

# How Agricultural Credit Serves Agricultural Development in Jordan

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## Review Article

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## ABSTRACT

This paper studies the consequences of agricultural credit on agricultural development in Jordan. To realize the study's purpose, a number of statistical methods were used, including econometric and descriptive statistics. The researcher used the official Jordan Agricultural Credit Corporation database along with a questionnaire design to serve the study purpose, as well as semi-structured interviews to collect the study information. T-test indicated the administrative and human obstacles of the Agricultural Credit Corporation does not serve agricultural development with no statistically significant. On the other hand, estimating the impacts of credit on agricultural output showed that the value of the financial-balance coefficient was negative in some years of study, which indicates the existence of a state deflation and the increase in the volume of agricultural output achieved by a higher rate than the increase in loans granted.

## 1. Introduction

**Context:** Credit plays a fundamental and important role in providing the financial resources needed to finance economic activities and directing these resources to serve the economic sectors in a proper manner (Akoijam, 2012). Many believe that the change in the volume of credit has a significant impact on the level of economic activity in terms of prosperity and contraction (Boucher, Carter, and Guirking, 2008). Modern theories in economic development have made clear that finance is the main tool for achieving development. Schumpeter emphasized the importance of the role of banks in providing the necessary financing to stimulate growth in economic activity. Keynes gave the banking sector a great importance in providing the necessary liquidity for the economy. Schumpeter saw that the services provided by financial intermediation institutions in collecting savings, evaluating projects and managing risks are all necessary to encourage economic development. This agrees with Keynes, who emphasized that the absence of financial intermediation will limit the transfer of money to investments and thus negatively affect the rate of economic growth (Mazzucato and

Wray, 2015). The agricultural sector is considered the main and most strategic pillar in achieving economic development (Alinda and Abbott, 2012). It is one of the leading productive sectors in consolidating the foundations of the economic structure under the system of vertical and horizontal agricultural development programs. Jordan's agricultural exports constitute (15.4%) of total exports, which 90.5% going to Arab markets, the most important agricultural exports are tomatoes, hydrogenated oils and cigarettes, exports of agricultural products increased by (17.1%) in (2021) compared to an increase of (15.1%) in (2020). Jordan's agricultural imports fluctuated substantially in recent years, it tends to decrease through 1970 - 2021 at 21 % of total import goods in 2021. The most important importing countries are Iraq, the United Arab Emirates and Syria (The Jordanian Ministry of Agriculture / Foreign trade report for the year 2020).

Jordan has achieved self-sufficiency in a number of agricultural products, such as olive oil and milk, but many basic food products, such as wheat, dairy products, sugar, red meat and vegetables, are imported from abroad (The Jordanian Ministry

of Agriculture, 2020. The Corporation's international role in the field of agriculture has been changed by participating in regional groupings and relevant international organizations, including the Food and Agriculture Organization (FAO) of the United Nations, the World Trade Organization, the European Union, the Greater Arab Free Trade Zone and the United Nations Economic and Social Committee for Western Asia (ESCWA), among others (Alinda and Abbott, 2012). Agricultural credit is one of the most important factors for promoting agricultural production, improving its means and raising the level of the rural communities it serves; it is even the main factor in that. The lending process in the agricultural sector is the main focus of its development, because agricultural projects need funding and effective support by the state or by lenders, in addition to that working in the agricultural sector requires a large capital to provide the requirements for production, reclamation costs, irrigation networks, among others (Swinnen and Gow, 1999). Even though the COVID-19 pandemic is a major threat to food production in the short and long terms, it also presents a chance to speed up changes in the food and agriculture industries that will increase their resilience to a variety of threats if we intend to adhere to improve food security (Pereira and Oliveira, 2020).

**Government Agricultural Credit in Jordan** (<https://www.acc.gov.jo/en>)2022, access date).

Many people confuse both the concept of agricultural finance and that of agricultural credit. While financing means providing money and managing it in a way that achieves a high degree of economic efficiency, agricultural credit is limited to providing financial liquidity to those engaged in agricultural production to enable them to practice their productive activity. In the literature on agricultural credit, the terms "agricultural finance" and "agricultural credit" are used as synonyms for one concept.

**First**, financing at the macro level (sectoral) is related to the provision of funds to the agricultural

sector, within the framework of financing comprehensive economic development and this is embodied in public- and private-sector investments in irrigation projects, land reclamation, planting fruit trees, providing technical and extension services, improving the means of marketing, taking care of livestock and protected agriculture and the expansion of the use of fertilizers and agricultural machinery. **Second**, financing at the micro level (individual) is related to the provision of funds for the development of agricultural production at the level of individual producers in the form of in-kind and cash loans from various sources of funding.

Classification according to loan terms: This classification is one of the most common and widely used ones. Loans are divided according to their terms; i.e., according to the time period that passes between the date of disbursement of the loan and the date of the last maturity of the loan. Short-term loans: These are loans granted to farmers to meet their seasonal agricultural needs, such as seeds, fertilizers, treatments, seedlings, payment of wages of workers, plowing, harvesting and irrigation, in addition to production expenses and loans for the necessary living purposes. The term of these loans ranges from one to two years. Medium-term loans: These are loans granted to farmers to finance production projects during a medium period of time, where their term usually ranges from one year to five years. Long-term loans: These are loans that are given to be repaid within a period of time that exceeds the upper limit of the period specified for repaying medium-term loans, where their repayment period may reach twelve years or more in some countries. These loans are disbursed to implement projects in which the nature of the investment requires the recovery of what was spent on them during a period, such as purchasing land, constructing facilities, buildings, factories, digging wells, large reclamation projects and major irrigation and drainage projects.

Classifying agricultural credit according to main uses: loans can be classified into four types;

**1- Production loans:** used for the purpose of purchasing agricultural production requirements, such as seeds, fertilizers, feed materials, machinery and livestock.

**2- Real-estate loans:** the purposes of which are to buy the farm or purchase additional lands for the farm, buy buildings, spend on irrigation and drainage projects, land reclamation, spending on gardening and any other improvements that take place on the farm. These loans are long-term. Loans from agricultural cooperative organizations are used to meet operating and spending expenses on the cooperative society, commodity stocks, buildings and

equipment and the purchase of real estate necessary for the cooperative society.

**3- Consumer loans:** These are used to obtain goods and services that are not directly related to agricultural production, but rather directly satisfy the desire of the borrower.

### Agricultural Transactions in the Agricultural Credit Corporation

(<https://www.acc.gov.jo/en>, 2022 access date).

#### Low-interest loans

The following table illustrates the interest-rate structure adopted by the Corporation as of 10/1/2001 till now.

**Table 1. The interest-rate structure adopted by the Corporation as of 10/1/2001 till now**

Description	Categories of loans in Jordanian dinars	Interest rate %
Medium-and long-term loans	1-10000	6.5%
	10001-15000	7%
	15001-20000	7.5%
	20001-30000	8%
	30001-50000	8.5%
	More than 50000	9%
Seasonal and short-term loans	1-5000	6.5%
	5001-10000	7%
	10001-15000	7.5%
	15001-20000	8%
	20001-30000	8.5%
	More than 30000	9%

Source: Agricultural Credit Corporation 2022.

### Islamic finance

Islamic agricultural transactions differ according to the type of agricultural activity; if the activity is productive for crops, it falls under the sharecropping contract. If it is related to the exploitation of vineyards and fruit trees, it falls under a watering contract and if it is a rental of machinery, it is called rent financing and the rule of rent are applied to it. Agricultural activities are of an intertwined nature; therefore, every activity must have a contract that suits it.

### Seasonal loans

These loans are granted for the purpose of purchasing agricultural production requirements, including both plants and animals and fattening projects. The term of each seasonal loan is according to the nature of the project and is not to exceed twelve months.

**Short-term loans:** These loans are granted for the purpose of purchasing agricultural production requirements, with terms of more than one year and less than two years.

**Medium-term development loans:** These loans are granted for the purpose of purchasing or establishing fixed, semi-fixed and movable productive assets the useful life ranges of which are (3-8) years. Accordingly, the term of these loans is between two and up to ten years. The total value of the approved loan and/or loans that may be granted to an individual farmer or to a group of farmers and the total balance of loans on him or on them shall not exceed 2% for a single borrower and 3% for a group of borrowers of the institution's capital paid and the general reserve as it was at the end of the year preceding the year in which the loan is granted.

**Long-term development loans:** These loans are granted for establishing projects to preserve the soil from erosion and building retaining and perimeter walls and barbed wires. The term of these loans is twelve years, with interest in the first year from the date of organizing the debt bond for the first year. The type of these projects refers to farms of fruit trees of various kinds (olives, almonds, apples,), irrigated and rain-fed. Interest is collected only during the first five years and the capital is repaid with interest in the sixth year from the date of organizing the debt bond.

### **Study Problem:**

Despite the importance of the agricultural sector, its contribution to the GDP is low compared to other sectors, as the contribution of agricultural GDP was about 993 (Million JDs) in 2008 reached 1.478 (Billion JDs) in 2021 (<http://dosweb.dos.gov.jo/>(access date,2022). The low contribution of the agricultural sector to the GDP is due to many problems that the sector suffers from, the most important of which are: the agricultural tenure structure, the nature of agricultural production and the limited financing directed to this important sector, which is characterized by limited financial resources and modest investments directed to it. The agricultural sector is important and vital, as it contributes to food security, which has placed a heavy burden on the supply chain, in addition to its contribution to cutting job opportuni-

ties in remote areas where there were closures due to the pandemic (Nchanji et al., 2021).

### **Study Objective**

The study aims to analyze and measure the impact of credit provided to the Jordanian agricultural economy by testing a major study hypothesis stating that: **Government agricultural credit has a positive impact on the agricultural domestic product (Agri-GDP)**, measuring the causal relationship between agricultural credit and agricultural domestic product on the agricultural sector.

### **Outline of the Study**

This type of research is classified as explanatory, as it attempts to explain the relationship between agri-credit and development.

**First:** Scientific information was analyzed in order to create a general understanding of the research topic and to construct hypotheses based on the literature review.

**Second:** A survey has been developed and conducted. The respondents, nascent entrepreneurs, were asked to complete a questionnaire concerning for example their behavior, personality and ambitions.

**Third:** By means of statistical analyses, the data has been analyzed.

Multiple regressions was performed in order to assess the relationship between the independent and dependent variables and to decide whether the formulated hypotheses should be accepted or rejected.

### **Theoretical Framework and Study Hypotheses**

#### **Theory**

#### **Financial, Administrative and Human-capital Factors and Agricultural Transactions**

Skuras et al. (2005) investigated the entrepreneurial human-capital accumulation and the growth of rural businesses: A four-country survey in mountainous and lagging areas of the European Union. The supply process of building entrepreneurial human capital was discussed in this article along with how it affects the expansion of rural businesses. Data was obtained from four studies on rural enterprises

in southern Europe's mountainous and underdeveloped regions. The research showed that there are numerous case study-specific processes for accumulating entrepreneurial human capital and knowledge. In order to anticipate successful businesses, human-capital accumulation processes related to education and training or to work and managerial experience continue to be the crucial ones. The findings pointed to the necessity for locally specific entrepreneurial human-capital accumulation assistance programs that are decentralized, adaptable and selective. Formal pathways of acquiring entrepreneurial human capital include education and training, whereas informal ones include the cognitive processes of gaining managerial and work experience as well as the non-cognitive processes of growing up in an entrepreneurial family or region where the business will later be established. (Carolina Trivelli et al., 2006) examine whether insurance can unlock agricultural credit and promote economic growth in Peru. Since financial modifications, the legal banking system in Peru today only provides services to 40,000 farmers statewide, in stark contrast to more than 200,000 farmers to whom the Banco Agrario provided services before it was dissolved, following a trend seen elsewhere in Latin America. Suppliers cite prohibitive transaction costs, a lack of client information, the ineffectiveness of the legal system in upholding guarantees, a lack of insurance and the high profitability of urban transactions as justifications for not expanding into rural areas, despite the fact that these regions are highly productive and well integrated into markets. Farmers themselves restrict their interaction with formal intermediaries due to the high cost of borrowing, the comparatively low profitability of agriculture and their concern that an unforeseen issue will prohibit them from making payments.

**Hypothesis 1-** There are no financial, administrative and human-capital obstacles to agricultural transactions.

#### **Gov-agri-credit and agricultural development Credit and Agricultural Development**

According to (Seven and Tumen, 2020), there

was a cross-country evidence suggesting that agricultural credits have a positive influence on agricultural productivity. The study found that doubling agricultural credits creates about 4-5 % increase in production output. The study data was gathered from FAO and WB World Development Indicators (1991-2014). FAO research (2020) found that Agriculture Orientation Index (AOI) for credit divides the share of credit to agriculture by the percentage of agriculture in the gross domestic product to normalize the share of credit to agriculture. (Mahmood, et al., 2009) studied the role of agricultural credit in the growth of livestock sector: A case study of Faisalabad. In order to gather input-output and socio-economic data for the examination of the effect of credit on the expansion of the cattle industry in rural areas, a stratified random-sampling approach was used. The future importance of the livestock industry in our food basket is defined by the fact that meat and livestock products had the largest income elasticities when compared to all other food categories, with the exception of fruits. It was noted that the availability of finance led to economies of size to more than quadruple the livestock sector, increasing the per family monthly income from the sector by 181%. Family size, literacy rate (schooling years) and credit all had longevity values of 0.18, 0.05 and 0.06, respectively .

Family size elasticity was the highest, followed by those of credit and literacy rate, showing that there is enough potential to use unemployed and under-trained rural workers in the agriculture industry. Putting jobs at the doorsteps of rural communities would assist to lessen the pressure of an expanding population on Pakistan's megacities. Credit to agriculture global and regional trends (2012–2020) was pointed out in FAOSTAT Analytical Brief 38.

The Agriculture Orientation Index (AOI) for credit divides the share of credit to agriculture by the percentage of agriculture in the gross domestic product to normalize the share of credit to agriculture. As a result, it can give a more precise picture of the priority that commercial banks accord to financing the industry. A credit share to the agriculture sector that

is lower than its economic contribution is indicated by an AOI of less than 1, whereas a credit share to the sector that is higher than its economic contribution is indicated by an AOI of greater than 1. Many high-income countries had AOI values above or close to 1 between 2016 and 2020 among countries for which credit data was available. This may be because agriculture in these countries makes up a smaller proportion of GDP or is dominated by large producers, is more focused on commercial production, is more mechanized and has a higher capacity to provide collateral outcomes (FAO. Sustainable development goals indicators- Accessed 23 July 2021)

**Hypothesis 2- Gov-agri-credit serves agricultural development (output).**

### 3. Research Methodology

#### Study Variables and Data Analysis:

The study relies on both the following types of data:

**Primary data:** Semi-structured interview and questionnaire design for the study purpose.

**Secondary data:** A number of previous studies, as well as approved figures issued by local and exter-

nal bodies, such as the Agricultural Credit Corporation, the Ministry of Agriculture and the Department of Statistics, along with data from the World Bank and the World Food Organization for the period (2008-2021).

#### Data Analysis Methods

Qualitative and quantitative analysis methods were used in this study.

**Qualitative Analysis:** This approach of data analysis evaluated and determined government policies by distributing a questionnaire to government officials and other representatives. This was carried out in order to come up with a proposition of feasible and appropriate policies for agricultural-development finance.

#### Quantitative Analysis:

This approach involved the statistical analysis of official statistics and the use of the one-sample T-test, means and Standard deviation to calculate the growth that occurred in the agricultural sector as a result of using agricultural loans and determine the relationship between granted agricultural loans and agricultural gross domestic product. Averages and marginal slopes were used to figure out some agricultural economic performance indicators.

**Table 2. Study Variables; description, source and data categories.**

Variables	Description YEAR ( <i>t</i> ); the period covered (2008 -2021).	Source	Data category
Financial obstacles			Primary data
Administrative obstacles	Specific questions, case study	Questionnaire	Primary data
Human obstacles			Primary data
Agri-GDP	Statistics of the contribution of agricultural production to the GDP	Department of Statistics - Jordan	Secondary data

Source: Author.

#### Hypotheses Test

In line with the methods of Paille and Meija-Morelos (2019) et al. (2019) and Hayes (2018), the research hypotheses have been tested using the T-test.

When  $\alpha \leq 0.05$  under a significance level of 5%, is rejected H0.

**When  $\alpha > 0.05$  under a significance level of 5%, is accepted H0.**

The following table shows the structure of testing the hypotheses.

**Table 3. Structure of Testing Hypotheses**

HYPOTHESIS	CONSTRUCT	DEPENDENT V.	EXPECTED INFLUENCE
H1 ,A			
H1 ,B	Financial, administrative and human-capital factors	Agricultural transactions	(+)
H1 ,C			
H2	Gov-agri-credit and agricultural development	Agricultural development (output)	(+)

\*  $\alpha \leq 0.05$ . Source: Author.

### Ethical Considerations

Globally, the following ethical considerations for science are taken into account.

1. Sovereignty: The writer should value the sovereignty, rights and dignity of the participants in the research by not writing their names anywhere on the report arising from the study.
2. Beneficially: The research should have a positive contribution and contribute to the welfare of people.
3. Non-maleficence: The research should not cause any harm to the research members in particular or to other people or the environment in general.
4. Justice: In terms of risks and benefits, a study needs to be fairly of distributed among people.
5. Informed consent: The consent of potential respondents should be obtained before completing the questionnaire.
6. The data should be given without indirect or direct coercion or inducement.
7. Prospective interviewees should be informed of the details of the research.

### Empirical Findings and Mechanisms

#### The Relationship between Credit and Agricultural Sector Growth

The growth that occurred in the agricultural sector as a result of the use of agricultural credit can be identified by analyzing the development that occurred in the relationship between agricultural loans and agricultural GDP, through estimating the aver-

age slope and the marginal slope for the agricultural sector to use agricultural credit. It is known that the appropriate limits for the expansion of the money supply are to increase this supply at an annual rate consistent with the national growth rate, taking into account a small margin of inflation ranging between 5% and 8% for a temporary period.

An increase in supply over actual demand will lead to inflation, just as the lack of supply over demand leads to deflation and then, financial balance does not happen in both cases. These trends can be identified in each sector by defining the relationship between the volume of credit and its output through the monetary-stability coefficient, or what is also known as the inflationary- pressure criterion. If the value of the coefficient is equal to one, this is an evidence of the occurrence of financial balance; i.e., the occurrence of complete monetary stability. If it is more than one, this means that there is a state of inflation the value of which varies according to the amount of increase from one.

$$\text{Average slope} = \frac{\text{Credit for agricultural sector}}{\text{The volume of agricultural output at constant prices}}$$

$$\text{Marginal slope} = \frac{\text{Change in the number of agricultural credits in a given year}}{\text{Change in the total agricultural output at constant prices in that year}}$$

$$\text{Financial balance} = \frac{\text{Annual rate of credit granted to the agricultural sector}}{\text{The relative annual rate of agricultural output realized}}$$

**Table 4. The impact of gov-agri-credit and agricultural development credit on the agricultural sector during the period (2008-2021)**

No.	Year	Agricultural GDP (Agricultural output) (Million JD)	Credit for the agricultural sector (JD)	Number	Average slope	Marginal slope	Financial balance
1	2008	993	25488470	5130	0.05	-	0.00
2	2009	1.120	24930487	4748	0.04	0.003	0.00
3	2010	1.198	24082721	5268	0.03	0.01	0.04
4	2011	1.245	28613085	5321	0.03	0.08	-0.06
5	2012	1.129	25301864	4967	0.03	0.103	0.01
6	2013	1.089	29181002	5571	0.04	0.02	0.01
7	2014	1.171	34549276	6194	0.05	0.03	0.01
8	2015	1.229	37131892	6574	0.03	0.01	0.02
9	2016	1.276	42142407	7285	0.03	0.04	9.42
10	2017	1.337	50946759	9623	0.03	0.66	-0.03
11	2018	1.380	46957229	8490	0.03	-0.03	-0.12
12	2019	1.415	46704330	8031	0.03	-0.03	-0.01
13	2020	1.438	38710120	6186	0.02	-0.02	0.00
14	2021	1.478	53657797	12375	-	-0.01	-

Source: Author's calculations based on fourth, fifth and sixth columns on this table

Table 4. shows that the value of financial balance coefficient has fluctuated up and down during the period (2008-2021), where some values took a negative sign in some years of the study which means deflation in the volume of loans granted to the agricultural sector (credit granted) as a result of credit policies. It was found that the value of the financial balance coefficient in most years of the study was less than the correct one, which indicates the existence of a case of deflation; i.e., an increase in the volume of agricultural output achieved was higher than the increase in credit granted to the agricultural sector.

It is also clear from the previous table that the average slope during the study period is small, as it did not exceed 0.05, which shows that the change in agricultural output does not result in a significant change in the volume of credit directed to the agricultural sector, which indicates the necessity of following a well-defined credit policy that reflects the priorities from the national perspective. By studying the marginal slope of the agricultural sector to use credit, the previous table shows the incompatibility of the agricultural-credit policy with the de-

velopment in the total agricultural output in 2017, where the limit did not exceed 0.66, while in 2009 it was 0.003, which indicates that the change in the volume of credit used in the agricultural sector is less than the change in the total agricultural output, which is due to the application of some credit policies related to the abolition of subsidies that determine the interest rate.

## Demographic Characteristics of the Study Respondents

**Semi-structured interview and questionnaire analysis:** The most important procedures that the researcher used in order to implement this study were to define the study population, the methods used in collecting data and how to reach the results of the study, along with the data that the study needs, the most important statistical methods carried out for data analysis and type and nature of the study. This study follows the descriptive analytical approach, based on the survey method for its relevance to the nature of the study, where the researcher measured the obstacles to the application of agricultural financing formulae in the Jordan



Agricultural Credit Corporation, by collecting descriptive data about them, analyzing it, linking and interpreting this data, categorizing and measuring it and drawing conclusions for dissemination, by collecting information through a note card which was processed by the Statistical Package for Social Sciences (SPSS).

**The study population and sample:** The study population consisted of all employees of the financial and technical sectors in the Agricultural Credit Corporation. After reviewing the statistics of the Agricultural Credit Corporation, it was found that the size of the study population was (205) male and female employees in the Agricultural Credit Corporation. With regard to the study sample, the

researcher distributed (170) questionnaire forms that were submitted to the employees of the Agricultural Credit Corporation, from which (166) questionnaire forms were retrieved. The final study sample consisted of (157) male and female employees who were randomly selected, representing (76.5%) of the study population. The following table shows the numbers of questionnaire forms retrieved and those valid for statistical analysis.

**Table 5. Distribution of study questionnaires**

Distributed questionnaires:	Retrieved questionnaires	Valid for analysis questionnaires
170	166	157

**Table 6. Demographic characteristics of the study respondents**

Variable	Category	Frequency	Percent (%)
Gender	M	72	45.9
	F	85	54.1
<b>Sum</b>		<b>157</b>	<b>100</b>
Age (Years)	24 or less	47	29.9
	25-40	79	50.3
	40-50	25	15.9
	More than 50	6	3.8
<b>Sum</b>		<b>157</b>	<b>100</b>
Education	Diploma	14	8.9
	BA	77	49.0
	Master	56	41.4
	PhD	1	0.6
<b>Sum</b>		<b>157</b>	<b>100</b>
Major	Accounting	31	19.7
	Management	22	14
	Economy	67	42.7
	Finance	10	6.4
	Agronomy	27	17.2
<b>Sum</b>		<b>157</b>	<b>100</b>
Experience (Years)	1-5	22	14
	6-10	74	47.1
	11-15	39	24.8
	16 or more	22	14
<b>Sum</b>		<b>157</b>	<b>100</b>

Source: Author's calculations based on the distributed questionnaire

From table 5, 6, it is noted that:

- 1-The number of males in the study sample was (72 ) with a percentage 45.9%
- 2- The highest percentage according to the age variable was 50.3% for (25-40 years). The lowest percentage for the age groups was 3.8% (more than 50).

3- Distribution of the sample members according to the educational qualification variable:

The highest percentage of the sample according to the education level variable was for the bachelor's level with 49%, while the lowest percentage was for PhD with 0.6%.

4- Distribution of the sample members according to

the experience variable:

The highest percentage of the sample according to the experience variable was 47.1% for (6-10 years), while the lowest percentage was 14.0% for (1-5 years) of experience.

**Table 7. Likert scale**

Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
5	4	3	2	1

The analysis included the calculation of means, standard deviations, and the percentage of each answer of the total answers for one-question T-test and the sample trend for each answer.

As for the group limits adopted by the study when commenting on the group means, they came (high, medium and low). Group length = (maximum - minimum) / number of levels (5-1)/3=1.33.

Low-agreement scores: (1-2.33), medium-agreement scores: (2.34-3.67) and high-agreement scores: (3.68-5).

### Study Financial Obstacles: Evaluation of the Sample Members of the Level of Obstacles by Answering the Following Questions:

1. Accounting procedures are compatible with all

The second part of the form identifies the existing financial, administrative and human obstacles according to a questionnaire that was filled out by the employees to analyze the data and test the hypotheses of the study according to five-point Likert scales, as follows:

- financing transactions.
2. There are no special financing criteria for special cases.
3. Financial resources are sufficient in order to carry out all financing transactions.
4. The Corporation has the technical competence to apply all forms of financing.
5. Some financing transactions are more expensive than others.
6. The time needed for transactions is suitable for farmers.
7. The Corporation sets a financing limit based on the size of the project.
8. The Corporation is reluctant to fund some projects due to the misuse of the target group of funding.

**Table 8. Means, standard deviations, percentage of each answer of the total answers for one-question T-test and sample trend to determine the financial obstacles**

Q	1	2	3	4	5	Mean	SD	%	T-test	Hypothesis	Group
1	97	30	20	10	0	1.6369	0.93475	32.738	-18.2719	statistically sig.	Strongly disagree
2	84	60	11	2	0	1.5478	0.67412	30.956	-26.9923	statistically sig.	Strongly disagree
3	0	2	20	85	50	4.1656	0.68731	83.312	21.24946	statistically sig.	Agree
4	0	0	50	77	30	3.6561	0.51532	73.122	15.95306	statistically sig.	Agree
5	17	80	20	20	20	2.6369	1.19911	52.738	-3.79418	statistically sig.	Neutral
6	2	85	20	20	30	2.9427	1.22077	58.854	-0.58813	Not statistically sig.	Neutral
7	7	0	20	50	80	4.2484	0.99135	84.968	15.77894	statistically sig.	Strongly agree
8	2	10	30	75	40	3.8917	0.89571	77.834	12.4739	statistically sig.	Agree

Source: Author

Table 8. provides the study members' responses' frequencies and percentages. The question (The Corporation sets a financing limit based on the size of the project) came first with a mean=4.24 and a standard deviation= 0.98, within the group strong-

ly agree. The question (There are no special financing criteria for special cases) came last with a mean = 1.54 and a standard deviation= 0.46, within the group strongly disagree.

**Table 9. Financial obstacles' one sample T-test**

Hypothesis	Mean	Standard deviation	Group	T- cal.	T-tab.	Significance	Result
There are no financial obstacles at the significance level ( $\alpha \leq 0.05$ ).	3.12	3.08	Medium-agreement	0.48	1.97	0.00	Support the null hypothesis.

Source: Author

Even though the result is not statistically significant at the significance level of ( $\alpha \leq 0.05$ ). The T-test indicates the existence of administrative obstacles.

**Study Human Obstacles: Evaluation of the Sample Members of the Level of Obstacles by Answering the Following Questions:**

1. Lack of knowledge of the cadre to meet the wishes of dealers hinders the application of financing transactions.

2. There are inadequate specialists to meet the needs of customers.
3. Finance officers need specialized training to implement new financing transactions.
4. There is no intention to train and qualify employees for new financing transactions.
5. There are no incentives to encourage employees to implement new financing transactions.
6. There is an absence of a corporation's culture among employees to implement new financing systems.

**Table 10. Answers of the sample members' means, standard deviations, percentage of each answer of the total answers for one-question T-Test and sample trend to determine the administrative obstacles**

Q	1	2	3	4	5	Mean	SD	%	T-test	Hypothesis	Group
1	0	7	20	50	80	4.29	0.855	85.85	22.06	statistically sig.	Strongly agree
2	7	10	25	85	30	3.77	0.979	75.41	10.06	statistically sig.	agree
3	100	47	7	3	0	1.44	0.576	28.91	-42.91	statistically sig.	Strongly agree
4	8	39	79	31	0	2.82	0.777	56.43	-3.31	statistically sig.	neutral
5	30	80	20	20	7	2.32	1.063	46.49	-7.48	statistically sig.	disagree
6	21	16	37	83	0	3.13	1.070	62.67	1.38	Not statistically sig.	neutral

Source: Author

Table 10. provides the study members' responses' frequencies and percentages. The question (Lack of knowledge of the cadre to meet the wishes of dealers hinders the application of financing transactions) came first with a mean=4.29 and a standard

deviation= 0.73, within the group strongly agree. The question (Finance officers need specialized training to implement new financing transactions) came last with a mean = 1.44 and a standard deviation= 0.45, within the group strongly disagree.

Table 11. Human obstacles one-sample T-test

Hypothesis	Mean	Standard deviation	Group	T- cal.	T-tab.	Significance	Result
There are no administrative obstacles at the significance level ( $\alpha \leq 0.05$ ).	3.45	2.78	Medium-agreement	2.02	1.97	0.42	hypothesis rejected.

Source: Author.

Since the calculated T is greater than the tabular T at the significance level of ( $\alpha \leq 0.05$ ), this indicates the existence of human obstacles. The result is not

statistically significant.

### Results of hypotheses

**Table 12. Means, standard deviations, percentage of each answer of the total answers for one-question T-Test and sample trend to determine human obstacles**

EXPLANATION	
H1, A H1, B H1, C	If we improve Financial, administrative and human-capital factors, then we can promote agricultural transactions because starting effective agricultural transactions will flourish Agri-GDP
H2	If the gov-agri-credit aim to promote Agri-GDP, then they support the agricultural sector because the agricultural sector is instrumental in promoting foreign trade and investment.

Source: Author

Table 13. Hypotheses Testing

DEPENDENT VARIABLES	INDEPENDENT VARIABLES	EXPECTED SIGN	RESULTED SIGN
Agricultural transactions	Financial factors	(+)	SUPPORTED
	Administrative factors	(+)	REJECTED
	Human factors	(+)	REJECTED
Agri-GDP	Gov-agri-credit	(+)	SUPPORTED

Source: Author

### Conclusion

From the results of the questionnaire and the empirical analysis conducted in this study, it can be concluded that the credit supply of the Agricultural Credit Corporation does not serve agricultural development due to administrative and human obsta-

cles. This outcome was not consistent across the various scenarios of the literature review included in this research with few exceptions. In line with the questionnaire's data analysis and hypotheses testing, Jordan's economic strategy (policy) was not significantly correlated to agricultural economic

growth. Estimation of the impacts of credit on agricultural output showed that the value of the financial balance coefficient was negative in some years of the study, which means a decrease in the volume of credit granted to the agricultural sector as a result of the policies related to the interest rate, while the value of the financial balance coefficient in some years was less than one, which indicates the existence of a state of deflation and an increase in the volume of agricultural output achieved by a higher rate than the increase in loans granted.

### Theoretical and Practical Implications

Given the gap in information about agricultur-

al economics in developing countries like Jordan where there is a paucity of literature, this study adds to the body of knowledge on the use of credit in the agricultural sector and how it serves agricultural growth in order to better understand its impacts. This study also proposed a set of detailed models that account for key constructs in predicting Jordanian government credit conduct.

The current study findings showed that state actors are directly responsible and influence the high state's economic priority policy, forming the economic strategy and economic-priorities behavior. Market actors can begin implementing the economic strategy as a key contributor to agricultural economic growth and involvement in economic activities within/ outside the state.

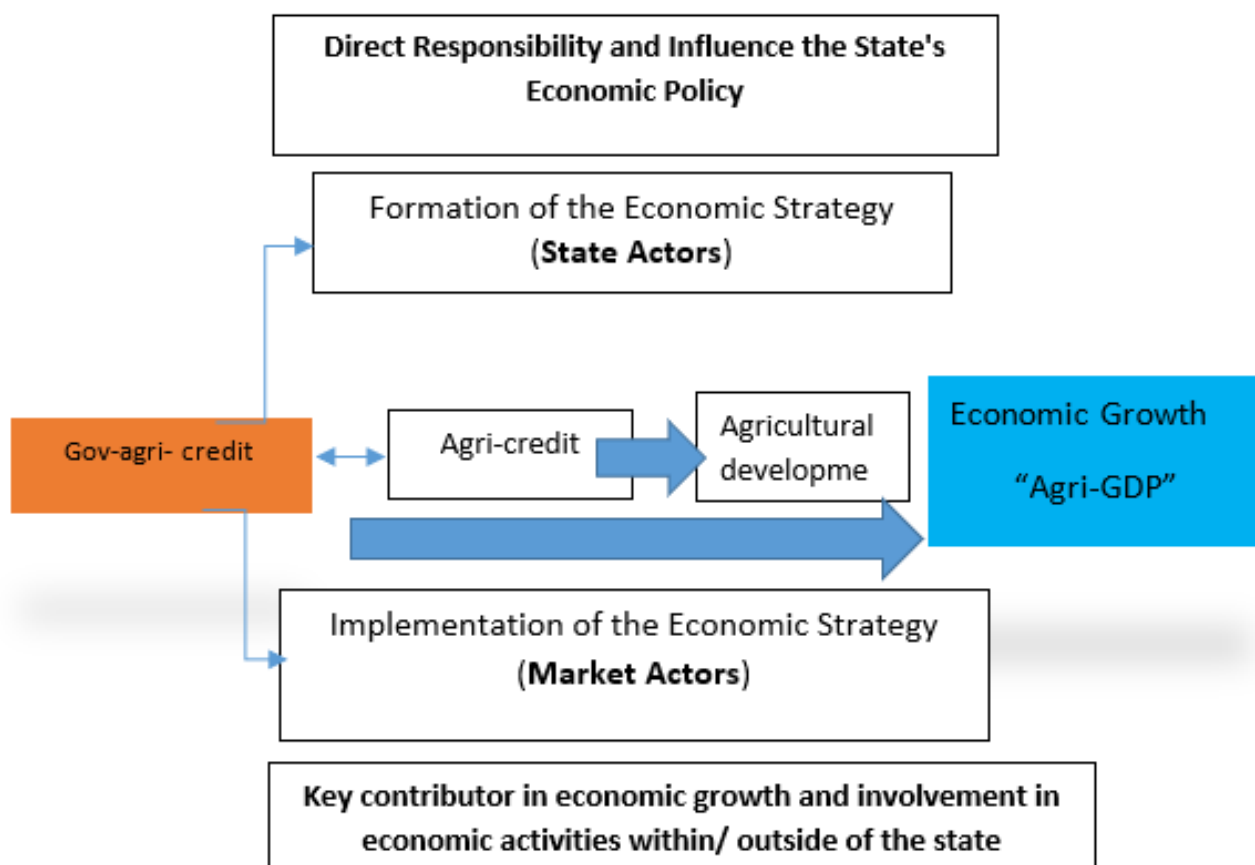


Figure 1. The relation between gov-agri-credit and economic growth.

Table 14. Hypotheses explanation

H	PATH	MEDIATION TYPES	HYPOTHESIS FINDINGS
H1	Financial, administrative and human-capital factors → Gov-agri-credit → Agri-Output → GDP	Partial	✓
H2	Gov-agri-credit → Agri-Output → GDP	Partial	✓

Source: Author

The study expects to boost academic understanding of the decision-maker and researchers regarding how the economic decision can be made in light of economic credit considerations. The present research will motivate the positive impact of agricultural credit and policy in terms of how to promote agricultural output to enhance economic growth. However, further studies proposed in the context of Developing Countries must be taking into consideration more rigorous, holistic research models, and additional data to make the results more robust. Moreover, results of the study could be broader if more countries were included and make comprehensive data reviewed.

Based on the results, the items below need further consideration for Jordan's economic policy to continue exploitation and expand the review that would lead to a growth strategy.

**1- Updating Jordan's investment policy:** Based on the recommendations of the NSE "New Structural Economic" (Lin, 2012) economic development requires continuous upgrading and diversifying of the existing industries; without a structural change, the increase of income per capita will be limited.

**A)** Establishing and updating regulations of the investment policy where this step must include consultation with stakeholders, private and public sectors and the civil society as well, in line with global practice.

**B)** Committing to institutional strengthening of the Agricultural Credit Corporation with another agen-

cy responsible. Strengthening should not be limited to staff increase, but also providing opportunities for training, which necessary to complete this mandate.

**C)** Reviewing and updating concessionary legislations in line with the update of Jordan's economic policy. This should be conducted to ensure that the investment legislations are reflective of the updated thinking of the Jordanian policy.

**2- Enhancing the training scope:** Training must include prioritization of resources and ensuring the availability of adequate employees to support the key credit areas.

**3- The necessity for the Central Bank to take package of measures:** This could help encourage the credit process, such as: reviewing the credit facilities granted and the obstacles facing the credit process in terms of facilitating the procedures and reducing the interest rates on loans to encourage those wishing to borrow, through reducing administrative expenses.

**4- Linking credit with modern technology and agricultural extension:** This will leads to an increase in the productivity of crops and consequently to an increase in farmers' income and an increase in their ability to pay back loans.

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## Limitations

Naturally, several shortcomings could hinder the data analysis and impact the generalizability of results and drawing conclusions. The limitations of this study were: the dataset; namely, the fact that no strong data access caused less powerful findings and could not conduct a representative empirical test of the research hypotheses, as well as the sample size used in the regression analysis, which was limited. However, these limitations do not significantly invalidate the findings presented in this study. However, further investigation must be conducted to understand the results of this assessment with additional certainty.

## Study Recommendations

**Development of gov-agri-credit:** To support the agricultural economic development in line with Jordan's high economic priority strategy, the country's view should develop and expand to support medium - and high priority projects, since the agricultural post-pandemic oriented policy should consider the key success of food security in the conditions of shortage of the supply chain from which the world suffers these days.

To achieve this strategic plan, we need agricultural development based on a food-security priority perspective, especially during and after the pandemic. Why is it important? Increasingly, food security concerns in our universe and the role of the agricultural economy cannot be understated, particularly as food security is essential to the supply of people's needs and desires, which becomes more serious after the pandemic and the current Russian- Ukraine war.

The key success of such a program includes: Upon completion of this plan, citizens can expect to support the development of food security. Improving food security will deliver new jobs and new industries will be founded. All these expected outcomes will reduce poverty and find export opportunities. Even people wishing to develop their businesses or start new jobs will have an opportunity to do so.

**Human development variable:** The results of human development; Labor productivity should be

raised due to the scientific and technical knowledge according to the neoclassical economics theory. This requires developing policies to increase the existing workforce in Jordan. Human investment development increases the workers' ability to cope with uncertainty and different risks. It is also important to make a proper association between human skills and new technologies and industries. Otherwise, the human capital will be either constrained for economic development because of lacking investment or having frustrated educated youth when upgrading the economy isn't fast progressing or does not offer skilled jobs.

The key of success to implementing such an expected policy: Increased productivity as well as the expansion of the industry, employee satisfaction, increased job mobility and increased suitable working environment.

## Bibliography

- Akoijam, Sunildro L.S. 2012. "Rural Credit: A Source of Sustainable Livelihood of Rural India." *International Journal of Social Economics* 40 (1): 83-97. <https://doi.org/10.1108/03068291311283454/FULL/XML>.
- Ali, H. & Davies, D. (2010). The effects of age, sex, and tenure on the job performance of rubber tappers. *Journal of Occupational and Organizational Psychology*, 76.
- Alinda, F., and Pamela Abbott. 2012. "Agricultural Policy and Institutional Framework for Transformation of Agriculture, Economic Development and Poverty Reduction in Rwanda." Institute of Policy Analysis and Research - Rwanda (IPAR-Rwanda).
- Alsuwailam, et al.'. 2021. "Impacts of COVID-19 on the Food Supply Chain: A Case Study on Saudi Arabia." *Sustainability* 2022, Vol. 14, Page 254 14 (1): 254. <https://doi.org/10.3390/SU14010254>.
- Amos, T., Ristow, A., Ristow, L. (2004). *Human Resource management*. (2nd Edition). Juta: Cape Town.
- Anna, Jasińska-Biliczak, and Kowal Jolanta. 2020. "Innovation Capability Development in Regional Entrepreneurship: The Case of

- Economies in Transition.” *European Research Studies Journal* XXIII (4): 6–32.
- Anochiwa, L. (2021). A contribution to the human capital investment debate vis-à-vis economic growth: the case for Nigeria. *Annals of Human Resource Management Research*, 1(1), 15 - 28.
- Azril, H., Shaffril, M. and Uli, J. (2010). Influence of socio-demographic factors on work performance among employees of government agriculture agencies in Malaysia. *The Journal of International Social research*. 3(10), 459-469.
- Boucher, Stephen R., Michael R. Carter, and Catherine Guirking. 2008. “Risk Rationing and Wealth Effects in Credit Markets: Theory and Implications for Agricultural Development.” *American Journal of Agricultural Economics* 90 (2): 409–23. <https://doi.org/10.1111/J.1467-8276.2007.01116.X>.
- Carolina Trivelli trivelli, by, Michael Carter mrcarter, Francisco Galarza, Alvaro Tarazona, and Johanna Yancari. 2006. “Can insurance unlock agricultural credit and promote economic growth? Insuring Agriculture.”
- Dubey, Pushkar, and Kailash Kumar Sahu. 2022. “Examining the Effects of Demographic, Social and Environmental Factors on Entrepreneurial Intention.” *Management Matters* 19 (1): 91–108. <https://doi.org/10.1108/MANM-12-2021-0006>.
- Food and Agriculture Organization. (2020). Farmers and agribusinesses at risk under COVID-19: What role for blended finance funds? FAO. <https://doi.org/10.4060/ca9753en>
- Food and Agriculture Organization. (2021). FAOSTAT statistical database. FAO. <http://www.fao.org/faostat/en/#data/IC>.
- Food Policy* 24 (1): 21–47. [https://doi.org/10.1016/S0306-9192\(98\)00067-0](https://doi.org/10.1016/S0306-9192(98)00067-0).
- Grant Thornton (2021). Uganda economic overview 2020 and economic outlook 2021 (pp. 1–27).
- Hoda, A., & Terway, P. (2015). Supporting Indian farms the smart way: Rationalizing subsidies and investments for faster, inclusive and sustainable growth (Indian Council for Research on International Economic Relations, Working Paper 302) .<http://hdl.handle.net/10419/176320>.
- Ibukun, C. O., & Adebayo, A. A. (2021). Household food security and the COVID-19 pandemic in Nigeria. *African Development Review*, 33(S1), S75– S87. <https://doi.org/10.1111/1467-8268.12515>.
- Initiative for Smallholder Finance ISF Advisors & Rural and Agricultural Finance Learning Lab. (2021). Pathway 4: Agri-SMEs operating in uncertain financial, operational, and supply chain conditions. COVID-19 Emergency Briefing Series.
- International Labour Organization. (2021). Key indicators of the labour market. International Labour Organization. S78|KOLOMAANDKEMEZE
- Jakfar, F., and H. Halim. 2022. “Agricultural Commodity Supply Chain during the COVID-19 Pandemic.” *IOP Conference Series: Earth and Environmental Science* 951 (1): 012109. <https://doi.org/10.1088/1755-1315/951/1/012109>.
- Kovanova, Ekaterina, Nogan Badmaeva, and Sayan Alekseev. 2020. “Demographic Factor of Intensification of Innovation Activity of Russian Regions.” *E3S Web of Conferences* 210 (December): 19001. <https://doi.org/10.1051/E3SCONF/202021019001>.
- Kumar, Rajesh. n.d. “Impact of Disruptions in Agri-Food Supply Chain Due to COVID-19 Pandemic: Contextualised Resilience Framework to Achieve Operational Excellence.
- Jakfar, F., and H. Halim. 2022. “Agricultural Commodity Supply Chain during the COVID-19 Pandemic.” *IOP Conference Series: Earth and Environmental Science* 951(1): 012109. <https://doi.org/10.1088/1755315/951/1/012109>
- Kovanova, Ekaterina, Nogan Badmaeva, and Sayan Alekseev. 2020. “Demographic Factor of Intensification of Innovation Activity of Russian Regions.” *E3S Web of Conferences* 210 (December): 19001.



- <https://oi.org/10.1051/SCONF/202021019001>.
- Kumar, Rajesh. n.d. "Impact of Disruptions in Agri-Food Supply Chain Due to COVID-19 Pandemic: Contextualised Resilience Framework to Achieve Operational Excellence."
- Lin, Justin Yifu. 2012. *Structural Economics Development and Policy*.
- Lin, J. Y., & Martin, W. (2010). The financial crisis and its impacts on global agriculture. Policy Research, Working Paper 5431. World Bank. <https://doi.org/10.1596/1813-9450-5431>
- Mahmood, N, M Khalid, and S Kouser. 2009. "THE ROLE OF AGRICULTURAL CREDIT IN THE GROWTH OF LIVESTOCK SECTOR: A CASE STUDY OF FAISALABAD." *Pakistan Vet. J* 29 (2): 81–84.
- Mazzucato, Mariana, and L. Randall Wray. 2015. "Financing the Capital Development of the Economy: A Keynes-Schumpeter-Minsky Synthesis." *SSRN Electronic Journal*, May. <https://doi.org/10.2139/SSRN.2603847>.
- Nchanji, Eileen Bogweh, Cosmas Kweyu Lutomia, Rowland Chirwa, Noel Templer, Jean Claude Rubyogo, and Patricia Onyango. 2021. "Immediate Impacts of COVID-19 Pandemic on Bean Value Chain in Selected Countries in Sub-Saharan Africa." *Agricultural Systems* 188 (March): 103034. <https://doi.org/10.1016/J.AGSY.2020.103034>.
- Pereira, Marcos, and Ana Marlucia Oliveira. 2020. "Poverty and Food Insecurity May Increase as the Threat of COVID-19 Spreads." *Public Health Nutrition* 23 (17): 3236–40. <https://doi.org/10.1017/S1368980020003493>.
- Seven, Unal, and Semih Tumen. 2020. "AGRICULTURAL CREDITS and AGRICULTURAL PRODUCTIVITY: CROSS-COUNTRY EVIDENCE." *Singapore Economic Review* 65 (supp01): 161–83. <https://doi.org/10.1142/S0217590820440014>.
- Skuras, Dimitris, Nicolas Meccheri, Manuel Belo Moreira, Jordi Rosell, and Sophia Stathopoulou. 2005. "Entrepreneurial Human Capital Accumulation and the Growth of Rural Businesses: A Four-Country Survey in Mountainous and Lagging Areas of the European Union." *Journal of Rural Studies* 21 (1): 67–79. <https://doi.org/10.1016/J.JRURSTUD.2004.05.001>.
- Swinnen, Johan F.M., and Hamish R. Gow. 1999. "Agricultural Credit Problems and Policies during the Transition to a Market Economy in Central and Eastern Europe."
- Official local and international websites: Studies, figures and official statistics- Access date 2022.**
- Ministry of Agriculture, <https://moa.gov.jo/Default/En>,
- National Agricultural Research Center (NARC), <http://www.ncare.gov.jo>.
- Agricultural Credit Corporation, <https://www.acc.gov.jo/en>,
- Jordan Cooperative Corporation, <http://www.jcc.gov.jo>.
- Jordan Enterprise Development Corporation JEDCO, <https://jedco.gov.jo>.