

## The risks of investing in the various fields of the Egyptian agricultural sector

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### **Abstract:**

Countries set their most important priorities in carrying out the process of inclusive development in all sectors of the country, and include working on the operation of all sectors by injecting general investments for the proper operation of those sectors. Research problem: The agricultural sector is most important productive sectors that support society. The investments in it depend mainly on individuals and not on institutions, despite the enormous investment required to work in it, so product and profits threatened with great fluctuations, accordingly, the returns of its projects are lower when compared to other projects. Research objectives: Comparison of returns on investment in different agricultural sectors. Ranking them according to the degree of investment risk, then determine investment priorities. The most important results: The IRR values for livestock and poultry production projects are higher than plant production. The non-agricultural projects IRR is higher than its counterpart of agricultural projects, the investors are interested in projects with a higher benefit- cost ratio, and net present value of project cost and benefits. As for the most important recommendations: There is a great necessity to support agricultural projects in general and plant production in particular. The necessity to increase the percentage of subsidies, in addition to relying on protected crops and contract farming, as the most important motivational tool to directing investments to the agricultural sector to preserve food commodities inside the country, to reduce the trade deficit and investors risks in this sector.

**Key words:** financial feasibility studies, internal rate of return, sensitive analysis, factors affecting of IRR.

### **Introduction:**

Countries set their most important priorities in carrying out the process of inclusive development in all country sectors; it resumes working in all sectors by injecting more investments for the proper working of those sectors. This requires the preparation of objective economic criteria that take into account the profits due to each project and field within the different economic sectors, taking into consideration the risk that these investments are exposed to in those activities, and to identify risk ratio in each sector and how to avoid those risks according to different fields of economic projects.

### **Research problem:**

Whereas the agricultural sector is one of the most important productive sectors that support the society stability at the time of recession and economic crises, as it is the sector concerned with providing food for the population. The investments in this sector must be given a special attention by the state. In spite of this, investments in

the Egyptian agricultural sector depend mainly on the private sector not on public one. Despite the huge investments that are required to enter the various fields of agricultural production, in addition to the most important characteristics of agricultural production, such as the length of the production period, its seasonality, and the inability to change the productive activity after starting it, all these factors make the product and profit amount from this activity threatened by occurrence large and wide fluctuations from time to time. According to these facts the agric. Projects give less returns when compared with others projects.

**Research objectives:**

- 1- Comparing the investment returns from different projects in different fields of the agricultural and non-agric. sectors.
- 2- Arranging the various activities in the agricultural sector according to the degree of risk of investing in them, consequently, the importance of setting priorities.
- 3- Factors affecting of IRR in study sample to determine the difference between the small agric. and non-agric projects with using dummy variable.
- 4- The effect of production costs on investment returns IRR, benefit/cost ratio (B/C) in the various fields of the agricultural sector.
- 5- Trying to develop some policies to reduce the investment risk in various agricultural projects like the supporting policies which working good to face the problems of IRR in these projects.

**Research methodology:**

The research used the project evaluation criteria and statistical methods that are appropriate for the objectives of the research and the nature of the data, such as methods of descriptive and quantitative analysis, to estimate and compare the investment returns in the different agricultural sector through feasibility studies for those activities, to arrange them according to the degree of risk and returns, and then statistical estimate of factors affecting investment returns IRR in the agricultural sector on one hand, and in other sectors on the other hand. That is in addition of the estimation of the present values of costs and returns and IRR of these projects.

**Data resources:**

The research will be based on the data published from the website of the Ministry of Planning and Economic Development, the Ministry of Finance, the Central Bank of Egypt and the Central Agency for Public Mobilization and Statistics, as well as periodicals, pamphlets, books, thesis and articles related to the research topic.

In addition to the data obtained from the records of the agricultural directorates in Menoufia and Qalyubia governorates, and the primary data that collected from personal interviews that were conducted to collect data in 2019/2020 to achieve the main objectives of the research from Menoufia Governorate for plant production, animal production and Qalyubia governorate to collect poultry production data.

This research depended on the primary data collected through case studies, whose components specifically designed to achieve the research objectives. This primary data was collected from the owners of the business farms and the production

under this study. The research choose two farms for some fields and taking data average for investment costs, operating costs, project revenues. So that the results of their work can be relied upon and considered as a general indicator of the firm under the study. Generally, as the financial feasibility studies results are percentages which qualify them to make comparisons between investment returns in different production sectors. The collected cropping production data was collected for one fadan production of traditional crops (wheat and potato), or un-traditional (cumin and coriander+ hibiscus),as well as, animal production from 5 heads of Friesian or 5 heads Buffalo collected from Tala Center, Menoufia Governorate. Regarding the poultry production, it was based on the statistics of Al-Rahma Farm from qaluob center, in Qalyubia Governorate.

In addition to row data of non-agricultural projects collected from the Internet, then the main indicators of financial feasibility studies were calculated by the researcher.

### **Results and discussion:**

Due to the increasing unemployment rates in Egypt, the trend towards providing and supporting the establishment of small projects in the various governorates is a duty that requires attention. The advantages of small projects: Providing job opportunities for many youth on the farm, Increase profitability rates, and maximum utilization of agricultural production and marketing by processing them. The revenues of each of the following projects depend on the marketing efficiency of the project, as these small projects depend on their individual success of the project owner.

The research conducted the financial feasibility studies for some projects in different fields of agricultural production and others in different same fields of un-agricultural production, to assess the factors affecting the projects returns and the investing risks on it, to reach the future investment planning in various fields, based on the current state of internal and external demand for different commodity groups in Egypt.

The research is based on calculating the criteria for financial feasibility studies for small projects. The World Bank has defined small projects as the institutions which have less than fifty labors, while the International Labor Organization defined it as those industries which have less than ten employed, as for the Egyptian definition of the Central Agency for Public Mobilization and Statistics; it is defined as projects that employ 1-99 workers<sup>(3)</sup>.

The research tended to adopt the definition of the International Labor Organization, so that the small investor or the single farmer can work with it due to the fragmentation of agricultural holdings in Egypt, As well as taking the same standard with non-agricultural projects so that their costs are all similar, which facilitates the comparison between the general results of all of them.

### **First: Financial feasibility of projects in the different fields of agricultural and non-agricultural projects:**

Evaluation is an assessment that is as systematic and impartial as possible of a project, program or entire strand of activities under a single thematic or institutional heading. An evaluation should provide evidence-based information that is credible,

reliable and useful, thereby permitting the timely incorporation of findings, recommendations, and lessons into the decision-making processes at the corporate, program and project levels<sup>(9)</sup>.

By reviewing the results of the research for feasibility studies for agricultural and non-agricultural projects, in ascending order to be a reference for investors in directing their investments in the Egyptian market to avoid and reduce risks that may occur.

### **1- Financial feasibility studies results for projects in different fields of agricultural production:**

**A-Feasibility studies for crops production:** The research depends on two combinations of cropping patterns applied in Egypt, first one is for traditional crops consisting of wheat as a winter crop and potatoes as a summer crop, the second for unconventional crops, which are medicinal and aromatic plants, which are made of cumin and coriander as winter crops, and hibiscus as a summer crop.

The Investment costs pay for faddan about 60 thousand Egyptian pounds. Operating costs: It includes the variable costs, which are seeds, fertilizers of all kinds, pesticides, petty expenses, labor and irrigation costs, electricity, gas and water. Project revenues: after wheat processing, into finished products, it is sold to consumer; regarding potatoes are either marketed directly to the end consumer or are processed table (1).

**B-Animal Production:** Dairy production from Friesian cows or milk buffaloes will be addressed to small farms; depreciation is added as an annual percentage to the annual operating costs.

Milk's friesian cows project is one of the successful investments, as it is one of the breeds with high productivity of milk, the project has an operating period 8 years, after this time the 5 heads of livestock will be replaced because its productivity begins to decline. And investment costs: place at 15 to 40 m<sup>2</sup> per head at a cost of 5,000 Egyptian pounds, a store for fodder, a milking machine, and a cooler to store milk, and the cost to purchase 5 heads Friesian milk's 135,000 Egyptian pounds. Operating costs: Fodder, medicines, treatments, and mineral salts, wages for the worker and the milkier, transportation costs, electricity, gas and water. Project revenues: it contributes to saving milk over only 80% of the total year, the head produces an average of 15 kg of milk daily, and production period of milk is about 305 days annually.

Milking buffalo projects one of the generate profits for its owner, (5heads) the period of operation of the project is 10 years, which is the economic productive life of the head of buffalo. And the investment costs are location, a milkman, a cooler, and a fodder store, at a cost of 25,000 Egyptian pounds, and buying a buffalo at a value of 100,000 Egyptian pounds. Operating costs: purchase of green fodder, fodder factory, veterinary medicine, and labor. Project revenues: Milk is available over only 80% of the total year, one head produces an average of 6 kg of milk daily, and the production period is about 200 days annually table (1).

**C - Poultry production:** The research will focus on the poultry production projects from brown subspecies which rose in the ground floor, and the depreciation

value was added as a percentage represented by one number on the operating costs, Considering the building life span of 30 years, Its value is estimated at about 25% of its original value at the end of its production period, electrical tools are considered items completely perishable at the end production period without value, production period of window wires is two year without value in the end of this period, while production period of electric generator, grain crushing machine, air conditioners, straws, and the sable transmission unit 30 years, each one of them have different scrap value at the end of its production period, as for watering and food units, its production period is about 10 years, zero scrap value at the end of it.

Egg chicken project is one of the very successful investments in Egypt, and the operating period is 30 years, which is represent economic and accounting productive period of any project, as well as the productive of the Belding is extended, the broiler chickens are replaced every year. Regarding the investment costs: the farm building and some tools and machines for production. Operating costs: the price of chicken, fodder, temporary labor, permanent labor, medical supervision, disinfection, vaccination, medicines, periodic maintenance, and electricity consumption. Project revenues: from the sale of eggs, maternal chickens and sabla table (1).

**Table No. (1): Financial results of investment in the various fields to Egyptian agricultural sector in 2020:**

Data	Plant production		livestock production		Poultry production
	Traditional crops	Non-traditional crops	milk's friesian	milking buffalo	egg chicken
Investment costs (in thousand Egyptian pounds)	60.0	60.0	160.0	125.0	142.0
Operating costs (in thousand Egyptian pounds)	29.8	10.1	41.2	19.2	161.9
Revenue (in thousand Egyptian pounds)	38.2	18.9	141.9	48.0	195.3
Internal rate of return (IRR)	15%	16%	36%	26%	30%
Benefits-cost ratio (B/C)	1.14	1.36	1.49	0.66	1.14
Payback period	6.7	6.2	2.7	3.8	3.0

Source: Calculated from case study data collected by the researcher.

### **Financial results of investment in the various fields of Egyptian agricultural sector:**

- Project internal rate of return (IRR)<sup>(7)</sup>: The results in table (1) it is explain that the IRR of the study projects is estimated around 15% for traditional cropping pattern against 16% for unconventional plant production, for livestock production about 36% for Friesian compared to 26% for buffaloes, and for egg production about 30%.
- Benefits/cost ratio (B/C): The results around 1.14 for traditional plant production compared to 1.36 for unconventional plant production, and for livestock

production, about 1.49 for the Friesian compared to 1.02 for buffalo, and for poultry production, the benefit/cost ratio is about 1.14.

- Payback period: The results of capital recovery period is estimated at 6.7 years for traditional plant production compared to 6.2 years for unconventional plant production, and for the livestock production, about 2.7 years for the Friesian compared to 3.8 years for buffaloes. Regarding the poultry production the payback period is about 3 years table (1).

## **2- Results of financial feasibility studies for projects in some different fields of non-agricultural production:**

The production period of each of these projects was considered to be about 30 years.

**A - The first project:** It is considered one of the industries required for packing fruit for marketing, and the importance of this industry is increasing due to its dependence on paper waste from newspapers and magazines that consume and throw waste.

Investment costs: area between 60-75 m<sup>2</sup> and a store for raw materials and products, in addition to the equipment and machinery needed for the project, which amount to about 250000 Egyptian pounds. Operating costs: fixed costs, which are permanent and temporary labor, and variable costs: production requirements, amounting about 182880 Egyptian pounds. Project revenues: from selling fruit dishes with different sizes, amounting to 285000 Egyptian pounds.

**B - The second project:** It is a project to manufacture women's clothes, which is one of the common industries in Egypt and depends on simple and easy-to-obtain technology, in addition to the presence of local demand for this commodity.

Capital assets investment costs: a place of a small area, in addition to sewing machines and their accessories, at a cost of about 85200 Egyptian pounds. Operating costs: the fixed costs, which are permanent and temporary employment, and variable costs, which are operating requirements, amounting about 576720 Egyptian pounds. Project revenues: from selling women's and daughter's clothes, which amount about 888192 Egyptian pounds.

**C-The third project:** There are many raw materials in the Egyptian environment that can be used, such as the leaves, which can be supplied from the palm trees that are abundant in most governorates in Egypt. The manufacture of the leaves is considered an alternative to burning it which serves the environment, and it is included in the cage industries to market some types of vegetables and fruits and many other industries.

Capital assets Investment costs: a place of 170 square meters for the production line and a place to store production requirements and the final product, equipment and machinery needed for the project, amounting to about 331750 Egyptian pounds. Operating costs: the fixed costs of permanent and temporary employment, and the variable costs of operating requirements, about 135480 Egyptian pounds. Project revenues: from selling products, amounting to about 252000 Egyptian pounds.

**D - The fourth project:** It is a project of packaging a lot of goods and tools that have many shapes and sizes.

Investment costs: a small place, simple equipment and machinery needed for the project, at a cost of about 100000 Egyptian pounds. Operating costs: the fixed costs, which are permanent and temporary labor, in addition to the variable costs of production requirements for operating the project, which are about 120000 Egyptian pounds. Project revenues: The project contributes to providing bags and plastic bags, at a value of about 150000 Egyptian pounds.

**E - The fifth project:** buying a car to transport vegetables and fruits from production places to markets.

Investment costs: buying a semi-transport vehicle, in addition to the costs of licensing and equipping the car, which amount to about 234000 Egyptian pounds. Operating costs: the costs of the driver, assistance, gasoline and maintenance expenses of the car, which are about 70200 Egyptian pounds. Project revenues: are the fees for transporting vegetables and fruits to different markets, amounting to about 150800 Egyptian pounds.

**Results of the feasibility study investment in the various fields to the Egyptian non-agricultural sector:**

- Project Internal rate of return (IRR): The results show that, the internal rate of return for the projects under study ranges from 46% to 59% table (2).
- Cost Benefit Ratio (B/C): The results show that, the cost benefit ratio for the non-agricultural projects under study ranges from 1.19 to 1.78.
- Payback period: The results show that the period of capital recovery ranges between 1.7 to 2.3 years for the non-agricultural investment projects under study table (2).

**Table No. (2): Results of the feasibility study investment in the various projects for non-agricultural Egyptian sector in 2020:**

Data	non-agricultural projects				
	Empty packaging fruit plates of waste paper	Manufacture of women's clothes	The palm waste industry project	Manufacture of packaging plastic bags and bags	car project to transport fruit and vegetable
Investment costs (in thousand Egyptian pounds)	276.5	852.0	331.8	100.0	234.0
Operating costs (in thousand Egyptian pounds)	182.9	576.7	135.5	120.0	70.2
Revenue (in thousand Egyptian pounds)	285.0	888.2	252.0	150.0	150.8
Internal rate of return (IRR)	59%	58%	54%	43%	53%
Benefits-cost ratio (B/C)	1.71	1.52	1.62	1.19	1.78
Payback period	1.7	1.7	1.9	3.2	1.7

Source: collected data from of the international network, and calculated by research.

**Second: the statistical estimation of factors affecting internal rate of return (IRR) for agricultural and non-agricultural projects:**

The research tended to make several attempts to find out the impact of the results from feasibility studies on IRR for the different projects, the results obtained, which are consistent with the economic logic, were presented in Table (3), which indicated that:

The results of the first equation, illustrate the positive statistically significant effect for the between the return to costs for each project on its IRR values.

As for the results of the second equation, which explain the factors affecting the values of the internal rate of return for all projects, it has been shown that the present value of sum total returns and costs of the project, the dummy variable which take (0) value for agricultural projects and (1) value for non-agricultural projects, It represents about 89% of the factors affecting IRR of the project under study, Also, the calculated F value was higher than its tabular counterpart. This indicates that the mathematical equations used to explain the fluctuations in IRR. The equation also clarified the statistically significant impact of the total present value returns of the project X4 on the value of its IRR, whereas, the higher the present value of the total returns from the project, the more investors are willing to take their investments in the project. As well as the negative statistically significant effect for value of total current costs of the project X3 on the value of IRR, whereas, the lower the present value of the total current costs of the project the more that encourages investors to undertake these projects, which is consistent with economic logic. As for the effect of the difference between agricultural and non-agricultural projects on the value of IRR, It shows that the profits average of non-agricultural projects exceed than its counterpart of agricultural projects. It means that the difference between non-agricultural and agricultural projects is in favor of non-agricultural, which requires increase subsidies and incentives for Egyptian farmers, as he has the priority care and protection.

**Table No. (3): Factors effecting IRR in different agricultural and non-agricultural projects on IRR values of study projects:**

number	Independent variable	Equations	R <sup>2</sup>	F
1	B/C (X <sub>2</sub> )	Y= -7.63 +34.26 X <sub>2</sub> (2.66)	0.47	7.08
2	Factors affecting the values of IRR	Y=25.16 +23.42 X <sub>1</sub> -1.92 X <sub>3</sub> +1.32 X <sub>4</sub> (3.94) (-1.79) (1.88)	0.89	15.68

Where:

**Y :** Estimated value of internal rate of return for projects under study.

**X<sub>1</sub>:** Dummy variable to explain the difference between agricultural projects (= 0) and non-agricultural projects (= 1).

**X<sub>2</sub>:** Benefits-cost ratio of the study projects.

**X<sub>3</sub>:** Total present value of costs.

**X<sub>4</sub>:** Total present value of benefits during project period.

**Source:** collected and calculated from results of the agricultural and non-agricultural projects feasibility studies.

The previous equations referred to them, indicate that non-agricultural projects are more profitable than agricultural projects, within the limits ranging between 23 and 34% for non-agricultural and agricultural projects. The statistically significant

results of the equations also confirmed that the positive effect of increasing net present value of returns and the negative of increasing net present value of present value of costs on the IRR values, their effect is ranges between 1.92% and 1.32%.

**Third: Using sensitive analysis to estimate investment risk in agricultural and non-agricultural projects:**

To avoid investor risk in decision-making in working in the free market depends on personal experience and the information available; These risks can be summarized in the increase of the prices of production inputs or the decrease in the prices of the final products, Hence, it is necessary to influence these risks in favor of the investor, otherwise he will be reluctant to invest in other various production sectors.

**1- Using sensitive analysis to estimate investment risk in different fields of agricultural production:**

The main investment risk that any productive activity may be exposed to is limited in achieving financial losses. The research applied sensitivity analysis for the results of the financial feasibility studies of the projects under study in different fields of agricultural production, the results listed in table (4):

**Investment risk in plant production:** From the results of the sensitivity analysis in the following table, it became clear that: The first project is very sensitive to any fluctuations in the prices of production inputs or the final product, As moving in one of them by about 20% brings losses to producer, and moving both of them together reduces the product's profits by 5%. The second project very sensitive for any fluctuations in the final product prices in a degree higher than the degree of sensitivity for fluctuations in the prices of inputs, as for both to move by 10% reduces product profits by 11%, while the decrease in revenue with increases in profits by 20% for each of them which realizes losses to the product.

**Table No. (4): Sensitivity analysis for the investment in different agricultural sector projects in 2020:**

Data		Plant production		livestock production		Poultry production
		project 1	project 2	project 3	project 4	project 5
		Traditional crops	un-traditional crops	milk's friesian	milking buffalo	egg chicken
<b>Internal rate of return (IRR)</b>		15%	16%	36%	26%	30%
<b>Sensitivity analysis</b>	<b>increase Cost 10%</b>	7%	13%	32%	23%	12%
	<b>increase Cost 20%</b>	-	11%	28%	20%	-
	<b>decrease in revenue 10%</b>	5%	11%	27%	19%	8%
	<b>decrease in revenue 20%</b>	-	6%	18%	11%	-
	<b>Costs increase 10% while revenue decreases 10%</b>	5%	11%	23%	16%	-
	<b>Costs increase 20% while revenue decreases 20%</b>	-	-	9%	5%	-

Source: collected and calculated from the data of study questionnaire samples.

**Investment risk in livestock production:** the results in the following table clarify that the third project is very Sensitivity to decrease revenues are higher than higher in costs, whereas, decreasing revenues by 20% reduces the IRR to 18%. On the other hand, reducing costs by 20% reduces the IRR to 28%. Moving both together

## The risks of investing in the various fields of the Egyptian agricultural sector ٣١٠

reduces the product's profit to 9%. As for the fourth project, it is more sensitive to diminishing revenue than its counterpart to higher costs. Whereas, decreasing revenues by 19% reduces the IRR to 16%. On the other hand, reducing costs by 20% reduces the IRR to 28%. Moving both together reduces the profit of the producer to 5%.

**Investment risk in poultry production:** From the results of the sensitivity analysis, it's clear that the fifth project is very sensitive to any fluctuations in the prices of production inputs or the final product. As moving about 20% in one of them results in losses to the producer, and both moving together at only 10% bring losses to the producer.

### 2- The investment risks which the projects are being exposed to in different sectors of non-agricultural production:

**Investment risks in first project:** From table (5), it is more sensitive to the change in final product prices than changes production requirements prices, this is evident from that, a decrease in revenues by about 20% reduces the IRR to about 19%, an increase in the production inputs prices by 20%, the value of the IRR decreases to about 31%, while the increase in production costs and a decrease in revenues by 20% for each of them leads to realizing losses in the project.

**Investment risks in the second project:** The results of the analysis showed that the project, it is more sensitive to the change in final product prices from the change in production inputs prices; this is evident from a decrease in revenues by about 20%, reduces the IRR to about 18%, compared to an increase of production input prices by 20% lower the value of the IRR to about 30%, the increase in production costs and the decrease in revenues by 20% for each of them lead to realizing losses in the project.

**Investment risk in the third project:** From the results of the sensitivity analysis, it turns out that the project is more sensitive to the change in final product prices than the change in the production inputs prices. This is evident from a decrease in revenues by 20% reduces the IRR to 25%, in exchange for an increase production inputs prices by 20%, the IRR value decreases to 37%. This indicates that the project will withstand the worst conditions, which are increases costs with decreases revenues and the movement in both of them by 20%. The project achieves profits, but by about 12%.

**Investment risks in the fourth project:** The results of the sensitivity analysis explained, that the project is very sensitive to any change in the production inputs prices or final product prices, whereas, moving in any of them, even by 10%, achieves losses for the project.

**Investment risks in the fifth project:** From the results of the sensitivity analysis, it turns out that the project is more sensitive to the change in the final product prices than the change in production inputs prices. This is illustrated by a decrease in revenues by 20%, the IRR reduces to 27%, and in contrast, increase the production inputs prices by 20%, the IRR decreases to 40%. While a project will withstand worst conditions, that costs increase with revenues decrease by moving in each of them by 20%, the project profits will be about 18%, it is a higher gain than bank profits; this indicates the efficiency of the project and tolerance of the worst conditions that can be encountered in working in the market.

**Table No. (5): Sensitivity analysis for investment in the different Egyptian non-agricultural sector in 2020:**

Data		non-agricultural projects				
		project 1	project 2	project 3	project 4	project 5
		Fruit packaging paper dishes	Women's Clothing	The palm waste industry project	Manufacture of plastic packaging bags and bags	car project to transport fruit and vegetable
<b>Internal rate of return (IRR)</b>		59%	58%	54%	43%	53%
<b>Sensitivity analysis</b>	<b>increase Cost 10%</b>	43%	42%	45%	21%	46%
	<b>increase Cost 20%</b>	31%	30%	37%	2%	40%
	<b>decrease in revenue 10%</b>	36%	35%	38%	17%	39%
	<b>decrease in revenue 20%</b>	19%	18%	25%	-	27%
	<b>Costs increase 10% while revenue decreases 10%</b>	25%	24%	30%	-	33%
	<b>Costs increase 20% while revenue decreases 20%</b>	-	-	12%	-	18%

**Source:** Collected from the internet and calculated by researcher.

**Fourth: Suggested policies to reduce investment risks in agricultural sectors:**

Although agriculture represent more than 5% of total world production and about 10% of international trade, where is reflect the majority of rural population <sup>(1)</sup>, it is still considered most sectors affected by national and regional support and protection policies, where most countries protect their farmers for political, environmental, developmental and economic reasons. There is no doubt that the obstacles in front of agricultural commodities trade is the most accurate and important. In order to develop agriculture export in the current international economic conditions, there has to be some support and protection, the agriculture sector cannot continue if the public sector does not contribute directly or indirectly to develop the technology used, financing and diversifying production, increasing quantities and improving quality.

The decrease in agricultural investments in light of the current situation will lead to a decrease in employment opportunities in this sector, and the entry of new groups of rural society below the poverty line, in addition to occurrence of possible migration from countryside, especially in Upper Egypt. And when some farmers in Sinai - RasSidr were asked about their views proposed solutions to advancement of the agricultural sector and develop investments in it, they reported was matching with the general three basic policies that can help the growth of the Egyptian agricultural sector, namely <sup>(2)</sup>:

- 1- Subsidy Policy: It is all that the state budget bears, to cover the price differences of goods and services from their economic prices, subsidy is one of the most important economic policy tools that the government uses to monitor market

## **The risks of investing in the various fields of the Egyptian agricultural sector** ٣٠٨

equilibrium, to achieving economic and social goals in development plans. Subsidy divided into in-kind and cash.

Whereas, agricultural sector subsidy policies contribute to easing the burden of productive costs on farmer, Hence, by increasing farmers subsidy, it requires increasing production and reducing poverty, unemployment and the external debt crisis, whereas support for farms is currently restricted in Egypt due to the current international agreements, on the other hand, the governments of the European Union support their agricultural production by many ways that lead to huge European agricultural surpluses, a large part of it is exported to developing countries at prices below their actual production costs, which gives it the opportunity to compete with the local product, Which leads to reduce the Egyptian production.

2- Protected agriculture: It is an advanced agricultural method that works mainly to increase productivity in quantity and quality. It is an industry based on capital intensification to intensify agricultural production.

The protected agriculture achieves market stability throughout the year; it also achieves an increase in the standard of living, because it compensates cultivation of large areas and shortened them in small areas, to achieve the objectives of increasing production despite of the scarcity of economic resources.

3- Contract farming policy: They are futuristic contracts; they are usually accompanied by attractive and pre-agreed prices. It eliminates the obligation of the farmer to produce and deliver a specific agricultural product in quantities and at a quality level agreed.

Where a producer agreement and the price is determined in advance of the production process, the buyer is required to provide some advisory services- marketing or financing, and within the agreed limits upon in the contract, it is considered a way to encourage and direct farmers to grow the strategic crops that the country needs.

### **Results:**

1- It is concluded from the results of the financial feasibility studies for the various agricultural and non-agricultural production projects that:

a- By arranging some agricultural projects in an ascending order using the results of the internal rate of return (IRR) to be a reference for investors in placing their investments in the Egyptian market and to avoid any possible risks falling into them: It turns out that livestock and poultry production projects are the most profitable, followed by plant production projects.

b- The internal rate of return (IRR) for non-agricultural projects is higher than its agricultural counterpart, despite the lower investment costs, the payback period, and the cost-benefit ratio, compared to its agricultural counterpart. This represents risk to investments in agricultural projects when the investor comparing it with non-agricultural enterprises.

2- By studying the effect of costs and revenues on the value of the internal rate of return for the projects under study, It became clear that investors are primarily concerned with pumping their investments in projects with a higher ratio of returns to costs, and the current value of costs and returns for the project. All of these factors are the determining factors for investors to direct their investments in non-agricultural projects at the expense of agricultural projects

3- The investment risk in agricultural and non-agricultural projects:

- a- The investment risk in agricultural production: Investments in traditional crops and poultry are very sensitive to any movement in costs or revenues. Investments in non-traditional crops and livestock production are more sensitive to any decrease in revenue.
- b- The investment risk in non-agricultural production: It is more sensitive to the decrease in revenues than to the increase in the prices of production inputs, except project of transport fruit and vegetable.

### **Recommendations:**

- 1- There is a great necessity to support agricultural production projects in general and plant production in particular, Due to the low internal rate of return in agricultural projects compared to non-agricultural projects; otherwise.
- 2- Increasing the percentage of investments directed to the Egyptian agricultural sector, as it contributes to the country's gross domestic product by up to twice the proportion of investments directed to it, it is a sector that carries the burden of providing food to the people as well as providing production requirements for many economic sectors. It also contributes to providing job opportunities and providing stability for a large proportion of the population.
- 3- It is suggested that the government undertake investment planning, motivate individuals and direct farmers to projects that serve the state's general plans. This can be done by conducting detailed studies of the productive groups and their internal items in the Egyptian trade balance, side by side from exports and imports for a suitable period of time to determine the quality, quantity and place of effective demand for those commodities in order to direct investments to them. Some examples have also been studied of products within the commodity groups as permitted by financial capabilities of the research.
- 4- The necessity to increase subsidies percentage in addition to relying on contract crops and protected crops, as the most important incentive tools to direct investments to agricultural sector to preserve food commodities within the country to reduce the trade balance deficit and reduce investors risk in this sector.

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## **مخاطر الإستثمار بالمجالات المختلفة للقطاع الزراعي المصري**

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### **الملخص:**

تضع الدول أهم أولوياتها في القيام بعملية التنمية الشمولية في جميع قطاعات الدولة، ويتضمن العمل علي تشغيل كل القطاعات بضخ أستثمارات عامه للتشغيل السليم لتلك القطاعات، وهذا ما يتطلب إعداد معايير إقتصادية موضوعية تأخذ في الإعتبار الأرباح المستحقة من كل مشروع ومجال داخل القطاعات الإقتصادية المختلفة، مع الوضع في الإعتبار المخاطر التي تتعرض لها هذه الإستثمارات في تلك الأنشطة. وجاءت مشكلة البحث لتوضح أنه بالرغم من أن الزراعة داعمة لإستقرار المجتمع، فيلزم أن توليها الدولة إهتمام خاص. وبالرغم من ذلك فإن الإستثمارات بها تعتمد علي الأفراد وليس المؤسسات، بالرغم من ضخامة الإستثمارات المطلوبه للدخول فيه، وطول فتره الإنتاج، وموسميها، مما تجعل المنتج وحجم أرباحه مهدد بحدوث تقلبات كبيره. وتصبح المشكلة مركزه في أن مشروعات القطاع الزراعي أقل عائدا من مثيلتها غير الزراعيه ولا بد من مواجهه ذلك دعما لقطاع الزراعة. كما جاءت أهداف البحث لمقارنه عوائد الإستثمار بالمجالات المختلفة في القطاع الزراعي، ترتيب الأنشطة حسب درجه خطوره الإستثمار بها، التقدير الإحصائي لمحددات IRR للمشروعات الزراعيه وغير الزراعيه، تأثير التكاليف الإنتاجيه علي عوائد الإستثمار بالمجالات المختلفة، محاوله وضع سياسات للحد من مخاطر الإستثمار بالمجالات المختلفة في القطاع الزراعي. تم الإعتماد علي البيانات الأولية التي جمعت من خلال دراسات الحالة للمشروعات المختلفة.

وجاءت أهم النتائج لتوضح أن قيم IRR لمشروعات الإنتاج الحيواني والداخلي أعلي من نظيرتها للإنتاج النباتي، كما أنها للمشروعات غير الزراعيه أعلي من نظيرتها الزراعيه بالرغم من أنخفاض التكاليف الإستثمارية وفتره الإسترداد ونسبه العوائد للتكاليف مقارنه بنظيرتها الزراعيه. كما أوضح تأثير التكاليف والإيرادات علي قيمة معدل العائد الداخلي للمشاريع أن المستثمرين يعينهم ضخ إستثماراتهم في المشروعات ذات النسبة الأعلى في العوائد إلي التكاليف، والقيمة الحالية للتكاليف والعوائد للمشروع، وكل تلك العوامل توجه المستثمرين لضخ إستثماراتهم في المشروعات غير الزراعيه علي حساب المشروعات الزراعيه.

أما أهم التوصيات فأوضحت أن هناك ضرورة كبيره لدعم مشروعات الإنتاج الزراعي عامة والنباتي خاصه، نظرا لإنخفاض معدل العائد الداخلي لها بالمقارنه بالمشروعات غير الزراعيه. ضروره زيادة نسب الدعم إلي جانب الإعتماد علي الزراعات المحمية والزراعات التعاقدية كأهم الأدوات التحفيزية لتوجيه الإستثمارات للقطاع الزراعي للمحافظة علي السلع الغذائية داخل الدولة لتقليل العجز في الميزان التجاري وتقليل المخاطر للمستثمرين في هذا القطاع.

**الكلمات المفتاحية:** دراسات الجدوى المالية، معدل العائد الداخلي، تحليل الحساسيه، محددات الـ IRR.