

"Insurance Plus Futures" Will Boost Targeted Poverty Alleviation

-- Take the Apple project in Lixian County, Gansu Province as an example

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Abstract: Once the model of "insurance + futures" was put forward, it aroused great attention from the government. In recent years, the variety of "insurance + futures" products and the expansion of pilot areas have effectively promoted the process of targeted poverty alleviation and contributed to the development of rural revitalization. Taking Apple project in Lixian County, Gansu Province as an example, this paper elaborates the launch background, operation mechanism, existing problems and promotion suggestions of "insurance + futures" in detail.

Keywords: "Insurance + futures", Targeted poverty alleviation, Lixian county.

1. Background of the Launch of Apple's "Insurance + Futures" Project

1.1. Continuous Promotion of the "Insurance + Futures" Pilot Project By the Central Government

In 2015, China launched the "insurance + futures" pilot project for the first time and achieved remarkable results. Since 2016, the "insurance + futures" model has been written into the No. 1 central document for seven consecutive years. The "insurance + futures" model can not only transfer the price risk of crops, but also reduce the income instability caused by the high price fluctuation of crops.

1.2. The Pilot Program of Insurance Plus Futures for Agricultural Products Was Expanded in Scope and Scale

Since the pilot of the "insurance + futures" project in 2015, insurance companies, futures companies, governments at all levels and other relevant parties have actively participated in the pilot promotion of "insurance + futures", and the pilot scope and scale have been constantly expanding. As of December 31, 2020, 622 "insurance + futures" projects had been carried out, covering corn, soybean meal, soybean, egg, sugar, apple and other varieties, with a nominal principal of about 18.826 billion yuan.

1.3. Apple Planting Area Is Large, High Yield

China's apple cultivation area is about 40 million mu, and the annual output is about 46 million tons, accounting for more than half of the global output. Apple planting area in our country is widely distributed in 25 provinces, dimension, longitude span is big, cover loess plateau and bohai bay area two advantages, including shaanxi, gansu, shandong, henan, shanxi, hebei and other regions for major apple supply area in our country, combined annual output up to 24.5 million tons, accounting for 53% of the total annual production.

1.4. Apple Growing Areas Are Mostly Poor Areas

Due to apple's growth environment when the big temperature gap between day and night, sunny temperate hilly plateau, so at present our country apple producing more distribution in bohai bay and the northwest loess plateau region. Due to the existence of objective natural conditions, these areas are not suitable for human habitation and are the key poverty-stricken areas. Therefore, the main apple producing areas in China highly coincide with the key poverty-stricken areas in China, and apple cultivation has become an important source of income for local fruit farmers. There are 122 key counties and cities of apple identified by the Ministry of Agriculture in China, among which 33 are national-level poverty-stricken counties.

1.5. The Price of Apple Fluctuates Greatly, And the Income of Fruit Farmers Is Unstable

1.5.1. Constraints of Natural Environment

The influence of natural environment on apple growth is mainly manifested in two aspects. On the one hand, during the fertilization period, due to the influence of rainy weather, fertilization operations can not be carried out normally, coupled with too much rain, so that the fruit tree nutrition deficiency, thus hindering the growth of apple flower buds; On the other hand, sudden cooling and frosts in early spring can also affect apple growth and yield later on. In 2016, due to the influence of El Nino phenomenon, the northern region continued to dry and the southern region frequent flooding disasters led to sharp fluctuations in apple prices and unstable income of fruit farmers.

1.5.2. Alternation of Seasonal Cycles

In addition to the natural environment, apple price changes are also affected by seasonal cycles. Usually, from September to November each year is the apple picking period, at this time there will be a large number of fresh apples into the spot market circulation, the supply of apples greatly increased, the price is relatively low; Apple's peak sales season, from

December to February, increases prices; March and April of each year is the period when apples are concentrated in cold storage. The supply of apples increases and the price decreases. In May, the shipment of cold storage apple is nearing the end, at this time, the supply volume is reduced, the price has been adjusted; Prices are relatively low during the period from June to August, when early apples are concentrated, driving overall wholesale prices lower.

It is the instability of the apple market price that can only passively accept the market price, which makes the annual income of farmers cannot be guaranteed, thus affecting the basic living standard of fruit farmers.

2. Operation Mechanism of "Insurance + Futures" Mode

2.1. The Application Principle of "Insurance + Futures" Mode

Application principle of "insurance + futures" mode: insurance companies design corresponding products based on the price of agricultural products and over-the-counter option products; Farmers or agricultural producers become value-protected investors in the futures market by purchasing corresponding insurance products, and transfer the risk of agricultural prices to speculators trading in the futures market, so as to achieve the purpose of reducing the risk of agricultural prices and stabilizing the income of agricultural products.

2.2. Operation Mechanism of "Insurance + Futures" Model

First, farmers or agricultural producers purchase agricultural product price insurance formulated by insurance companies as the guarantee of their stable income, in order to transfer the price risk of agricultural products to insurance companies;

Secondly, insurance companies realize the risk transfer of agricultural products by buying put options in futures companies.

Finally, futures companies copy options over the counter and then trade options through futures exchanges, thus achieving the role of risk decomposition.

At the same time, the futures investors to bet on an exchange trading call option contracts, it increases the risk of their own, to some extent makes exchange realizes the agricultural insurance + futures "the transfer of risk.

After the futures exchange hedges the risk, the futures company begins to exercise the rights to settle and pay the difference. The insurance company needs to confirm whether the insurance meets the indemnity conditions. If so, the insurance company will pay the indemnity for the insured products.

3. Research on Apple "Insurance + Futures" project in Lixian County, Gansu Province

3.1. Project Promotion Background

Li County of Gansu Province is a major county in apple cultivation. The annual apple cultivation area in the county reaches 600,000 mu, accounting for 58% of the total cultivated area. Apple industry has developed into a pillar industry in the county.

At the beginning of 2020, li county am in state-level poverty-stricken counties. In order to help the people who have not been lifted out of poverty in Li County fully and on schedule and open the road of rural revitalization, the Mid-term Association, Zheng Commercial Office and other institutions have taken multiple measures to promote the development of Li County and actively carried out targeted assistance activities in the area. In the middle period, Concorde Yong 'an Securities signed a precision help agreement with the government of Li County to boost the county's precision poverty alleviation.

3.2. Project Participants

3.2.1. Ginseng Protect Body

The project for the ginseng protect the main body of 290 households in lixian county, gansu province by inputting tent card poor farmers.

3.2.2. Project to Undertake the Main Body

The project to undertake main body has the Chinese insurer, yongan futures and its subsidiaries wing on capital. The view, the insurer is responsible for growers of China for underwriting, claims procedures. Yongan futures docking insurer, the design scheme of li county project and dominate the project operation. Wing on Capital is responsible for hedging options in the futures market. After the expiration, it will settle the options for the insurance and pay the difference.

3.2.3. The Other Players

This project participation main body other polite county, the county government and the China futures industry association. Li county, the county government support for the project and actively introduced various policies promoting the development of the project. China futures industry association is responsible for the project organization as a whole, is committed to precision lixian county poverty alleviation work.

3.3. Specific Elements of the Project

3.3.1. The Implementation Steps

Step 1: Carry out project training and publicity in Li County to enhance farmers' understanding of the "insurance + futures" model;

Step 2: Collect farmers' data and planting information, organize and promote the insurance work;

Step 3: insurer to yongan futures purchase enhanced the locking (real value) put options, insurance products, the single;

The fourth step: products trigger compensation in advance, options settlement in advance;

Step 5: insurance expired, insurer to pay to the home.

3.3.2. Insurance Elements

The insured for 290 families in lixian county, gansu province by inputting tent card is poor. Insurance products target price is 7530 yuan/ton (option to enter the real time of the day disk + 100 yuan price 7430 yuan/ton).

Pilot spot size is 3560 tons, the premium is 1.5053 million yuan (futures companies paid 1 million yuan, li county, the county government subsidies of 505300 yuan, including 250000 yuan in mid union supports, yongan futures support 255000 yuan), the rate was 6.3%, the royalty is 397.47 yuan/ton, stipulated according to 1.548 tons/mu per mu. The total royalties for 141493.2 yuan, total project insurance cost is 1505311.54 yuan, total area of 2300 mu. Insurance products unit of insurance cost is 422.84 yuan/ton, 654.48 mu. Terms: if the solstice 12 November 2020 in February 2021, 11 days

after any trading day's closing price of 7379.40 yuan/ton or less to the subject matter, the settlement price for the deal in the future one day, a natural month all transactions min (closing price of 7379.40 yuan/ton, the subject matter) arithmetic average price. If option during observation period all day close to the subject matter > 7379.4 yuan/ton, settlement price for 2020 on November 12 solstice on February 11, 2021 min each trading day the arithmetic average price (strike price).

3.3.3. The Option

Option types is to enhance the locking (real value) put options, options of mark for AP2105, admission time is on November 12, 2020, the subject matter during admission price is 7430 yuan/ton, options strike price is 7530 yuan/ton, due date is December 15, 2020, observation period: On November 12, 2020 - January 11, 2021.

Historical volatility is 33% (wing on capital use own volatility models to apple's modeling calculation).

Settlement formula: if any of the options during observation period trading day's closing price of 7379.40 yuan/ton or less to the subject matter, the compensation amount = [150.60 yuan/ton + Max settlement price 9.4 yuan/ton (0737 -)] * nominal amount; If option during observation period all day close to the subject matter > 7379.4 yuan/ton, pay financial = (0, executive price - settlement price) * nominal amount.

3.3.4. Insurance Claims

On November 15, 2020, 2105 contract prices, apple trigger lock price. The insurance by a single date will be on November 12, 2020, insurance time limit is 3 months, due to the contact price terms, insurance products ended on December 15, 2020 (trigger lock price a month after the early termination).The project final settlement price is 6964.27 yuan/ton (November 16, 2020 to December 15, 2020 of each trading day's closing price of arithmetic average).

Finally, yongan futures put option royalties collection of 1.415 million yuan, the project to pay 565.73 yuan/ton, 875.65 yuan/mu, total compensation of 2.014 million yuan, loss ratio reached 133.79%.

Low in January 2021, insurer by bank transfer to all claims which have been transferred to growers account.

3.3.5. Project Results

The project total compensation of 2.014 million yuan, worth in fruit growers' income 6944.82 yuan, an average increase of 875.65 yuan per mu apple revenue. In 2020-21, the production of apples in each producing area of the country was large. In addition, due to the continued impact of weak consumption caused by the COVID-19 epidemic, farmers could not sell the ideal price of apples and had to passively accept the loss of income. This project, futures companies play a professional advantage, use otc options and futures market hedging, for farmers scattered apple price risk, through the futures market to make up for spot prices lead to the loss of the farmers, improve the income of farmers.

The smooth development and good compensation effect of this project have been highly valued by local governments at all levels. The government and other relevant departments also said they would support the "insurance + futures" project in Li County for three consecutive years to guide local farmers, enterprises and cooperatives to use innovative financial tools to manage risks. At the same time, the program also increased the farmers on the market risk management awareness and understanding of risk management tools

application, with a good exemplary and leading role, increase the confidence of farmers planting for apple, the local apple industry played an important role to realize high quality development, also helped by the precision of poverty farmers poverty.

4. Problems in Apple "Insurance + Futures" Project in Lixian County, Gansu Province and Suggestions for Promotion

4.1. There Are Problems

4.1.1. The Basis Risk

Basis risk exists in the price fluctuations between the hedging instrument and the protected commodity out of sync. Basis clinch a deal namely spot the difference between the price and the exchange, the futures price, the amount is not fixed. Basis of volatility has brought the project risk is unable to avoid

4.1.2. No Closed Loop of Production and Marketing Has Been Formed Yet

This project is not apple's acquisition of enterprises to participate in, the current "insurance + futures" mode only solved the problem of the price of apple, and the problem that the sales have not been solved, which makes the case, in the city of marketable without apple sales difficult, can only rely on price cut, farmers have not been real security. If apple "insurance + futures" pattern can be rich, optimization and upgrading, to form closed-loop production and sales, the farmers don't have to worry about falling prices already, also do not have to worry about production, can also according to the volume to the adjustment of agricultural planting varieties.

4.1.3. Fewer Futures and Options on the Floor

China's futures market development time is shorter, relatively few listed futures varieties, corresponding futures contract has not yet been introduced agricultural products cannot be used "insurance + futures" model for risk management. In addition, exchange-traded species less, increasing the difficulty futures company internal hedge risk.

4.2. The Promotion Proposal

4.2.1. The Innovative Operation Mode

Futures companies can combine the local government in the financial poverty alleviation, support agriculture financing, service entity economy cooperation and exploration. Futures + bank "at the same time, actively explore the" insurance, "insurance + futures orders" as well as the basis of trade mode, mode of operation to further enrich, optimize and upgrade, strive for the "insurance + futures" mode and all kinds of new model is applied to agricultural products, at the same time broaden the application scope and expand the pilot area.

4.2.2. Design Options Products Flexibly

This project designed real value + lock structure insurance products and the corresponding option scheme, which fit the vital interests and practical operation of the insured. According to the project situation, barrier options and American options can introduce more exercise price options combination, many times for several options to build, such as variety, can be flexible setup option clause, many kinds of options, options for several components can optimize the structure of the project, to extend the time of insurance coverage, effectively reduce the price risk, strengthen the

guarantee of farmers.

4.2.3. Develop New Varieties of Futures and Floor Options

According to the needs of industry development and the characteristics of agricultural products, accelerate the promotion of new varieties on the market. In addition, the listing of options also need to accelerate the pace of futures companies to provide strong support for hedging.

4.2.4. Shift to Sustainable Development

After five years of exploration and operation, the insurance + futures business entered a new stage in 2022. In order to further improve the understanding of the "insurance + futures" cognitive and acceptance, and promote the local government for "insurance + futures" to provide policy support and financial support, promote the local government to the transformation of agricultural price subsidy policy to explore, promote the model from the pilot to conventional, futures companies should also invest a lot of manpower and financial resources to support the development of industrialization in poverty-stricken areas and We will promote the sustainable development of the "insurance + futures" business, and enable financial instruments to more effectively serve agriculture, rural areas and the real economy.

References

- [1] M. J. Guo, "Apple "insurance + futures" pave the road of rural revitalization," [J]. *New Financial Management (Government Financial Management)*, 2021(04):56-57.
- [2] D. H. Jiang, "Application of "insurance + futures" in the risk management of agricultural prices in China: Based on the case study of Apple pilot in Fuxian County, Shaanxi Province," [J]. *Price theory and practice*, 2020 (8) : 120-123 + 178.
- [3] T. Zhang, P. J. Qi, "Research on the Construction of Rural Financial Support System and Its Potential Risks -- Based on the Expansion of "Insurance + Futures" model," [J]. *Journal of investment research*, 2019, 38(10):42-51.
- [4] T. T. Cao, Y. B. Ge, "Innovative measures of financial poverty Alleviation in China: A Case study of Apple's "Insurance + Futures + Bank"," [J]. *Finance Theory and Practice*, 2018(12):90-96.]
- [5] Y. Zhao. "Practice and effect of "insurance + futures" mode in agricultural product price risk management," [J]. *Agricultural Economics*, 2017(11):134-136.
- [6] W. W. Xu, K. Chen, J. Y. Xu. "An Analysis of "Insurance + Futures" model to help "Agriculture, rural Areas" -- A Case study of Apple Project in Fuxian County, Shaanxi Province," [J]. (China, 2022 (9) : 5-8.