REVIEW

An Alternative Proposal for Financing for the Agricultural Sector (Agricultural SME's Bonds)

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ARTICLE INFO	ABSTRACT
	In today's environment, where SME's financing continues to be a serious problem, systems that facilitate non-bank financing models different from traditional ones should be considered. In the present article a model of financing based on bonds for SME's is proposed, very suitable for the agricultural sector or any group with little access to traditional financing. To improve the analysis, a fuzzy logic system is proposed that allows the most representative variables to be properly selected and take into account the uncertainty of the environment and the subjectivity of the analysts.

1. Introduction

It is not difficult to justify the financing problems of the companies, nor a work on it, mainly since the financial crisis broke out in the distant year 2007. Companies and institutions have had to live with an additional problem to the commercial and organizational, the lack of funding to support viable projects.

In addition, this financial crisis, generated another confidence, as toxic financial products such as swaps, clips, preferred, structured, convertible, multi-currency mortgages, ... overshadowed the financial landscape of many companies, especially smaller, sinking confidence in many sectors, as well as consumption and investment.

In these moments of incipient recovery of funding, the scenario continues to be of credit need, both for companies and for citizens.

Meanwhile, banks have tried to undo positions and in this way the money lent to companies and families represents a scant 50%, when in 2007 it was above 67%. At the same time, credit to public administrations has practically doubled in the last ten years throughout the EU, tending to continue growing even more. But the business activity will not recover until the credit flows to companies and individuals, the fearful money meanwhile takes refuge in the public debt. Unfortunately, there are still years of financial restriction that will keep this diabolical circuit in a 'feedback' of precarious employment and a burden for domestic consumption, but it is the painful reality and the change of dependence on financing via

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banking sector of companies an urgent need that other countries have already undertaken; in Germany only 65% of business financing it comes from banks and in the US a surprising 30%, while in Spain the dependence on bank financing for companies reaches 80%. It is therefore essential that parallel to the efforts to unblock the banking system, work in other directions, as in the United Kingdom, the US or Germany, secondary debt markets have advanced a lot, getting significant amounts of money to finance Business. Thus, the south of Europe fundamentally suffers a great banking dependence.

If we add to this situation the latest cuts in the ECB interest rate, leaving it at the historical minimum of 0%, and the reductions in risk premiums, we enter a scenario of possible credit recovery, redirecting it from the public to the private sector, in the whole EU. But, this road is fast and simple? Would it be the same for all sectors? Unfortunately not, since we run the risk that these new injections of liquidity serve to improve financing, but only part of the economy.

The large corporations have been able to better withstand the crisis, so that size has served as protection, since they have obtained far-reaching options for SMEs, even today.

In this paper we propose a novel formula for access to credit to SMEs, since we can not consider a way out of the real crisis without being reactivated. This leads us to propose an alternative financing proposal, which we think can solve part of the problems mentioned. This option, different from the banking one, that can be applied to any sector, but that in the agricultural case can have a great journey through its characteristics and peculiarities.

As long as the banking dependence is not reduced, the economy will be very weak, and with the current figures it is very difficult, since according to the Association for the Financial Markets in Europe (AFME in English) 86% of the financing is still bank, if we bear in mind that the Capital Markets union should be ready by 2019 in the EU.

Within this situation the agricultural case draws attention, since there is abundant information on financing to companies and SMEs in general, but not on the specific problems of agricultural operations. We have not found studies or concrete information about the difficulties that small agricultural companies have. This lack in a strategic sector is what has motivated us to look for a model that can, at least in part, provide a possible solution to it, allowing access to medium and long-term financing, outside the usual circuits, and that they have access to other larger companies.

We must warn that the proposal we present, although part of a theoretical basis, has its main objective in its practical realization, aspiring not to remain in an academic work, but to provide a financial option to SMEs not only agricultural, but of any sector.

Thus, the main objective of this paper is to propose a bond market model for those situations where it is necessary and to facilitate access to credit in sectors where there are shortcomings in non-bank financing.

2. Problem of Financing

From the point of view of the financial offer, it has been possible to appreciate how the situation of companies is not easy in relation to their financing. The volume of loans with respect to GDP has declined on average throughout the Euro zone, although with greater intensity, while the cost of financing granted has increased. This fact coexists with the paradox of the increase in public financing, causing a crowding out effect in the private sector.

Faced with this situation, the options are few. Keep trying to get a bank financing that either does not arrive, or comes very expensive and with very complex requirements for SMEs, making business projects unvaluable, or looking for other possibilities.

Basically, the situation could be summarized in the following points:

a. The resources of the bank to invest in companies are applied to very specific projects or to finance the public sector.

b. The scarcity of credit and the narrowing of margins make the bank financing conditions, in cost and volume, non-extendable.

c. Small and Medium Enterprises have been affected both by changes in regulation (Basel III) and by the "flight to quality" of European banks since the beginning of the crisis1. Therefore, the solvency pressures on banks we think will clearly favor the option of bonds as a financial formula.

d. Undoubtedly SMEs represent an important part of employment and the creation of wealth, but their financing conditions have deteriorated in absolute and relative terms compared to large companies.

e. Different financial solutions are being discussed or implemented, from public initiatives and private investors to bank financing, market-based financing or securitization.

f. Financial entities are beginning to reduce lines and raise costs as indicated by the ECB.

g. Companies now finance themselves with their suppliers; and the weakest links fall.

Given these positions, it only fits as a dynamic element, an option that can actively involve both providers

of funds, as well as resource applicants, which brings us to the bond market in its aspects of emissions focused on SMEs. that we will address in the next section.

3. The Option of a Bonus Market

The Bonds are an interesting instrument of alternative financing through Private Placement, which allow obtaining non-bank resources, reducing dependence on financial institutions, diversifying the sources of financing. For the purposes of the objectives of this article we would highlight:

• They are a different system of operation, both in longer terms than the loans (5 to 10 years) and in their scheme, which makes them an interesting support for long-term financing.

• The amounts are normally returned at the end of the period and not periodically, which allows a greater dedication of the financing to the investment, being ideal for the medium and long term.

• There are no Covenants normally, which is a huge advantage given the hardness of them currently by commercial banks.

• They can attract new potential qualified investors: private banking, investment funds and Family Office.

Regarding the strategic interest for the issuer:

• There is no dilution in the case of ordinary bonds.

• It is an instrument that reinforces the visibility of the company and the project to be financed (organized and transparent markets and LP financing). For example, if you enter Euronext, the impact of the company at a global level is much greater than if you only resort to traditional options, usually local, and that do not provide the added value of an organized international market, where potential customers and partners They can make the company visible and be interested in their projects.

In the case of Standard bond issues:

• The objective is to have a flexible and transparent instrument for both the issuer and the investor.

• They suppose a form of complementary financing to the traditional one.

• No rating is necessary as a precondition.

• Issuance size with a minimum of around 10 million euros: (Euronext; <10 M €: Alternext and alternative markets, with a minimum of € 5 million).

The validity of this system of non-bank financing is evident with the issuance by the largest low-cost European airline, the Irish Ryanair, which has made its debut in the capital market with the issuance of bonds for 850 million euros at very low prices. competitive The interest on these debt securities is 1.875% and its maturity date has been set at seven years. The lawsuit has had an oversubscription of eight.

But, these options, as we advance in the introductory section, are they within the reach of a small company? And for all sectors? It seems not. SMEs have it tremendously difficult, and within SMEs, the agricultural sector especially.

We think, and experience supports it, that SMEs have been removed from these formulas, and taking into account that they represent 73.9% of the total productive capacity in the EU, as reflected in table 1, We are convinced of the need to provide a model of access to this type of financing.

It is true that the figures we have managed can be very high for most farms, many of them small farms, and this could be a problem to issue these bonds that would provide access to financing. The solution we propose is to syndicate the bonds, grouping small farmers or entrepreneurs, so that each group can subscribe a bond, and between different associations reach the volume of the issue. This is a very important first differentiation.

In this case, the existence of a rigorous analysis committee that assesses the solvency of the members of the aforementioned group is vital. In this line, and in the case of small issuers, which do not have a broad financial department, and are certainly not subject to an audit, it would be interesting for the promoter group to have a team of external auditors to carry out the reviews of the financial data in order to provide them with the necessary guarantees, at the same time unloading the farmer or small entrepreneur from this cost and facilitating their incorporation into the fund.

One possible criticism of this proposal is why it is not channeled through an existing market. The answer is that unquoted SMEs do not have access to the bond market, or practically restricted, so the option of mutualizing risk and bonds in a common fund is the most viable for all purposes. A specific option could be:

• A fund with initial capital is established, whose corporate purpose is the development of a bond fund for SMEs in the agricultural sector.

• The companies request their incorporation to said fund, providing the documentation requested by the analysis team.

• Accepted companies issue bonds individually subscribed by the fund itself, which is the one who gets the rating. This is another of the fundamental differences with respect to existing models.

• The fund in turn invests in a fixed income percentage, and in public debt or large companies, in a way that guarantees solvency.

• The fund is financed through bond issues in Euronext / Alternext aimed at institutional investors.

• The emission differential that may exist between SMEs and the fund remunerates management expenses.

• The companies participate in the shareholding of the fund in proportion to their size and percentage of issue.

• Very small companies or companies with excessive indebtedness should be discarded. The main ratios that could be proposed would be: (FFPP / medium and long-term debt: <1x and / or Debt / Ebitda: <3x and / or, equity / assets:> 75%)

• It is suggested to start with companies with export profile or strong growth in the local market, which after the failure of equity markets such as the Spanish MAB, have no other affordable financing options.

It would be in summary of:

• Organize and implement this long-term financing system for SMEs based on bonds.

• Promote good banking management practices to viable projects, especially agricultural projects.

• Communicate and promote a novel financing system among lenders, investors and financial authorities.

3.1. Phases and Deadlines of the Proposed Model

The phases and the estimated deadlines would be:

3.1.1 Phase A. Structuring and Assembly of the Operation.

Phase AI

Term: 2 months

Participants: Promoters of the fund, (small entrepreneurs, especially farmers, investors, investment funds, etc.) In this sense, have Professional Associations, Associations of Farmers, Chambers of Commerce, etc. It is very interesting and provides the necessary solidity and credibility.

Preparation of a strategic, financial and operational report, the so-called "sales notebook".

This strategic document would allow to verify on the spot (i) the interest in this financing system of potential borrowers (SMEs) (ii) the interest of investors to finance it (iii) reaction of the regulatory authorities (iv) reaction of the agencies of rating

a) Appointment of the risk analysis committee.

b) Choice of initial companies

The report shall consist of:

- "Rationale" of the project reasons

- Detailed description of the fund model

- Initial companies that make it up: you can group different sectors.

- Credit Analysis Report of each

It would serve as a reference for phases II and III

Phase A II:

Term: 15 days

Intervening

Legal report Share with a legal firm with a presence in the countries where interest is expected for the fund, assessing the legal viability and making the necessary legal and fiscal adjustments to ensure the optimal functioning of the system. In this sense, another interesting option is to take advantage of the relationships between universities in different countries, forming the necessary start-ups, so that a number of professors who join the risk analysis area are grouped together with the private sector. knowledge of the peculiarities and characteristics of each country.

Phase A III:

Term: 1 month

"Maping" or search for investors (Eaf, ..) and mainly European family offices, specialized funds, EAFIS clients and later Cofides or Ico. One on one meetings with selected investors with the document made in phase I. Confirmation of the funds to be invested.

Phase A IV:

Term: 1 week

Modeling to simulate the impact of the hypotheses in terms of structuring costs, management systems, guarantee systems and emissions for financing in order to check whether the financing conditions are still attractive after the application of the hypotheses.

Phase A V.

Term: 2 months

Contact the rating agency:

Contact and selection of the auditor:

Application for rating by registered entity and preparation of the Euronext placement prospectus, and approval thereof.

The issuance prospectus (English and in the different official languages of where there are investors) is the passport to the quotation in the market, it includes a thorough due diligence of the documentation by the "listing sponsor", verification of all the detailed information of the companies that form it, of the legal requirements to quote on Euronext, and of the issuer's ability to meet its financial obligations.

Creation or subcontracting of a fund manager, responsible for the management of the assets.

3.1.2 Phase B: Placement of SME/Agricultural Bonds

The second and final phase would be the formation of the union of jobbers, closing of the placement and registration of the operation. At this moment, it is particularly import-

ant that a group of farmers, or related companies, together with Chambers of Commerce, Counseling or similar, lead the presentation and give it reliability in the markets.

One suggestion is that these expenses advanced by the promoters of the project are capitalized in shares of the management company of the fund, at the moment of its constitution so that they are considered investment and not expense. It is a way to ensure that the partners that drive the project maintain their links with it.

The problematic that the analysis team must face is still pending, when assessing the companies that wish to join the fund, whose assets must study and update estimated future data.

These data, always based on estimates, are subject by their nature to the uncertainty in which the value is maintained, in which the conditions under which they have been estimated do not change, and above all in the subjectivity of the people who have designed them and calculated, that they can not always detach from their own interests and particular interests.

Traditional methods of analysis are valid as long as the variables they work on do not change and have a high degree of reliability, but what happens if the future cash flows, or revenues, or components of the equity, change over those appear in the business plants? In this case it could happen that the analysis under which a company could issue bonds resulted in an opposite result, discouraging its issuance.

In order to give greater reliability to the previous analysis, which should be done to admit a company to the bond issuers union, we think that the use of fuzzy logic can greatly improve the previous studies, since they take into account both the inherent uncertainty to any economic process, such as subjectivity in the analysis and valuation. In this way, the valuation analysis is much more powerful and above all reliable, being able to be more rigorous and avoiding as far as possible that companies that do not have sufficient solvency and profitability guarantees issue bonds in this model.

For this reason, the problem of this application of fuzzy logic to the estimates and analyzes to be carried out will be briefly addressed, a proposal that should be assumed by the team of analysts of the bond fund.

4. Application of Fuzzy Logic in the Estll

In the structure outlined in the previous section, the analysis department assumes a very important role, since it must evaluate different variables, fundamentally the patrimonies of the companies that request their entry in the Agricultural SME's Bonds union. Depending on the valu-

ation of that patrimony, the companies will be able to emit a figure of bonds.

In this valuation, there are intangibles that are not always adequately collected in the accounting. For example, the GoodWill or Trade Funds, whose quantification is a real problem. For the valuation of these intangibles, subject to conditions of uncertainty and subjectivity, we are faced with a challenge, since no one can know the evolution of business and there is also a possible burden of subjectivity in the analysis by any economist.

In our opinion, the solution necessarily involves the application of the theory of fuzzy subsets. As will be seen below, the fuzzy logic allows to substantially improve the quantification processes of those elements considered as intangible.

It should be noted that the application of fuzzy logic in the economy, and specifically in accounting, is not new. Several authors of recognized prestige, among which we can highlight Kaufmann and Gil Aluja (1986), Gil Lafuente (1990, 1993, 1996) and Couturiery-Fioleau (1996) in analysis and financial planning; Cooley and Hicks (1983), Faircloth and Ricchiute (1981), Siegel, Korvin and Omer (1993) and Kelly (1984) in auditing; and Whalen, Schott, Hall and Ganoe (1987) in financial accounting, have used this logic.

On the other hand, management accounting has already made some really brilliant contributions in this regard. Thus, Zebda (1984) and Siegel, Korvin and Strawser (1995) have applied fuzzy logic in the cost-benefit analysis in the investigation of deviations; Kaufmann (1984) used it in the base-zero budget; Tanaka, Okuda and Asai (1976) use this instrument to solve problems in the elaboration of capital budgets; Brewer, Gatain and Reeve (1993) use it to improve the analysis of programs; Georgescu (1998) develops a model for flexible estimation of cost functions; Chan and Yuan (1990) apply this methodology in their cost-volume-benefit analysis as an aid to the accountant in the face of uncertainty and risk; and finally, Mansur (1995) uses it to assess opportunity costs.

In this way, following the trail of the previous authors, a methodological proposal of quantification of the so-called intangibles will be introduced, based on the foundations of fuzzy logic. The potential of this technique multiplies the analysis made and gives it a great certainty in the evaluation of the assets, making sure that the company can assume with guarantees the payment of interest and repayment of the principal amount of the bonds issued and accepted by the fund.

So, next we will deal with the quantification of intangibles by means of fuzzy logic, eliminating the subjectivity in the analysis and taking into account the uncertainty in-

herent in any economic data in the future.

4.1. Proposal for Quantification of Intangibles Through Borrosa Logic

The ultimate goal of this section is to demonstrate very briefly the usefulness of fuzzy logic in the quantification of those elements where it is impossible to resort to objective and certain criteria for their estimation.

Therefore, a methodological approach based on fuzzy logic is proposed, which we think will substantially improve the valuation process of intangibles, fundamentally in what may affect the equity valuation of a company.

The proposed methodology is based on a sequential process divided into seven stages, each of which will then be commented and illustrated through a simple application example to estimate the true value of a Goodwill.

4.1.1. Selection of the Variables to be Determined.

First, it is necessary for the company to select the target variable or variables. That is to say, we must define which variables we want to contrast, in order to ensure the highest reliability in the analysis. The most important variable will be the estimation of the value of existing intangibles, but we can apply this analysis to other items subject to uncertainty, such as provisions, amortizations, etc. which have a great effect on the results and final value figures of the company.

If an analysis is carried out to update estimated cash flows, the method that we will propose below is perfectly valid, since no one can assure with certainty the figure of the mentioned flows within several years.

We will try to quantify the intangible variable of Goodwill (Ḡ) to adjust to a specific case. The subjectivity and uncertainty that accompanies any valuation attempt, advises the use of the methodology proposed in this section.

4.1.2. Valuation of the Intangible (Ḡ) by Experts

Secondly, a group of experts, previously agreed upon, is asked to make a first assessment of the variable (Ḡ) in an environment based on their knowledge and the existing information of the sector (historical data, aggregates, etc.). uncertain. Obviously, if you want to quantify various cost elements, it is logical that different experts are used for each of the variables to be estimated. Since experts will predictably make rough predictions, it will probably be necessary to transform their opinions into trusted triples.

Returning to the proposed example, given the great diversity of factors that can affect the quantification process, as well as the uncertain and eminently subjective nature of it, it is very useful to use the opinion expressed by independent experts. In this way, six expert analysts are se-

lected for exhibition purposes and are asked to give their opinion on the Goodwill estimate in the target company. Obviously, experts will make approximate predictions, and rarely will anyone offer a fixed estimate.

Table 1. Results offered by the surveys carried out to the experts

Nº Exp.	Opinión on (Ḡ)
1	[60.000 , 65.000]
2	[55.000 , 75.000]
3	[55.000 , 70.000]
4	[50.000 , 60.000, 70.000]
5	[60.000 , 74.000]
6	[65.000 , 70.000, 75.000]

The reading of this table would be the following. Expert 1 considers that (Ḡ) will be in the interval [60,000, 65,000] for the company analyzed, under market conditions and considering all the existing variables. While the number 4 prefers to express its opinion through a fuzzy triangular number, considering that in a normal situation the intangible goodwill is quantified at 60,000 euros (level of presumption 1), but the more uncertainty increases, the latter may reach take values between [50,000, 70,000] (presumption level 0).

Table 2. Transformed the opinions of experts in trusted triplets the previous table

Nº Exp.	Opinion on (Ḡ)
1	[60.000 , [60.000, 65.000], 65.000]
2	[55.000 , [55.000, 75.000], 75.000]
3	[55.000 , [55.000, 70.000], 70.000]
4	[50.000, [60.000, 60.000], 70.000]
5	[60.000, [60.000, 74.000], 74.000]
6	[65.000 , [70.000, 70.000], 75.000]

4.1.3. First Approximation to the Value of the Intangible (Ḡ).

In order to improve the information, we proceed to treat the results obtained by calculating its arithmetic mean, if all the experts inspire the same degree of confidence, or their mathematical hope, in the opposite case. The result will be a fuzzy number, which will inform about the approximate values to be reached by the variables analyzed.

In this way, applying the proposed methodology to the proposed example, and assuming a similar confidence level in all the experts, the arithmetic mean of the estimated values will be calculated next:

M (Ḡ) = 1/6 * ([60,000, [60,000, 65,000], 65,000] + [55,000, [55,000, 75,000], 75,000] + [55,000, [55,000, 70,000], 70,000] + [50,000, [60,000, 60,000], 70,000]

+ [60,000, [60,000, 74,000], 74,000] + [65,000, [70,000, 70,000], 75,000]) = [57,500, [60,000, 69,000], 71,500]

The result obtained is a trapezoid fuzzy number, according to which, it is estimated that the variable (Ḡ) will oscillate, in the case of maximum uncertainty, in the interval [57,500,71,500], with the maximum possibility level being the interval [60,000, 69,000].

4.1.4. Application of the Expertise Method

Subsequently, and in order to provide consistency to the analysis carried out by the experts initially, the results obtained are subjected to counter-activation. The counter-optics consists in asking new experts, different from those who made the first expertization, to pronounce on the opinions of the first experts, thus increasing the objectivity of the resulting values. Although there are several methods of counterexpertizaje (Kaufmannn and Gil Aluja, 1.987: 115), for its simplicity and operability, we consider especially interesting for our purposes the so-called Method of Expertise.

The Expertise Method is simply to summarize the opinions expressed by the experts in an interval, and submit it to a new expertization. In this way, the opinions will be even more focused, reducing the amplitude of said interval, and therefore, the uncertainty and subjectivity that every opinion has implied. As a consequence of the process, an Expert will be obtained, which will reflect the opinions of the new specialists.

Returning to the proposed example, in order to improve the estimates of the previous six experts, the broader interval obtained in the third stage is subjected to counter-learning through the Method of Expertise. For this, five new specialists are used who will adopt the following semantic correspondence (table 3):

Table 3. Semantic Correspondence

0	is correct 57.500
0,1	practicaly 57.500
0,2	almost 57.500
0,3	close to 57.500
0,4	close to 57.500 than to 71.500
0,5	as close to 57.500 as 71.500
0,6	close to 71.500 than to 57.500
0,7	close to 71.500
0,8	almost 71.500
0,9	practicaly 71.500
1	is correct 71.500

The use of this methodology allows the expert to represent his thoughts, thus improving the sensitivity of the analysis to be carried out.

Suppose that the results obtained were the following table 4:

Table 4. Obtained results

Nº new expert	Opinion
1	0,7
2	0,6
3	[0,7 , 0,8 , 0,9]
4	0,5
5	[0,5 , 0,6 , 0,7]

The previous table expresses the opinion of the new experts surveyed. For example, expert number 1 believes that the value of the intangible variable is close to 71,500 euros, while expert number 3 estimates that it will range between an amount close to 71,500 euros and practically 71,500 euros, with the most possible value being almost 71,500 euros .

Once the opinions are collected, the corresponding Expert is built, for which the absolute frequencies will be determined first, then the relative frequencies will be calculated, and finally the inverse accumulated frequencies will be determined.

To establish absolute frequencies, determine the number of times each value appears in the lower (Li) and upper (Ls) extremes of the interval, as well as in the center of the interval (Vc), since in our example opinions are expressed in triples of confidence (Table 5).

Table 5. Example opinions

level of presumption	absolute frequencies		
	Li	Vc	Ls
0	0	0	0
0,1	0	0	0
0,2	0	0	0
0,3	0	0	0
0,4	0	0	0
0,5	2	1	1
0,6	1	2	1
0,7	2	1	2
0,8	0	1	0
0,9	0	0	1
1	0	0	0

In this way, the previous table of absolute frequencies indicates that the 0.6 appears twice as the central value of the interval, once as the upper end and another as the lower end, while for example the 0.9 only appears once as the extreme end. upper of the interval.

Subsequently, we divide the absolute frequencies by the number of experts participating in the process in order to establish the relative frequencies (table 6).

Table 6. Relative frequencies

level of presumption	Relative frequencies		
	Li	Vc	Ls
0	0	0	0
0,1	0	0	0
0,2	0	0	0
0,3	0	0	0
0,4	0	0	0
0,5	0,4	0,2	0,2
0,6	0,2	0,4	0,2
0,7	0,4	0,2	0,4
0,8	0	0,2	0
0,9	0	0	0,2
1	0	0	0

Now it is necessary to calculate the inverse accumulated functions, starting by accumulating from level 1 (from bottom to top), with which we will have already built the Expertón (table 7).

Table 7. Accumulated reverse frequencies

level of presumption	Accumulated Reverse Frequencies		
	Li	Vc	Ls
0	1	1	1
0,1	1	1	1
0,2	1	1	1
0,3	1	1	1
0,4	1	1	1
0,5	1	1	1
0,6	0,6	0,8	0,8
0,7	0,4	0,4	0,6
0,8	0	0,2	0,2
0,9	0	0	0,2
1	0	0	0

In this case, since opinions were expressed in confidence triplets, an M-Experton has been obtained where, as has been seen, Li is the lower limit, Vc the central value and Ls the upper limit of the interval.

4.1.5. Calculation of the R + -Experton.

Once the Expert is determined, the next step is to carry out the opportune transformations that facilitate the obtaining of the R + -Expertón, which will allow the expression in monetary terms of the opinions of the experts. However, since the proposed example is based on an M-Experton, the result to be obtained will be an R + -M Experton.

The linear transformation of an Experton, whose data are defined on the interval $^{[0,1]}$, to an R + - Experton, referenced to the interval [A*, A*], where A* represents the lower limit of the interval and A * the upper limit is the following:

R + - Experton = A* + (A* - A*) * Experton

Applied to our example means that:

R + -M-Experton = 57,500 + (71,500 - 57,500) * M-Experton

This process allows obtaining the following R + -M-Experton (table 8):

Table 8. R +-M-Experton

level of presumption	R+-M-Experton		
	Li	Vc	Ls
0		71.500	
0,1		71.500	
0,2		71.500	
0,3		71.500	
0,4		71.500	
0,5	71.500	71.500	71.500
0,6	65.900	68.700	68.700
0,7	63.100	63.100	65.900
0,8	57.500	60.300	60.300
0,9	57.500	57.500	60.300
1	57.500	57.500	57.500

4.1.6. Calculation of the Expected Average Value of (Ḡ).

Next, the mathematical expectation of the R + - Expertones is determined, obtaining interesting information about the expected average value of the analyzed variable, represented by a fuzzy number.

In this way, in order to approximate the value of (Ḡ), objective of the proposed example, it will proceed to operate as follows:

E (A) = 1/10 * ([71,500, 71,500, 71,500] + [71,500, 71,500, 71,500] + [71,500, 71,500, 71,500] + [71,500, 71,500, 71,500] + [71,500, 71,500, 71,500] + [65,900, 68,700, 68,700] + [63,100, 63,100, 65,900] + [57,500, 60,300, 60,300] + [57,500, 57,500, 60,300] + [57,500, 57,500, 57,500]) = [65,900, 66,460, 67,020]

The final result obtained is a triangular fuzzy number, which includes the Goodwill intangible estimate (Ḡ) that can be compared with the accounting data of the company, and may also serve to verify the quality of the financial information provided. If this analysis can be repeated at different times, a very interesting sectoral database can be developed.

Its graphic representation would be:

In this way, the results allow us to conclude that said value will be in the range (65,900, 67,020), being the most possible value to reach, always based on the opinion of the experts, 66,460 euros.
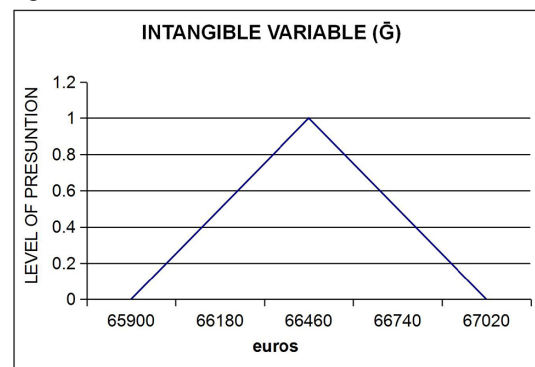
Figure 1. Intangible variable (Ḡ)

However, it is still possible to limit the previous interval, proceeding to defuse the fuzzy number obtained, which leads us to introduce a final stage in the proposed sequential process.

4.1.7. Obtaining the Final Value of (Ḡ).

Finally, the proposed process concludes with the calculation of the mathematical expectation of the previous fuzzy number. This will make it possible to defuse the results, that is, to transform a fuzzy number into a confidence interval, having eliminated the subjectivity, and consequently, objectifying the estimation of the studied intangible.

Let A ($\propto$) be a fuzzy number represented as a confidence interval where the presumption level $\propto$ varies in the interval [0,1], its mathematical expectation will be obtained by calculating its integral with respect to $\propto$ defined between 0 and 1.

$$E(\mathrm{A}(\propto)) = \int_0^1 \mathrm{A}(\propto)d\propto$$

In the proposed example, since it is a triangular fuzzy number, its characteristic function will be linear, and its representation through confidence intervals will be the following:

A ($\propto$) = [(66.460 – 65.900)* $\propto$ + 65.900 , (66.460 – 67.020)* $\propto$ + 67.020]

Calculating your mathematical hope:

$$E(\mathrm{A}(\propto)) = \int_0^1 \left[560\propto + 65.900, \quad 67.020 - 560\propto\right] \ d\propto$$

E(A ($\propto$)) = [66.180 , 66.740]

So that, subjectivity has been eliminated, transforming the previous fuzzy number into a more precise confidence interval, and therefore the intangible variable Ḡ has been adjusted much more, and will range between 66,180 euros and 66,740 euros.

5. Conclusions

Improving the competitiveness of a sector depends to a large extent on the development of its business fabric. This statement is especially relevant in the case of SMEs, where size is one of its most relevant characteristics. Specifically, in the agricultural sector, the problem of access to financing is particularly serious, weighing its growth and the success of viable projects.

We are, without a doubt, facing one of the most complex economic stages of recent decades, which covers all economic spheres, since the crisis having originated from a purely financial perspective, its greatest impact has been located on the real economy. No economic agent is free to suffer consequences, starting with families and ending with companies, where the agricultural sector is one of the most punished by the absence of credit.

To partially solve this problem, we propose the creation of a specific bond market for this sector, where financial liabilities can be syndicated and negotiate them.

As a final contribution, it is very interesting the incorporation of a public entity, such as a Regional Ministry, regional government, local or public company, which means an increase in the exit rating (BBB or BB +), and the best placement of bonds in the markets. As a second derivative, we would highlight the use of a fuzzy logic technique that allows us to take into account both the uncertainty in the analysis and the possible subjectivity of the analysts, making the model much more robust and solid.

In short, the proposed bond market allows, without needing to have a large size, access to a financing formula inaccessible for small or unlisted companies, allowing financing projects that would otherwise be unviable. In addition, during the life of the bond only the payment of the coupons would have to be assumed, being able to allocate most of the generated resources to strengthen the business project.

Finally there is a social aspect, in underdeveloped countries, where agriculture, and in general the primary sector is vital, and in many cases it does not find the most suitable channels for its development, being able to finance agricultural projects in North Africa for example.

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