The Agricultural Cooperative as an Instrument for Economic Development: An Approach from Spanish Investors’ Preferences through a Choice Experiment

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Abstract: The cooperative is one of the most important forms of business in the agricultural sector, due to its special characteristics for small farmers and livestock producers in order to gain access to greater comparative advantages. In addition, cooperatives are a driving force in the social economy, which means that investment in agricultural cooperatives can be seen as a sustainable investment. The aim of this paper is to analyse the preferences of investors in agricultural company cooperatives, looking in depth at the role of the cooperative as a business form. In order to achieve this objective, the choice experiment methodology was applied by carrying out a questionnaire to a total of 282 investors. Latent class models were also used to identify possible groups of investors. Two classes of investors have been identified based on their preferences: owners (return seeking) and workers (risk averse).

Keywords: cooperatives; choice experiment; ownership; agronomy

1. Introduction

The cooperative in the agricultural sector has several relevant factors to justify its existence and development. In particular, the literature on economic organization shows the ability of cooperatives to reduce transaction costs and their capacity to develop countervailing power [1]. Thus, the recognition of the efficiency of agricultural organization is fundamentally determined by two factors, the efficiency of the division of labour and the efficiency of control activity, of which the second reason is more relevant. In this sense, cooperatives have a key role to contribute to the efficiency of the control activity, resulting in a form of continuity of the family farms that characterize the agricultural organization.

The cooperative company can be defined as the association of members (workers, producers, clients, etc.) to achieve an economic and social objective, taking decisions in a democratic manner, in comparison to the definition of other types of companies that are usually set up with independent shareholders and management. In the cooperative company, ownership and control of the company is usually shared, which leads to a coordination of objectives and elimination of opposing interest groups, as is the case in other types of companies. In turn, cooperative investment is affected by financial constraints in a relevant way [2], which highlights the importance of knowing how it is possible to invest in this type of financial product.

The cooperative as a legal form in Spain is developed in Law 27/1999 on Cooperatives (BOE, 1999), which specifies that there are basically two types of members: those members who carry out the corporate activity and collaborating members who do not necessarily have to carry out this activity. However, the collaborating partners have limitations in terms of both the percentage of capital and voting rights. In this sense, decision-making, management and control end up residing with the members who participate in the cooperative.

The legal form of a cooperative has a few economic and social advantages for society. Specifically, this type of enterprise contributes to the financing, maintenance, and stabil-
ity of job creation [3]. It also allows the incorporation of women into the labor market, creating opportunities and meeting different needs in rural areas, contributing to more sustainable development [4]. Furthermore, investment in agricultural cooperatives is of vital importance for the sustainability of the agricultural system [5].

Currently, there are some 3699 agricultural cooperative companies in Spain, with a turnover of 30,556 million euros in 2019, representing 68% of final agricultural production. The total number of members amounts to more than 1 million, with a contribution to employment of around 112,000 employees. This shows the economic importance of the agricultural cooperative in Spain [6]. Cooperatives can be classified as first grade cooperatives if their members are individuals and second grade cooperatives if their members are, in turn, other cooperatives. The majority of cooperatives are located in first and second grade cooperatives, accounting for a total of 91%, with most of them concentrated in Andalusia, Castilla la Mancha and Castilla y León.

On the other hand, the social economy has shown great growth, especially in the area of the entrepreneurial business sector [7]. In this field, the agricultural cooperative is one of the key instruments in the development of this type of economy. Furthermore, cooperatives promote and foster the achievement of several Sustainable Development Goals, including poverty reduction, food security and good nutrition, sustainable energy, promotion of stable and peaceful societies, etc., (“Cooperativas hacia 2030”, 2018; Internacional, 2015).

In this sense, investment in this type of company provides solutions to the current capitalist market, as they contribute not only economically but also by incorporating social and environmental aspects that are not usually addressed by other types of companies [8]. Therefore, localizing investment in cooperatives involves allocating resources towards a more socially responsible investment policy than the traditional one that only pursues economic profit. For all these reasons, the cooperative form in the agricultural sector can be considered as an instrument for the sustainability of the system.

The literature provides a significant number of papers on cooperatives. From works that analyse the control rights in cooperatives determined by the types of members that configure it [9,10], the investment behaviour of members [5,6,11–13], cooperative social inclusion [14], cooperative social responsibility and the cooperative [15], to efficiency and productivity [16,17].

However, the literature has not paid much attention to the willingness of non-member investors to invest in agricultural cooperatives. Only the work carried out by Alho, 2017, which analyses the investment preferences in agricultural cooperatives for a set of investors in Finland, stands out. Its main findings show that there is a willingness to invest in agricultural cooperative investment instruments and that a significant part of the sample is particularly interested in the attribute related to voting rights. Knowing what the investment preferences are in this type of instrument is useful to develop possible measures to increase the attractiveness of the investment for investors.

In this regard, the aim of this paper is to analyse the preferences of investors to invest in agricultural cooperatives and to analyse how various attributes influence their decision. The importance of raising funds for the agricultural cooperative is key to the sustainable development of the agricultural economy, in addition to the potential rural development that this type of enterprise brings. The importance of knowing the preferences of investors is relevant for planning investment projects and generating legal structures to attract investment to cooperatives. In addition, it also explores whether preferences are heterogeneous, trying to identify different groups of investors according to their preferences and characteristics. To achieve the proposed objective, a total of 282 investors were interviewed. A choice experiment was used to analyse the preferences and obtain the most important attributes. Additionally, latent classes were applied to identify homogeneous groups.
2. Material and Methods

2.1. Database

The database to carry out the objective of this work has been obtained from a questionnaire conducted on a sample of Spanish investors by means of random sampling. The final sample is made out of 282 individuals who have invested in some financial product and, therefore, can be considered investors (both investors and working members). The questionnaire is composed of information on the socio-economic environment as well as variables on risk perception and sustainability. The main descriptive statistics of the sample are shown in Table 1.

Table 1. Main descriptive statistics of the sample.

| Variable                          | Mean (or %) |
|----------------------------------|-------------|
| Age                              | 41.48       |
| Sex (female)                     | 47.72%      |
| (male)                           | 52.28%      |
| Income less than 900 €/month     | 11.19%      |
| More than 900 and less than 500 €/month | 24.19% |
| More than 1501 and less than 2500 €/month | 37.55% |
| More than 2501 €/month           | 27.08%      |

The sample obtained was collected by means of simple random sampling without being able to count on an objective representativeness given that the characteristics of Spanish investors are unknown. We do not know the target population since no data are available on the investor population in Spain. The status of an investor has been determined by asking whether he/she has ever invested in financial products.

The questionnaire was prepared using Google Forms, as this type of online tool is increasingly used in research due to its advantages in terms of flexibility, speed of data collection and lower cost than traditional surveys [18–20].

2.2. Choice Experiment

The paper is based on the choice experiment conducted by [16] but adapting the attributes and levels to the Spanish regulations. Choice experiments have been widely used in the field of economics to analyse preferences [21–24]. These experiments are based on the idea that a product can be decomposed as the sum of several attributes that characterise it. Specifically, the following attributes have been incorporated: the voting rights of the shareholder, the profit entitlement, the share price and the expected return and risk. The selection of attributes and levels has been based on the literature review and the current legal configuration of the cooperative in Spain. All the attributes, as well as the different levels, are listed in Table 2.

Voting rights refer to the configuration of voting rights held by the shareholder or owner/investor of the cooperative. Profit entitlement is the form in which the shareholder/owner/investor’s investment is remunerated. Capital price to the way in which the price is configured, whether in a secondary market or not. Finally, the level of risk and profitability of the investment is included.

Considering the four attributes mentioned above, with the different levels in each case, a total of 6,480 (3 \times 3 \times 3 \times 3 = 81) possible combinations of plausible scenarios can be established. Given the large number of resulting comparisons, for economic and time reasons it was decided to apply a factorial design. This procedure resulted in a total number of 16 alternatives, which meant that each respondent was faced with a set of eight choices. This type of design practice is frequently used in choice experimentation [25]. Figure 1 shows an example of a choice set.
Table 2. Attributes and levels of the Choice Set.

| Attribute                  | Levels                          | Coding |
|----------------------------|--------------------------------|--------|
| Voting right               | No voting rights               | SIN    |
|                            | Voting rights of producers     | PROD   |
|                            | Voting rights owners           | PROP   |
| Profit entitlement         | Dividend                       | DIDV   |
|                            | Fixed remuneration             | FIJA   |
|                            | Mixed                          | MIXTA  |
| Capital price              | Value on a secondary market    | SECUND |
|                            | Capital is returned at par value| NOMINAL|
|                            | Capital is returned at nominal value plus an appreciation | APRECIA |
| Expected return and risk   | 6% high risk                   | HIGH   |
|                            | 4% medium risk                 | MEDIUM |
|                            | 2% low risk                    | LOW    |

Figure 1. Example Choice Set.

2.3. Econometric Model

The model used to analyse investors’ preferences for participation in agricultural cooperatives was the conditional logit model, and a latent class model was also implemented in order to study unobservable heterogeneity and different types of investors based on the response of the responses to the valuation.

These models, which are a derivative of random utility models [26], assume that the utility function of each individual is the sum of two terms, a deterministic part that can be described as a function of the factors that influence individuals’ utility and a random, unobserved part that is considered stochastic. So, following [27] we can assume a sample of N individuals with a choice between J alternatives on T occasions, where the utility of an individual n derived from the choice of alternative j on occasion t is as follows:

\[ U_{njt} = \beta_n' x_{njt} + \epsilon_{njt} \]  \hspace{1cm} (1)

where \( \beta_n' \) is the vector of individual-specific coefficients, \( x_{njt} \) is the vector of observable attributes of individual n and alternative j at choice occasion t, and \( \epsilon_{njt} \) is the random term that we assume to be an independently and identically distributed extreme value. Therefore, the probability of respondent n choosing alternative I at choice t is given by the following expression:

\[ L_{nit}(\beta_n) = \frac{\exp(\beta_n' x_{nit})}{\sum_{j=1}^{J} \exp(\beta_n' x_{njt})} \]  \hspace{1cm} (2)
Expression [2] is the conditional logit formula [26] In this paper we will use the simulation approach [28,29] where the log likelihood is given by equation [3]:

\[
SLL(\theta) = \sum_{n=1}^{N} \ln \left\{ \frac{1}{R} \sum_{r=1}^{R} S_n(\beta^r) \right\}
\] (3)

where R is the number of repetitions and \( H_{nq} \) is the rth draw from \( f(\theta) \).

On the other hand, in order to identify unobservable heterogeneity and groups, latent classes are applied, which are estimated from:

\[
SLL(\theta) = \sum_{n=1}^{N} \ln \left\{ \sum_{q=1}^{Q} H_{nq} \prod_{t=1}^{T} \prod_{i=1}^{J} \frac{\exp(x'_{njt} \beta_{rn})}{\sum_{J}^{J} \exp(x'_{njt} \beta_{rn})} \right\} y_{njt}
\] (4)

where \( H_{nq} \) is the probability of membership in a given class and is obtained from:

\[
H_{nq} = \frac{\exp(z_{tn} \gamma_q)}{\sum_{q=1}^{Q} \exp(z_{tn} \gamma_q)}
\] (5)

Therefore, the functional form of the \( U_{njt} \) derived from individual \( n \) for alternative \( j \) in choice set \( t \) can be defined as follows:

\[
U_{njt} = \beta_0 ASC + \beta_1 SIN_{njt} + \beta_2 PROD_{njt} + \beta_3 DIDV_{njt} + \beta_4 FIJA_{njt} + \beta_5 SECUND_{njt} + \beta_6 NOMINAL_{njt} + \beta_7 HIGH_{njt} + \beta_8 MEDIU_{njt} + \epsilon_{njt}
\] (6)

The ASC (alternative specific constant) is defined as the alternative that represents the third option in each comparison, i.e., the alternative of not choosing any investment. The following values have been taken as base values (reference values): for voting rights, owner’s voting rights (PROP); for profit entitlement, mixed remuneration; for capital price APRECIA, and finally for profitability and risk LOW.

3. Results

The results obtained after applying the methodology proposed above to the sample obtained are shown below. Specifically, Table 3 shows the results of the logit model for the full sample. A positive (negative) sign for a coefficient indicates that it increases (decreases) the probability of choosing the investment in agriculture cooperative alternative.

| Coefficient | Coefficient | Stand Error | Z     | p-Value |
|-------------|-------------|-------------|-------|---------|
| ASC         | −1.0474     | 0.1199      | −8.73 | 0.000   |
| SIN         | −0.4685     | 0.0611      | −4.21 | 0.000   |
| PROD        | −0.0843     | 0.1300      | −1.38 | 0.168   |
| DIDV        | 0.0172      | 0.0618      | 0.13  | 0.894   |
| FIJA        | −0.0264     | 0.6183      | −0.43 | 0.669   |
| SECUND      | 0.2652      | 0.0862      | −3.08 | 0.002   |
| NOMINAL     | −0.4779     | 0.0783      | −6.10 | 0.000   |
| HIGH        | −0.3756     | 0.0860      | −4.36 | 0.000   |
| MEDIUM      | −0.3615     | 0.0659      | −5.49 | 0.000   |
| Loglikelihood | −2399.1635  |             |       |         |
| Observ      |             |             | 6.840 |         |

The results show that the option of not investing in any of the proposed options has a negative utility given the negative and statistically significant coefficient of ASC. On the other hand, the fact that the investment in agriculture cooperative has a dividend is the only parameter that has a positive utility, although it is not statistically significant. The
rest of the parameters have a coefficient of negative utility. However, it should be noted that the coefficients for voting for producers and a fixed remuneration are not statistically significant.

This shows that investors have a strong preference for the coefficients used as a baseline in the logit regression for the investment in agriculture cooperative, an investment set up in which voting rights are given to the owners, with a mixed payout consisting of a fixed part and a dividend, additional appreciation to the nominal value of the capital in its return, and relatively low levels of return and risk.

In terms of the level of importance of each attribute, which is determined by the value of $Z$, it can be seen that the ASC comes first, the quotation parameters second, the corresponding profitability in percentage terms third, followed by the cooperative’s control and voting rights, and finally, the form of owner remuneration.

Next, to deal with heterogeneity, we proceed to estimate latent classes as shown in the methodology section. The models have been estimated with different number of latent classes and subsequently the model fit parameter has been obtained. Table 4 shows the traditional statistical tools to select the optimal number of classes according to the model fit.

Table 4. Statistical parameters for fit the class number.

| Class Number | AIC      | CAIC     | BIC      |
|--------------|----------|----------|----------|
| 2            | 8797.02  | 8885.417 | 8866.417 |
| 3            | 8920.64  | 9055.565 | 9026.565 |
| 4            | 8905.651 | 9087.098 | 9048.098 |
| 5            | 8949.319 | 9177.291 | 9128.291 |

Table 4 shows the AIC, CAIC and BIC statistics, which show a better fit the lower the number obtained. In this sense, it can be seen that for both statistics the optimal model to estimate would be the one composed of two latent classes.

Table 5 shows the results of the choice experiment with latent classes.

Table 5. Results of the choice experiment with latent classes.

| Class 1       | Class 2       |
|---------------|---------------|
| Coefficient   | Coefficient   |
| Stand Error   | Stand Error   |
| $Z$           | $Z$           |
| $p$-Value     | $p$-Value     |
| ASC $-0.4132$ | ASC $-0.5135$ |
| 0.1199        | 0.1541        |
| $-1.91$       | $-3.33$       |
| 0.000         | 0.001         |
| SIN $-0.8571$ | SIN $0.1473$  |
| 0.0611        | 1.81          |
| $-6.44$       | 0.0561        |
| 0.000         |               |
| PROD $-2.2225$| PROD $0.0884$ |
| 0.1300        | 1.81          |
| 4.38          | 0.071         |
| 0.168          |               |
| DIDV $3.4309$ | DIDV $0.1535$ |
| 0.0618        | 1.26          |
| 4.32          | 0.206         |
| 0.894         |               |
| FIJA $1.6894$ | FIJA $0.0781$ |
| 0.0862        | 0.19          |
| $-4.09$       | 0.853         |
| 0.669         |               |
| SECUND $-1.4408$ | SECUND $0.3793$ |
| 0.0783        | 3.20          |
| $-7.98$       | 0.001         |
| 0.002         |               |
| NOMINAL $-4.4254$ | NOMINAL $0.0971$ |
| 0.0860        | 0.15          |
| 6.32          | 0.884         |
| 0.000         |               |
| HIGH $2.8411$ | HIGH $0.1047$ |
| 0.0659        | $-6.86$       |
| 5.39          | 0.000         |
| 0.000         |               |
| MEDIUM $2.1762$ | MEDIUM $0.0896$ |
| 0.4034        | $-7.83$       |
| $-0.79$       | 0.000         |
| 0.000         |               |

Class share 27.5% 72.5%

| Const (Class 1) | Loglikelihood |
|-----------------|---------------|
| $-0.9732$       | $-2399.1635$  |
| 0.1672          | Observ 6.840  |
| $-5.82$         |               |
| 0.000           |               |

The ASC coefficient is negative and statistically significant in both classes. The first class consists of 27.5% while the second class comprises 72.5% of the respondents. The first class has statistically significant and positive coefficients for medium and high return and risk, while the coefficients are negative and statistically significant for no voting rights, secondary market listing and a return of nominal value, i.e., they prefer to have a vote as
owners and a return of capital taking into account the nominal value plus a premium with high levels of return and risk. This type of class can be referred to as return seeking or ownership.

In the case of the second class, it can be observed that the coefficient of owners’ voting rights is positive and statistically significant together with the secondary market price. However, both fixed and dividend remuneration, no voting rights and nominal return have a statistically insignificant coefficient. On the other hand, high and medium returns and risk report statistically significant but negative coefficients. In this sense, this majority group could be referred to as risk averse or working.

4. Discussion

The aim of this paper is to analyse the preferences of Spanish investors regarding investment in agriculture cooperative instruments in agricultural cooperatives and to determine which factors are most relevant. The cooperative in the agricultural market in Spain plays a fundamental role for the development of the sector in general and in particular for certain areas that otherwise would not find a way to develop and obtain economic growth, especially those located in non-urban centres.

The overall results show a trend towards an investment in an agriculture cooperative model that is characterised by a demand for instruments that have rights for owners to vote for control of the cooperative, with relatively low levels of return and risk, more in line with traditional investments in agriculture cooperative and that do not have high volatilities [29,30]. This result is in line with that obtained for a similar analysis in the Finnish case [13], although it differs in the profitability attribute, where the latter has a higher tendency towards profitability and high levels of risk.

Control of the cooperative is one of the most relevant attributes, apart from the return of capital, which shows that the organisation and governance of the cooperative is an attribute that is very important in this type of enterprise, as shown by various studies [31–33]. One possible explanation for this result lies in the fact that this type of instrument places greater emphasis on the investor’s involvement in the management and growth of the company than on the pure holding of the stake.

The fact that the ASC has a negative result shows a certain rejection of this type of instrument, unlike the results obtained for the Finnish case [13]. However, this result can be explained by the cultural aspect of both countries, with Spain being a country that is more reserved when it comes to non-traditional investments, and investment in cooperatives may fall outside what is traditionally considered a traditional investment.

Moreover, an investment in cooperatives can be seen as an illiquid product (as most of them are not listed), as evidenced by the high importance given by investors to listing as an attribute. This fact could lead to higher levels of trading of the shares, although it is also true that this would probably lead to greater volatility marked by the prices at which they are listed.

The estimation by latent classes has made it possible to obtain two types of investors. On the one hand, those referred to as owners or seeking return and those that we can call risk adverse or working. The identification of two groups is slightly lower than that obtained by [13], which manages to separate those investors who are owners from those seeking returns, but the types of investors can be considered similar, although it is true that the probability of belonging or class size is very different. Again, the explanation for this lies in the cultural factor as has been shown internationally with other investment products.

Preferences for investing in cooperative instruments clearly show a higher probability and size group, which are workers or risk-averse, which shows that this type of investment in agriculture cooperative is more focused on workers who own the enterprise and want at least effective control or representation in the enterprise, rather than high profitability. This group could become the actual owners of the cooperatives and channels a way to avoid the financial constraints that agricultural cooperatives face in terms of possible financing [2].
The results of class 2 are in the opposite direction to those obtained by studies that analyse investment in agricultural cooperatives from the point of view of the owner in countries such as Greece or China [5,33,34], although this approach is different, it can serve as an approximation and comparison to the results obtained in this paper. However, regional differences in these countries must be taken into consideration. In these studies, profitability is one of the determining factors, but also the future strategies of the cooperative, as well as the governance of the cooperative, the latter of which seems to be in line with the results obtained in this study.

5. Conclusions

The aim of this paper has been to analyse investors’ preferences for investment products located in agricultural cooperatives. Agricultural cooperatives play a fundamental role in the development and growth of the agricultural sector. Therefore, it is essential to know which are the most demanded preferences and characteristics in order to be able to organise this instrument in an adequate way. A segmentation of investors by latent classes has also been carried out in order to identify investors with their own independent characteristics.

The main results have shown that profitability is one of the determining factors in investment in cooperatives, although control of the cooperative and, therefore, voting rights is a factor that is very present when investing in this type of instrument. The most relevant factor, apart from the ASC, is the price, due to the possible lack of liquidity of the instrument. In this sense, an organised market for investment in cooperatives could lead to a greater increase in this type of product, as its investment would be more liquid and it would be easier to invest.

The latent classes have made it possible to identify two types of investors: those who can be described as owners who expect a high return on their investment and who have turned out to be the minority group and, on the other hand, a group of investors who are more risk-averse and prefer greater control by the producers, who have been described as risk averse or working, this group being the most numerous or probable in the estimation of the latent classes.

The identification of these two groups clearly shows that this type of instrument is aimed at investors who wish to become involved in the business in which the agricultural cooperative operates and, therefore, influence its management. This seems to indicate that two types of shareholdings could be articulated for the ownership of cooperatives, as is currently regulated in Spain. The results obtained are in line with those obtained in the case of Finnish investors.

The research carried out has several implications for the stakeholders. First of all, for the managers of the cooperative to know what the preferences of the investors are in the cooperative and to act accordingly. For governments, they can take these preferences into account in carrying out future reforms. Finally, for investors, knowledge of their preferences can show those projects that may be more attractive for attracting capital and, therefore, for business success. In this way, such projects can have more resources and the investor can locate its resources there.

This paper presents future lines of research to be developed, which at the same time can be assumed as limitations of the study. Firstly, it would be interesting to know the difference between those who are already owners of agricultural cooperatives and those who are not and could become so. Secondly, an interesting aspect to develop would be to find out the main motivations that investors have for allocating their funds in these instruments, beyond the characteristics or attributes mentioned above, as observed in various studies.

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