seen to be relevant and would have a positive effect on returning. In addition, a household that is more able to finance the costs of farm rehabilitation is more likely to return. We consider also the availability of surface irrigation before displacement as a factor that can motivate return because it is a cheap way (surface) to access a fundamental input for farming (irrigation water). However, the ownership of a property in place of displacement is taken as a sign of settlement in area of displacement which may deter return and so it would have a negative effect on return. On the other side, high losses of farm assets (due to the conflict) can be a factor that deters return since this would increase the cost of rehabilitation.

Table 2. Explanatory variables: expected signs, definitions for the three steps of analysis

Explanatory variables and expected sign	Definition of variables as were entered in the estimated model	Return to area of origin	Resume agriculture	Intensify agriculture
Female headed (+/-) household	A dummy variable with values of 1 if a household is headed by female, zero otherwise	X	X	X
Age of household (+/-) head	A continuous variable with the age reported in number of years	X	X	X
(+) Basic needs	A dummy variable with values of 1 if household basic needs were covered, and zero otherwise	X	X	X
Children going to (-) school	A dummy variable with values of 1 if a household has children ages 6-20 years going to school, zero otherwise	X	X	X
Security condition (-)	A categorical variable for the perceived safety conditions in the area of origin. 1 completely safe and 5 totally unsafe	X	X	X
Access to property in the area of origin (+)	A dummy variable with values of 1 if a household has access to property in the area of origin, zero otherwise	X	X	NA
Ownership of property in area of (-) displacement	A dummy variable with values of 1 if a respondent owned a property in the place of displacement, zero otherwise	X	X	X
Access to (+) agricultural land	A dummy variable with values of 1 if a respondent has access to the farmland owned before displacement, zero otherwise	X	X	X
Surface irrigation before (+) displacement	A dummy variable with values of 1 if surface irrigation system was available in the farm before displacement and zero otherwise	X	X	NA
Losses of farm (-) assets	A continuous variable measuring the extent of losses in farming assets in (percentage (0-100 percent	X	X	X
Interest in (+) agriculture	A dummy variable with values of 1 if a household expressed an interest in working in and zero otherwise	X	X	X
Capacity to (+) mobilize capital	A continuous variable as the share of money a household can mobilize relative to the needed amount to restore farm activities	X	X	X
Time spent since (+) return	This is a continuous variable measured by number of years since return to area of origin	NA	X	X
Surface irrigation in the last 12 (+) months	A dummy variable on taking a value of 1 if the surface irrigation was available in the past 12 months and zero otherwise	NA	NA	X

Source: Authors' elaboration

In steps 2, in which we analyse why some returnee households resumed farming while others have not, we consider the same variables included in step 1. The reason is that many of them may have impacts on resuming farming such as the age and gender of the household head, access to the agricultural land, extent of loss in agricultural assets (agricultural land, equipment, animals, feed, and seeds), availability of surface irrigation before displacement in the farm, and capacity to mobilize financial capital. We also keep all the other variables to avoid any bias that can result from sample selection. However, we add a new variable that is relevant of this step which is: time spent in the area of origin since return (measured by months). The relevance of this variable is resuming farming would need time, and so a household who returned a month ago should not be treated as a household who returned 9 months ago. The addition of this variable is also useful as a restrictive variable that is recommended in econometric models with sample selection (Smith and Floro, 2020; Ruysen & Salomone, 2018).

In step 3, we include exactly the same variables of step 2 with only one additional variable: the availability of surface irrigation now since this step applies to households who already resumed farming, given that irrigation is known to be a critical factor in the intensity of farming activities in a semi-arid country like Iraq (Abdullah *et al.*, 2019). However, since this variable is found to be highly correlated with the one that captures surface irrigation availability before displacement, we excluded the latter. Another variable — ownership of property in area of displacement — was also deleted due to lack of variation since no household in the sub-sample has reported positively to the relevant question. As a consequence of deleting these two variables in the third equation, the analytical model meets the condition of restrictive variables that is mentioned above.

Across the three steps, we also control for the area

of origins i.e., the governorates from which the households were displaced in 2014. This allows capturing the factors that may drive households' decisions and that are location-specific.

### 4.3 Descriptive statistics

As mentioned in Section 3, we used data from a survey designed particularly for this study and collected from households who were involved in farming before 2014 and then were displaced due to the conflict. The survey was conducted in November and December of 2019. The original dataset covered 776 households from whom 208 were returnees and 68 resumed farming. However, a few cases with missing data were omitted resulting in reducing the sizes of the analytical samples to 754, 202 of whom were returnees and 68 resumed farming.

In Table 3, the summary statistics are presented for the full analytical sample, for the sub-sample of households who returned to areas of origin and the sub-sample of those who resumed farming. In the full analytical sample, 27 percent of the households have already returned to areas of origin, but only 9 percent resumed farming and the average cropped land of this latter is only 78 percent. The table also shows that in the sub-sample of returnees, only 33 percent resumed farming. This trend is due to the complexity of the return decision process which entails a mix of household beliefs, assets and capabilities that the study aims to disentangle in an attempt to understand the main factors driving decisions regarding the three steps. The decision to return or stay in displacement is viewed to be costly in both economic and psychological terms, but it is shaped by the household capabilities. Here any household is assumed to have pursued a benefit-cost analysis before taking decisions to return, to resume farming and to what extent.

Table 3 also shows interesting trends in the explanatory variables. That of basic needs has



an increasing trend, indicating that as we move in the decision process the share of households who have the capacities to cover basic needs increase, that is to say better-off households are those mostly returning and resuming farming. A similar trend (sometimes inverted) is observed for most other variables such as those of access to property and farmland, losses of farm assets and interest in agriculture. However, exception exists as in the example of capacity to mobilise capital that declines when moving from the full sample to the sub-sample of returnees to increase substantially when moving to the sub-sample of those who resumed farming. The variables of gender and age also have this “jumpy” trend.

The following section presents the results of the econometric analysis and discusses which

factors are playing major roles in differentiating households along the decision pathways portrayed in Figure 3 (see section 3.1 above).



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Table 3. Descriptive statistics for the variables of interest for the full analytical sample and for sub-samples returnees to areas of origin and resumers of agriculture

	Variable name	Response/ unit of measurement	Total sample (754)	Returnees to areas of origin (202)	Resumers of agriculture (68)
Dependent variables	Returnee to area of origin	Yes	27 percent	100 percent	100 percent
	Resumer of agriculture	Yes	9 percent	33 percent	100 percent
	Intensity of resumed agriculture	Share of cropped land	NA	NA	78 percent
Explanatory variables	Female headed household	Female	8 percent	10 percent	5 percent
	Age of household head	Years	44.96	45.60	46.50
	Basic needs	Yes	75 percent	88 percent	90 percent
	Children going to school	Yes	77 percent	78 percent	84 percent
	Security condition	Scale (1-5)	2.09	1.50	1.57
	Access to property in the area of origin	Yes	52 percent	80 percent	100 percent
	Ownership of property in area of displacement	Yes	4 percent	0 percent	100 percent
	Access to agricultural land	Yes	46 percent	70 percent	88 percent
	Surface irrigation before displacement	Yes	67 percent	80 percent	79 percent
	Losses of farm assets	Share	83 percent	79 percent	71 percent
	Interest in agriculture	Yes	56 percent	73 percent	99 percent
	Capacity to mobilize capita	share	8 percent	3 percent	14 percent
	Time spent since return	Month	NA	27	27
	Surface irrigation in the last 12 months	Yes	NA	NA	0.70

Source: authors' elaboration from this survey data









## 5. Results

Table 4, summarises the results of the analysis revealing the most important factors that differentiate households. For first step i.e., returnees vs displaced, the most key factors are perceived security conditions in the areas of origin, ability to cover the basic needs, access to property in areas of origin, and the ownership (or being in the process of acquiring) of a property in the area of displacement.

The results indicate that a worsening of perceived security in the areas of origin by 100 percent would decrease the probability of a household being a returnee by 11 percent. The ability to cover basic needs, taken as a proxy for wealth level, indicates that being able to cover all basic needs would increase the probability of being a returnee by

almost 10 percent. This can be understood as the poor are facing financial liquidity constraints to cover the return costs, whether being the travel expenses or/and reintegration costs. As shown in the literature (Sadiddin *et al.*, 2019), being able to cover some basic needs — say food security — is a push factor for some households for whom the ability to satisfy some basic needs is a precondition to be able to return. Similarly, having full access to the house in areas of origin increases the probability of being a returnee by almost 11 percent, while on the other hand owning a property in the place of displacement would drastically reduce the likelihood of returning to the areas of origin by around 33 percent.

Table 4. Average marginal effects and conditional average marginal effects from three econometric equations with sample selection

Explanatory Variables	Return to area of origin	Resume agriculture	Intensify agriculture
Female headed household	0.025 (-) (0.565)	0.069 (-) (0.116)	0.048 (+) 0.267
Age of household head	0.001 (+) (0.001)	0.003 (+) (0.002)	0.008 (+) *(0.004)
Basic needs	0.098 (+) ***(0.037)	0.653 (+) ***(0.140)	0.305 (+) 0.0201
Children going to school	0.028 (+) (0.032)	0.021 (+) (0.134)	0.272 (+) 0.187
Security condition	0.11 (-) ***(0.019)	0.465 (-) (0.064)	0.251 (-) ***(0.087)
Access to property in the area of origin	0.11 (+) ***(0.031)	0.807 (+) ***(0.119)	0.335 (+) *(0.200)
Ownership of property in area of displacement	0.33 (-) ***(0.125)	1.31 (-) (0.474)	NA
Access to agricultural land	0.046 (+) (0.029)	0.135 (+) **(0.065)	0.958 (+) ***(0.185)
Surface irrigation before displacement	0.072 (+) **(0.031)	0.036 (+) (0.073)	NA
Losses of farm assets	0.001 (-) ***(0.000)	0.003 (-) ***(0.001)	0.000 (-) 0.002
Interest in agriculture	0.114 (+) ***(0.027)	0.426 (+) ***(0.064)	1.738 (+) ***(0.377)
Capacity to mobilize capital	0.019 (+) (0.052)	0.57 (+) ***(0.173)	0.061 (-) (0.314)
Time spent since return	NA	0.000 (-) (0.003)	0.000 (+) (0.006)
Surface irrigation in the last 12 months	NA	NA	0.237 (+) *(0.132)
N of Observations	754	202	68
Wald Chi 2 Test	***162.46	***120.8	**18.8

Other factors that seem to have strong association with return are access to agricultural land, household's interest in returning to agriculture, access to irrigation, and extent of damage/losses of agricultural assets. The interpretation of their results is straightforward as they have the expected signs and are statistically significant. It is nevertheless important to emphasize here the role of access to agricultural land as a key factor for former farmer households to return to the areas of origin. Having full access to agricultural land would increase the likelihoods of returning to the areas of origin by 5 percent. Together with access to land, having access to the surface irrigation before displacement will encourage farmer households to return to areas of origin. This reflects the importance of access to natural resources for Iraqi farmers, especially in the context of the post-ISIL conflict, in the decision to return to areas of origin. On the other hand, destruction of agricultural assets and infrastructure is negatively associated with the likelihoods of returning to the areas of origin, suggesting the need to support these farmer households to restore the agricultural activities in the conflict-affected areas.

Our results are in line with findings from previous studies on conflict-affected countries which point security problems as major challenge discouraging return of displaced population. They indicate also that a lack of prospects for a decent and stable income and challenges related to reconstruction of destroyed houses and basic infrastructure as major obstacles to the sustainable return of displaced persons (Valenta, *et al.*, 2020; Ozerdem and Payne, 2019). For instance, a study conducted by the World Bank covering eight countries indicates that for refugees and IDPs from rural areas the ability to reclaim their land or obtain access to land elsewhere is central to their prospects of re-establishing livelihoods. In addition to reclaiming land other assets in areas of origin play an important role for the ability of returnees to reintegrate and re-establish

livelihoods (Harild, Christensen, and Zetter, 2015).

Furthermore, interest in returning to agriculture as a proxy for household's economic intentions in the near future, is positively related to the dependent variable and statically significant at 1 percent. This opens the door for further policy debate on how to promote displaced farmers' interest and their willingness to resume agricultural activities as part of a broader debate and policy on durable solutions for returnees and IDPs in Iraq.

In terms of the marginal effect of the explanatory variables on the decision to resume farming those who have full access to agricultural land are more likely to be resuming farming by about 13 percent compared to those who do not have access to land. Similarly, an interest in agriculture would increase the probability of resuming farming by around 42 percent. Whereas an increase in the capacity of mobilising capital by 100 percent would increase the probability of resuming farming by 57 percent. Extent of losses in farm assets, although significant, seems to have a minor effect on the dependent variable since its marginal effect is very small. It implies that a 100 percent loss of agricultural assets would decrease the probability of resuming farming by less than 1 percent (0.3 percent). The capacity of households to cover basic needs also increases the probability of resuming farming by over 60 percent. Other variables with less of an effect on the decision to resume farming include female-headed households, age of the household head, time spent in the same community since return to the area of origin and availability of surface irrigation in the farm before displacement. These variables have the correct direction of effect (the right signs), but are not statistically significant.

Out of the 202 farmer households who returned to their areas of origin, only 68 of them returned to agriculture, indicating a tendency to exit farming among a proportion of households who were farming before 2014. One reason for

this tendency could be financial constraints as expressed by lack of capacity to mobilise resources to rehabilitate the farm. Providing financial support under favourable credit terms could be a key push factor in encouraging returnees to resume farming. For the returned farming families, capacity to mobilize financial capital (to access farm inputs- seeds, animals, feed, or equipment) and access to agricultural land are the two most important requirements for households to resume farming. Provision of these two requirements and rebuilding lost agricultural assets and infrastructure by governmental and agricultural authorities would encourage returned households to work in agriculture.

On the factors that could have influenced the intensity of resumed farming, age seems to play a significant role. Results indicate an increase of age by one year would result in an increase

of intensity of return to farming by about 0.3 percent. This is particularly interesting as it seems to show the association of older farmers with farming while the youth might be exiting from agriculture. Another explanatory variable that is statistically significant is having access to surface irrigation which is a relatively cheaper form of irrigation compared to groundwater. However, perceived security conditions, access to agricultural land and property appear significant also as determinants of the level of intensity as they were also significantly associated return to area of origin in the first step.







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## 6. Main findings, conclusions, and policy recommendations

This study provided a brief description of the main characteristics and challenges of the Iraqi agricultural sector, reviewed the damage and losses caused by ISIL's occupation since 2014 and analysed the challenges and constraints that Iraqi displaced farmers face regarding return to their areas of origin and resuming their agricultural activities.

### 6.1 Key findings of the study

Below are a number of key findings of the study:

- » The ISIL occupation has caused massive destruction of infrastructure and losses of economic activities, including the agricultural sector. The gross damage incurred in the seven directly affected governorates totals USD 45.7 billion (World Bank, 2018), from which USD 2.1 billion is direct damage on agriculture, with losses totalling USD 1.4 billion for the agricultural sector. The World Bank estimates that Iraq will require \$88 billion for reconstruction over a period of ten years (World Bank, 2018).
- » The occupation worsened security conditions and caused large-scale human displacement. The total displacement toll exceeded 4.7 million IDPs with more than 1.2 IDPs still in displacement as of October 2020. This has further worsened the already adverse economic, environmental and security conditions caused by years of conflicts and instability and substantially increased the burden on the Iraqi Government.
- » The study reveals that the Iraqi agriculture sector already faces several major constraints and challenges which need to be overcome to guarantee a sustainable and inclusive developmental path. Water scarcity, soil salinity, low productivity and farmland fragmentation, together with low-priced competing imports of agricultural commodities have made agriculture unprofitable, uncompetitive and unreliable source of livelihoods for farming communities. Data show that agricultural productivity growth in the last two decades has been very low and the sector is performing below its capacity, while poverty, food insecurity, and unemployment are very high especially in rural areas.
- » The study finds that the rate of return to areas of origin among the farming households is still very low and noticeably lower than the rate of return among non-farming households, suggesting that farmers face additional constraints to return compared to non-farmers. Even among returned farming households, agriculture is not the main source of family income for 80 percent. Only 20 percent of returned farmers indicated that they depended on agriculture as the main source of income,



while many have not yet resumed farming. Further, the intensity of resuming agriculture is still low for returned farmer households. Data shows that informal jobs, private businesses and public jobs are the three most important sources of income for most displaced farmer households.

- » For returned farming households the data highlights important trends about the relative importance of their main sources of income: Informal jobs, private businesses, public jobs and agriculture. The shares of households indicating agriculture and public jobs as the most important sources of their income have increased while the shares of households depending on private businesses and informal labour have decreased.
  - » Compared to the situation before displacement households who resumed farming face the challenge of “low prices offered for products”. Indications suggest it is mostly driven by fierce competition with cheap imported products from neighbouring countries.
  - » Lack of irrigation emerged as a new challenge for farming communities after displacement as indicated by 21 percent of the farmers who returned to agriculture. This is a clear consequence of the massive damage and losses of the farm assets and infrastructure, including irrigation facilities. In addition to lack of irrigation, the lack of access to inputs due to financial difficulties and ill-functioning markets are the three most important challenges constraining agriculture production as the data reveal.
  - » Results of the econometric estimation models on difficulties confronted regarding the return of displaced households to their areas of origin reveal the following:
    - The ability to cover basic needs, perceived security conditions in areas of origin, access to property in the area of origin, ownership of a property in the place of displacement,
- availability of surface irrigation system in the farm before displacement, extent (state) of losses in farming assets and interest in agriculture are the seven most important factors affecting the decision of farming households whether to return to areas of origin or not.
- Perceived security conditions in the area of origin clearly appear to be a main factor preventing return. This confirms findings of a previous study that found that 60 percent of returnees went back because their location of origin was considered relatively secure, whereas 35 percent of IDPs chose to stay in displacement due to lack of security in the area of origin (Barwari, 2018).
  - Secure access to the property in the areas of origin is a strong incentive and motivation for displaced households to return. The same applies to access to surface (cheap) irrigation necessary for faster rehabilitation of farm activities, especially for the households interested in agriculture.
  - The extent of loss of farming assets seems to prevent displaced households from returning as in this case it is impossible to earn a living from agriculture unless massive investments are implemented for the rehabilitation of farms. On average, farming households lost 83 percent of their farm assets.
  - The ownership of a property (a house and/or agricultural land) in the area of displacement to is a sign of settlement and comfort which may translate into long-term settlement rather than return to areas of origin.
- » Among households who returned to areas of origin the estimation model reveals the following regarding resuming farming:
    - Access to agricultural land, extent of losses in agricultural assets, capacity to mobilize



financial capital to resume agriculture and interest in agriculture are the four most important factors differentiating households who resumed farming from those who have not yet done so.

- ▶ Needless to say, that without access to agricultural land, no farming can be resumed. But it is of interest to note that this factor was not significant in differentiating households that returned to their areas of origin from those that did not (in the first estimation model). This could be an indication that for many households in the sample returning or not returning to areas of origin is not driven by a hope to resume farming because the latter may not be important for their incomes.
  - ▶ The capacity to mobilize financial capital to resume farming and the extent of losses are also very important and deeply interlinked. The more damage is incurred, the more likely that capital will be needed. However, the variable is attempting to capture how households are different in mobilising this capital. Having this factor points significantly to the fact that many households are not resuming farming due to credit or liquidity constraints needed to rehabilitate their farms.
  - ▶ Interest in agriculture was a significant feature of households who resumed farming. This may reflect a combination of factors such as age, expertise, education profile and assets profile. However, it may also be enhanced by policy approaches aimed at increasing the interest in agriculture, especially that of the youth.
- » Among households who resumed farming the estimation model analysing the differences in the intensity of farming indicate the following findings:
- ▶ The age of the household head and availability of surface irrigation on the farm are the two most important factors associated with the proportion of farmland utilised for farming. On average, nearly 78 percent of the land cultivated before displacement is utilised for agriculture by returnees who resumed farming. However, the share differs significantly among them, ranging from only 10 percent to more than 100 percent (the latter indicates more intensity than before displacement).
  - ▶ Results show that the younger the household head, the lower the propensity to intensify farming. This may indicate a process of exiting agriculture by the youth and points to the importance of policies that foster the interest of rural youth in agriculture who generally have higher propensity to migrate exit farming. However, it can also indicate that older farmers have better farming experience that allow them to intensify, pointing to the importance of extension services to target younger farmers.
  - ▶ The importance of surface irrigation is clear. Farming intensification requires higher input use. The availability of surface irrigation was also a factor influencing the decision to resume or not resume farming. This points to the need to prioritize the rehabilitation of irrigation schemes and networks to make irrigation available for those who need it. Together with the reconstruction of other rural infrastructure, this will generate wider options for those among the displaced farming community who wish to return to their areas of origin and resume farming.

## 6.2 Policy implications and recommendations

Restoring Iraq's agriculture and food system requires a combination of short and long policy programmes and strategies that complement each other. The most immediate need is to rebuild and rehabilitate conflict-affected areas to create enabling conditions for voluntary and sustainable return of the displaced households. Results of this study indicate that security problems, challenges to reconstruction of destroyed houses, assets and infrastructure, lack of opportunities for a decent and stable income are often reported as major obstacles for safe and sustainable return. Rehabilitation and recovery investments will have critical importance for the displaced farming households to return to their areas of origin and resume their agricultural activities. In order to enable a smooth and sustainable return for IDPs, it is necessary to support households in accessing their residential property and agricultural land in their areas of origin. Security and stability in the areas of origin are critical enabling factors and can be enhanced through conflict sensitive approaches and analysis of local context where potential disputes over land and other resources may emerge within communities of origin. Conflict resolution approaches should also be supported. Results and findings of this study point to the following policy recommendations:

- » Reconstructing agricultural assets. The most pressing requirement of the agricultural sector is the restoration of farm equipment and assets and other input delivery systems (access to roads, marketplaces and irrigation systems) for farmers to resume their agricultural activities. Results of this study indicate that the very high losses of agricultural assets are key factors associated with continued displacement. Even the small proportion of farmers who have returned to areas of origin may not be able to resume farming without targeted support to restore this damage.
- » Maintaining the interest of farmers in agriculture. Interest in agriculture appears to be a significant factor that drove the decisions of displaced households to return to their areas of origin and resume farming. Although interest in agriculture can be subjective reflecting farming experience and attachment to rural lifestyle, it may not be maintainable without support and promotion. This will require overcoming the vast range of difficulties that farming households face and prevent rendering farming as a lucrative business. Farmers who returned to agriculture faced several challenges, ranging from "low prices offered for agricultural products" to "lack of access to seeds, animals, feed or equipment" to "little or no access to irrigation". Overcoming these and other constraints (such as difficulties in accessing land and credit to rehabilitate farms and restore agricultural assets) should be a high priority on the policy agenda.
- » Increasing investment in the agricultural sector. The current health and economic crisis, associated with the COVID-19 pandemic and the decline in oil prices has made investing in the agricultural sector very challenging as the government is faced with competing priorities. Still, one of the lessons learned from the COVID-19 experience is the importance of increasing local food production to avoid food insecurity and malnutrition. As most of the poor reside in rural areas and noting that agriculture is a main source of their livelihoods and employment, it has become imperative to increase investment in local agriculture and food systems to achieve food security and reduce poverty. The results of this study

show that to encourage farmers to return to their areas of origin and resume agriculture, investments should target the rehabilitation of irrigation systems and providing farm inputs. In the past, the neglect of the agricultural sector in the Kurdistan Region of Iraq has led rural populations to abandon farms and move to cities in search of low-skilled but stable jobs. Investing in agriculture can create more stable sources of income and offer rural opportunities to remain in their rural areas rather than migrating to the cities.

- » Addressing food insecurity for both returned and displaced households. Results of this study reveal that the ability to cover basic needs (food, housing, health care, and education) is a main factor associated with households who returned to their areas of origin. This points to the necessity of enhancing social safety net instruments such as targeted food distribution systems that should guarantee access to basic needs for all, especially the poor. Enhancing social safety nets should accompany the investments to rehabilitate agriculture to make the latter more inclusive, while addressing the immediate needs of the poorest, including those who cannot return now or who do not want to return at all.
- » Giving high priority to the creation and reactivation of employment-generating activities. To encourage displaced farming households to return to their areas of origin and to prevent re-displacement, there is a need to diversify their income sources to enhance their resilience and provide them with more stable and sustainable livelihood options. Public institutions are therefore recommended to encourage investment and development in key sectors such as small- and medium- enterprises and construction known to be labour-intensive and potential generators of employment. A study conducted by IOM (IOM, 2018b) reveals that between 2014 and 2017 about 75 percent of surveyed

employers had suspended or stopped business activity, with significant job losses. The reasons ranged from a drop in demand, lack of electricity, displacement, supply chain disruptions, confiscation of property by ISIL and the inability to export goods and services. A combination of incentives (e.g. tax reduction) and public support (e.g. provision of necessary infrastructure) would be necessary to boost this sector that tends to have high employability with strong linkages with farming and rural economies.

- » Providing credit for resuming agriculture and subsequent growth. The capacity to mobilize financial capital is a key factor in resuming farming as revealed by the results of this study. For farmers to continue their agricultural activities the average financial requirement is approximately 11.9 million Iraq Dinar per household, which is a considerable amount, especially considering the impacts of the current COVID-19 crisis and the decline in oil prices. One option would be the provision of loans and credit at affordable interest rates by financial lending entities in the country. The close coordination between the government and international agencies and donors can lead to alternative, more innovative mechanisms of funding.

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# Annex

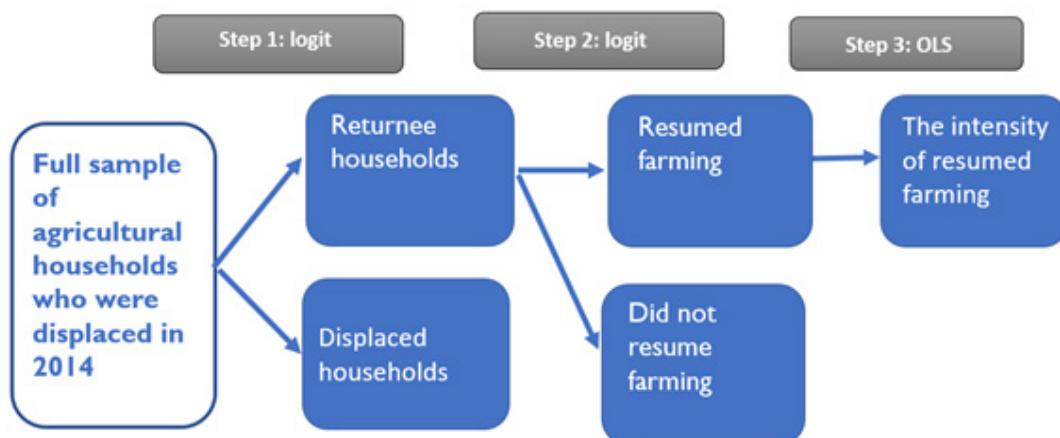
## Technical note on the empirical model

The main difference between our model the classic sample-selection model of Heckman (1979) is that ours is a sequence of three equations instead of two, very similar to that analysed by Jensen *et al* (2015). This is to say that the likelihood function for the triple-hurdle model is an integration of two logit models and one OLS models.

Figure A1 presents by means of a diagram the data generating process encompassed by the triple-hurdle model. Starting from the left, households are first classified between those who were involved in agriculture before displacement in 2014 vs those who were not. The latter group

is excluded as they fall outside the scope of the study. Then households are either returnees or still in displacement, which is a binary variable leading to logit model as a natural choice for modelling this first stage. Logit is also used for the second stage because the dependent variable is also binary, where households, having returned in the first stage, have either resumed their farming activities or have not. Then the third stage investigates the intensity of resumed farming activity. This is a continuous dependent variable for which we use an OLS model.

Figure A1. A graphical representation of the data generation process of the triple hurdle model



Given the above, we face a decision problem modelled as a sequence of decisions pursued by households, which are 1) returned to area of origin (RETURN), 2) resumed farming activities (RESUME) and then decided on the level of farming intensity (INTENSIFY). The triple hurdle regression models of this decision sequence is as a tiered series of latent variables and can be written as follows:

$$\begin{aligned}
 RETURN_i^* &= B_1X_i + \varepsilon_{1,i} \\
 RETURN_i &= \begin{cases} 1, & RETURN_i > 0 \\ 0, & RETURN_i \leq 0 \end{cases} \\
 RESUME_i^* &= B_2X_i + \varepsilon_{2,i} \\
 RESUME_i &= \begin{cases} 1, & RESUME_i > 0 \\ 0, & RESUME_i \leq 0 \end{cases} \quad \begin{matrix} \text{given } RETURN_i > 0 \\ \text{given } RETURN_i > 0 \end{matrix} \\
 INTENSIFY_i^* &= B_3X_i + \varepsilon_{3,i} \\
 INTENSIFY_i &= \begin{cases} INTENSIFY_i, & RESUME_i > 0 \\ -, & RESUME_i \leq 0 \end{cases}
 \end{aligned}$$

In the first hurdle (equation 1), households are classified as returnees or displaced. This means that households who were classified “displaced” in the overall probability estimates of the RETURN model but do not contribute to the incentive response part of resuming farming. In these cases, accounting for the individuals self-selecting out of the “returnees” is important to minimize bias arising from sample selection. This is carried out by estimating the first tier of the model i.e. RETURN (equation 1) jointly with RESUME (equation 2) and INTENSIFY (equation 3).

In the second hurdle (equation 2), households who returned to their area of origin were classified as either resumed farming (RESUME = 1) or not (RESUME = 0). The outcome equation (equation 3) models the intensity of resuming farming given that the household has resumed farming in the first place (i.e., RETURN = 1 and RESUME = 1). The error terms of equations (1), (2), and (3) are correlated and assumed to be multivariate normally distributed each with an expected value of zero.

The three equations were estimated with standard errors clustered at the governorate of origin level

by means of regression techniques, controlling for governorate of origin’s fixed effects to account for any location-specific differences that were not observed and thus accounted for in the sets of independent variables.

The Maximum Likelihood approach is used for the estimation of the Logit models. In the third model, the Ordinary Least Squares (OLS) procedure was used. The estimated coefficients were corrected for heteroscedasticity using appropriate corrective measures of STATA software and the Standard Deviation reported in subsequent tables are robust to heteroskedasticity. The estimated coefficients are average marginal effects of the explanatory variables. In addition to the list of the explanatory variables drawn from the survey data a total of 6 dummy variables were added to capture the effect of the governorate of origin. The models were estimated with several specifications, and the results confirmed the stability (robustness) of the estimated coefficients in terms of the direction of their effects, magnitude and significance.

The choice of independent variables for each model was driven by a combination of logical relationship to the dependent variable and data availability. As the first model is a case of typical migration problem, we pulled from the data what can be considered push factors (from areas of displacement) and what can be considered pull factors (to areas of origin). For the second and third models, a combination of common sense and data availability drove the choice of variables. In the three models, we controlled for demographic and geographic variables to the extent possible.





# ARE IRAQI DISPLACED FARMERS RETURNING TO AGRICULTURE?

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