



Theoretical retirement savings model for the informal agricultural sector in Colombia

Modelo teórico de ahorro para la vejez para el sector informal agropecuario en Colombia

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Abstract

Saving for old age is important for individuals in their retirement age, even more so if they belong to the agricultural sector or the popular economy, in most cases they do not have enough resources to accumulate throughout their life to be able to use them in the retirement stage. The objective of this article is to design a savings scheme for old age for informal employees in the agricultural sector, a case study of the municipality of Cajicá Colombia. Methodologically, a mixed approach is used, applying a multivariate statistical process, in which significant variables are established to feed the proposed scheme or model and the relationships between each of the variables analyzed. Analysis of the results is performed based on the input of information collected in the sample. The proposed theoretical model is a scheme an additional aid to the current one, although it does not fully guarantee total protection in terms of social security and, as it is a support, it is only limited to satisfying needs of the present, and to the extent that there is a longer savings period or considerable amounts, it can allow for the generation of capitalization through productivity since the resources can be used in infrastructure projects and their profitability is granted to the beneficiary saver.

JEL Code: J24, J26, J46

Keywords: savings for old age; theoretical model; pension; informal sector; agricultural sector

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Resumen

El ahorro para la vejez es importante para el individuo en su edad de retiro, más aún si pertenece al sector agropecuario o de la economía popular, en la mayoría de los casos no alcanza a acumular los recursos a lo largo de su vida para poder usarlos en la etapa de retiro o jubilación. El objetivo de este artículo es diseñar un esquema de ahorro para la vejez en empleados informales del sector agropecuario, estudio de caso del municipio de Cajicá Colombia. Metodológicamente, se usa un enfoque mixto, aplicando un proceso estadístico multivariado, en el cual se establecen variables significativas para poder alimentar el esquema o modelo planteado y las relaciones entre cada una de las variables analizadas. Se realizan análisis a los resultados con base en el insumo de información recolectada en la muestra. El modelo teórico planteado, es un esquema que puede brindar una ayuda adicional a la vigente, aunque no garantiza totalmente la protección total en cuanto a seguridad social y que, por ser de soporte, solamente se limita a satisfacer necesidades del presente, y que en la medida que se tengan mayor plazo de ahorro o montos considerables pueden permitir generación de capitalización a través de la productividad ya que los recursos pueden usarse en proyectos de infraestructura y su rentabilidad se otorgue en cabeza del beneficiario ahorrador.

Código JEL: J24, J26, J46

Palabras clave: ahorro para la vejez; modelo teórico; pensión; sector informal; sector agropecuario

Introduction

Social security is an indispensable form of protection for individuals, as it ensures their well-being in the pursuit of personal activities (Restrepo et al., 2021). These conditions ensure a crucial aspect of people's well-being, regardless of their stage of life, including old age (Mendieta & Jaramillo, 2019). Thus, it is important to note that, as people age, expenses increase, directly correlated with the level of savings generated by accumulated wealth or income from work (Meza, 2017).

Hence, there is a need to establish a savings plan that enables individuals to maintain resources to protect their livelihood in old age (Atlatenco, 2022). In developed countries with well-defined policies, workers' income during their working years can fully subsidize their pension benefits. In developing countries, regulations must be established that involve the economic sector's participation through contributions, accompanied by contributions from employees in the formal sector, to maintain long-run savings that can be used as pensions in retirement (Machicado, 2022). Naturally, this is subject to compliance with the conditions for access, which vary by country (Atlatenco et al., 2021; Ruperti et al., 2019).

For Colombia, and especially within the formal employment sector, two systems remain in force: the Average Premium System (RPM; Spanish: Régimen de Prima Media), administered by the state, and the Individual Savings System (RAI; Spanish: Régimen de Ahorro Individual), managed and

administered by private pension funds (Acuña & Suarez, 2022). These maintain the same conditions and requirements for obtaining a pension, subject to strict compliance with the regulations, which are important for establishing the pension allowance or the number of resources the individual is entitled to receive. This method provides supervision and auditing for the survival requirement without requiring any additional requirements (Guzmán, 2019).

Regarding the informal sector, there are periodic subsidies that favor the poorest segment of the population, although they do not serve as a true source of retirement income. The only guarantee of healthcare is through a model called the System for Identifying Potential Beneficiaries of Social Programs (SISBEN; Spanish: Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales), which provides essential healthcare, but of poor quality for this group of individuals (Ramos, 2020). Another scenario is individuals who are self-employed (i.e., in the informal sector), as they do not contribute to the system and do not receive employer contributions. This situation occurs among the poorest sector of the population, who cannot access education and must perform basic manual labor that relies on physical strength rather than intellectual or professional skills. This does not help generate actual retirement savings (Barreneche et al., 2021; Guzmán, 2019).

Accordingly, the objective of this article is to design a sustainable, long-term retirement savings plan for informal workers in the agricultural sector that guarantees minimum income resources for survival during retirement, based on the characteristics of the Cajicá population. These plans were developed through the theoretical postulates presented in the literature review, the methodological process, and the collection and analysis of results.

Review of the literature

Various classical theories suggest that individual consumption is related to income and is directed toward future income (Casas & Pico, 2021). This theory leads to the concept of permanent income, in which an individual has two components of income over time: the first is related to temporary income throughout their life, and the second is a permanent component (Ruperti et al., 2019; Friedman, 1957).

Permanent consumption is defined as that which is compatible with the maintenance of wealth, and its result is linked to the consumption function—very similar to the life cycle theory proposed by Modigliani and Miller (1958), which can be complemented by some empirical causes, referring to the relations between the permanent component and the transitory component, where the transitory component is exclusively linked to savings. Within Keynesian theory, the level of savings is independent

of the consumption function, but it is not complementary to the situation described, because higher savings do not necessarily imply higher income (Solorzano, 2021).

The concept of marginal propensity to save within the consumer economy stems from this, highlighting the level of savings of the individual and indicating that if their income level increases, their consumption level will also increase, and therefore, they will save less. This concept highlights the connection between the two propensities: the marginal propensity to consume, which harms savings, and the marginal propensity to save.

Likewise, in a modern economy, the relation between consumption, investment, and liquidity preference is direct, and the link between savings and income is unstable over time (Casas & Gil, 2011). In contrast, Broten (2017) stated that the effective demand function determines the level of consumption, which, in turn, is determined by the level of production in an economy. Thus, savings depend directly on income, since income is higher, and the functions of investment and savings differ from the income humans receive from their work.

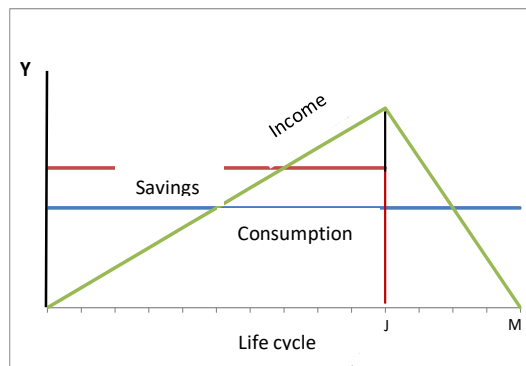


Figure 1. Life cycle according to Modigliani

Source: created by the authors based on information from Modigliani and Miller (1958)

Figure 1 shows the life cycle of an individual over time. Modigliani and Miller (1958) propose that consumption is constant, implying stable consumption levels. Nevertheless, in today's world, consumption is influenced by inflation, which leads to exponential growth in monetary terms. At the beginning of life, income is almost zero, except in cases of wealth accumulation. During working life, income increases, allowing consumption to be covered and allocating part of it to savings for future consumption. At point J in the cycle, the individual has no income, which reduces savings. At the end of their life, at point M (death), savings are depleted, leading to a final equilibrium.

This last point presents a real opportunity to explain income-level expectations, since, at its optimal maximum, it should equal zero. Nevertheless, it is known in advance that in some cases this will not occur and that higher values will generate an additional resource known as inheritance or unconsumed capital, which is of greater benefit to families or beneficiaries, or the lower value will be offset by resources contributed by family members. This point is where the dilemma lies in creating a system that maintains this level, given rational life expectancy, which depends on a healthy life experienced through adequate consumption of health goods and services, as well as on the well-being of previous productive stages. There are no models that benefit an optimal situation that allows for maintaining balance. In this aspect, the model proposed by Modigliani and Miller (1958) represents a general theoretical equilibrium. Nevertheless, many forces or externalities remain that can locate variations in the consumption function and in the individual's income, which do not permit the achievement of an adequate equilibrium.

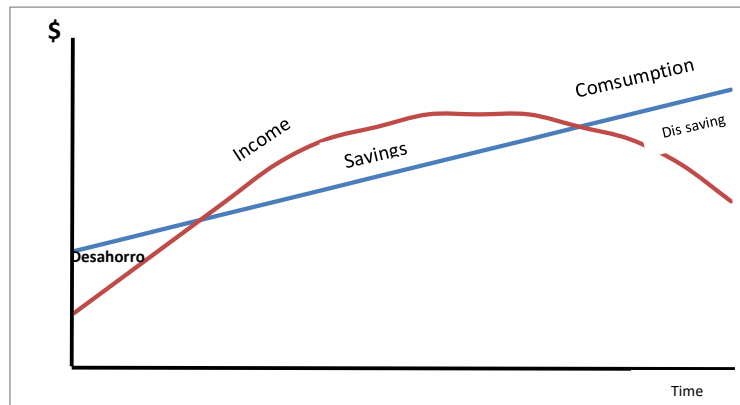


Figure 2. Life Cycle, adjusted

Source: created by the authors based on information from Modigliani and Miller (1958)

Figure No. 2 presents a more accurate scenario of Franco Modigliani and Miller's (1958) life cycle theory, because it considers income as a function where the intercept is lower than the level of consumption at the age at which the individual is born, which is much more realistic than that presented in Figure No. 1. This adjusted life cycle shows the proportions of savings (in this case, dis-saving, since income is greater than consumption) at different stages of the life cycle. Furthermore, this proportion must be compensated for in the intermediate stages, i.e., at the end of youth and in the later stage of maturity.

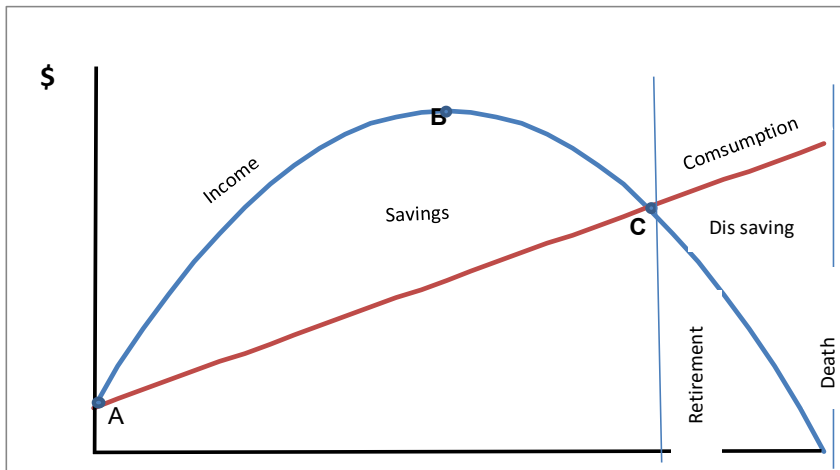


Figure 3. Life cycle, Alternative
 Source: created by the authors

Figure 3 shows the individual earning income from point A, although this does not always occur at exactly that point. Consumption, nonetheless, is always present, leading another individual to finance it, reducing their savings. In this context, it is assumed that consumption equals income at point A. Savings grow at a slower rate than in previous stages, while in maturity these savings decrease, and as old age approaches, at point B, income declines. Upon retiring (point C), consumption continues to increase, leading to dis-saving.

The theory does not clarify how income or wealth accumulation can sustain consumption from retirement until death, which is the objective of pension resources. In some systems, subsidies may benefit spouses or heirs (Ramírez, 2021). Nevertheless, this theory faces difficulties due to the influence of qualitative variables, such as life expectancy and pension regulations, which are influenced by economic factors, lifestyle habits, and health (Gambau, 2014).

Pension programs in Colombia only apply to the formal sector, namely the RPM program, effective since 1979, and the RAI program, effective since 1994, as an alternative to the RPM program, which represents company contributions of seventy-five percent (75%) of the worker's monthly income. A pension reform has recently been processed and approved, proposing a pension for workers who did not meet the contribution and savings requirements, which applies to the informal sector. This benefit provides a monthly sum of COP 200 000 (approximately USD 48), which is insufficient to meet basic needs. In fact, this amount represents a value equivalent to fifteen percent (15%) of the minimum wage

(minimum wage = COP 1 300 000 = USD 310), which contrasts with the minimum pension equivalent to the minimum wage for an employee in the formal sector.

Thus, for the informal sector, it is impossible to generate adequate savings for retirement pensions, making it necessary to create a plan using their own resources that generates accumulation and thus obtains a resource similar to that currently established for pensions.

Methodology

Methodological design

A qualitative and quantitative analysis was conducted to identify aspects related to savings. A stratified categorical sampling of individuals was required, based on data provided by the municipality (Department of Social Prosperity). A survey was conducted to collect relevant information for the analysis of results. A survey-type information collection instrument was used, comprising a questionnaire with both open-ended and numerical questions, administered at intervals to establish fundamental variables and their relations within the model.

Once the information-gathering stage was complete, the information was analyzed using financial theory, including calculations of money over time and under variable conditions, such as inflation and interest rates, to assess the sustainability of resources in the future.

Population and sample

To determine the characteristics of savings, a database of informal agricultural sector employees was essential. A database of individuals linked to the sector was available, filtered by residence, specifically rural customers, as this is the best reference for informal employees.

The filtered database corresponds to a selected sample population of 12 435 individuals, of whom 241 have a registered email address and 7 283 have a registered landline or cell phone number. Of these, 5 983 people use WhatsApp, a population to which the survey could be applied. The sampling technique produced several instruments to be administered, assuming a 95% confidence level and a 5% margin of error, based on a 25% response rate, yielding a list of 1 492 candidates to answer the survey questions. The sample for this article was selected using simple random sampling, yielding a representative sample of 195 individuals.

The sample size formula is based on descriptive analysis, as the aim is to identify specific characteristics in a similar group of individuals. It is qualitative in nature with a finite population, and is described as follows:

$$F = \frac{N * Z^2 * pq}{d^2 (N - 1) + Z^2 * pq}$$

Where:

F = sample size

N = population size

Z = Confidence level

d = Level of error in the estimate

p = probability of occurrence of the study analyzed

q = probability of non-occurrence of the study analyzed is equal to (1 – p)

p + q = 1, since this will be the total probability

In this case, a confidence level of 95%, an error level of 5%, and a probability of occurrence of 50% are used.

Results and discussion

Firstly, because the database contained lengthy responses, a designation was developed for each question and response to improve visualization in the analysis graphs.

The acronyms are the result of the variables with names in Spanish, as follows:

GEN = Gender; ED = Age; REC = Economic resources; DM = Working days per month; PER = Percentage of savings based on income; FAH = Frequency of savings; RAV = Range in years of savings for old age; SUB = State subsidy or grant; DIN = Amount of money in COP to be received; ARE = Savings allocated to an economic resource.

Table 1 summarizes the survey responses; Figure 4 shows the summary by gender; and Figure 5 summarizes the frequencies of responses to the other questions. Regarding Figure 4, there are more responses from male workers in the rural sector of Cajicá (62.37%) than from women (37.63%). This result may be due to the work's context and the difficulty of the labor required for this activity. This variable is highly relevant because the usual retirement age is higher among men.

Table 1

Survey responses

GEN	ED	REC	DM	PER	FAH	RAV	SUB	DIN	ARE
F: 73	E1:78	R1:73	D1: 7	P1:19	A1: 21	V1: 9	SUB.N: 12	I1:18	RA1: 28
M:121	E2:67	R2:63	D2:33	P2:91	A2:151	V2:35	SUB.S:182	I2:86	RA2: 40
	E3:49	R3:43	D3:62	P3:81	A3: 21	V3:95		I3:65	RA3: 15
		R4:15	D4:90	P4: 3	A4: 1	V4:50		I4:25	RA4:111
			D5: 2			V5: 5			

Source: created by the authors

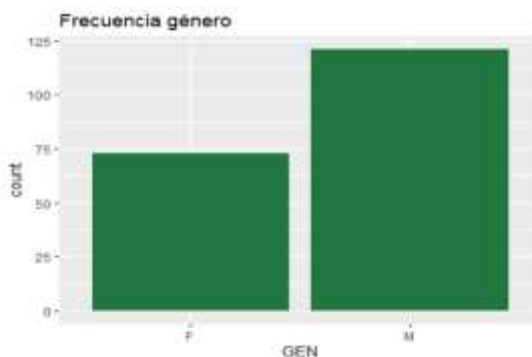


Figure 4. Gender frequency, survey

Source: created by the authors

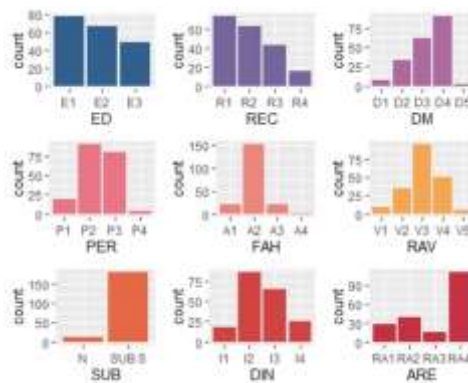


Figure 5. Frequency of responses to survey questions 2 through 10

Source: created by the authors

Analysis of results for each question

Age range (ED): among those surveyed, 40.2% are aged 18-25, 34.54% are aged 26-35, and 25.26% are aged 36-45. Considering the total number of people surveyed, the proportion of respondents aged 45 and above was 14.08%.

Resources with which respondents believe they can achieve retirement (REC): The most popular response was “Personal savings” with 37.63%. Meanwhile, the least popular response was “Financial support from close family members” with 7.73%.

Range of days per month spent working (DM): of the 194 responses, 46.39% work between 20 and 30 days, while the second most popular response was 15 to 20 days, with 31.96%.

Percentage of savings permitted by your work activity (PER): It was found that 46.91% of the selected records can save between 2% and 5% for their pension through their current work activity. Meanwhile, 41.75% can save between 5% and 10%.

Frequency of saving is habitual (FAH): 77.84% of respondents voted that their frequency of saving is “Monthly.”

Consideration of years of saving for old age (RAV): 49.97% believe that between 25 and 30 years are needed, while 28.35% believe that between 30 and 40 years are needed.

Consideration of the government subsidizing part of the pension (SUB): 93.81% responded that if the government could subsidize part of the pension, they would agree to make joint savings.

Monthly monetary consideration for living with dignity after retirement (DIN): given that this question did not include extra costs for rent or services, 44.33% of respondents selected the range of 500 000 to 750 000 Colombian pesos, while 33.5% chose the range of 750 000 to 1 000 000 Colombian pesos.

Main activity where savings resources are believed to be invested (ARE): the most common belief among the selected respondents is that their resources would be used to finance productive projects in their own region, generating profits that would be distributed to the contributors themselves (57.22%). The second most voted activity, with 20.62%, corresponds to the belief that these would be placed or loaned to families or companies.

Multiple correspondence analysis

This type of analysis is developed for contingency tables containing categorical and nominal variables, i.e., properties and characteristics used to describe individuals' results. Based on the survey results, the

data's underlying structure is evaluated to inform decisions grounded in an understanding of the relations between variables.

Correspondence analysis was used to identify characteristics of individuals in the rows, grouped by columns. This analysis cross-references relevant information from each category with the results, thereby enabling the characterization of individuals.

Cross-referencing information for each categorized variable establishes the link between variability within each category and each individual. To determine the number of principal components in the database, the intrinsic values must be established, which represent the explained variance. The aim is to show that the higher the intrinsic value of an axis, the more explanatory information it will contain about the structure of the data and, therefore, the greater its contribution to establishing the significant variable and, consequently, its importance. The database obtains the results shown in Table 2.

Table 2
Values specific to the dimensions and variability of the data

Dimension	Intrinsic value	Percentage of variance explained	Cumulative percentage of variance
1	0.2648	9.808	9.808
2	0.2435	9.019	18.83
3	0.2034	7.535	26.36
4	0.1722	6.379	32.74
5	0.1444	5.349	38.09
6	0.1378	5.103	43.19

Source: created by the authors

Table 2 presents six dimensions, the main components that correspond to the links between variables and categories. When these are combined and accumulated, the cumulative percentage of explanation for the variables is 43.19 (the six dimensions). Moving through the data from previous dimensions, the cumulative variance increases, indicating that the variables can be explained in relation to each other with greater significance. The amount of variance explained decreases progressively. Therefore, dimensions 1 and 2 are the two main dimensions with the highest intrinsic values, accounting for the most relevant part of the variance and thus serving as the main components in explaining the variables among themselves. To better visualize the participation of each dimension, a Scree Plot (sedimentation graph) of the dimensions is shown in Figure 6, which shows the percentage of variance explained by the variables.

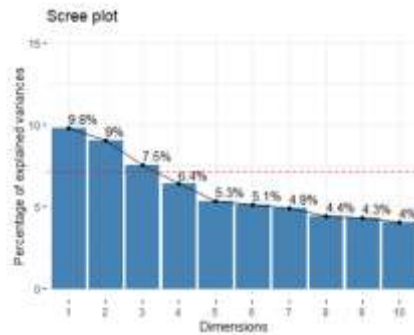


Figure 6. Sedimentation of dimensions

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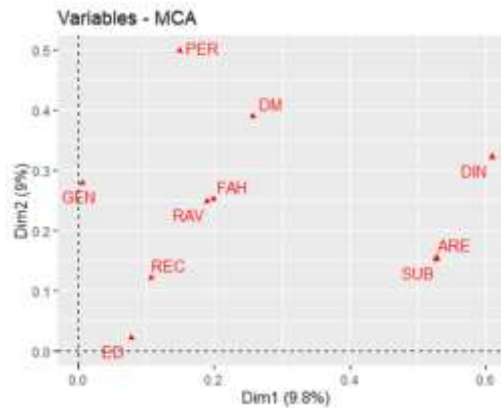


Figure 7. Correlation between variables and dimensions

Source: created by the authors

Figure 6 identifies the dimensions that contribute most to the analysis of results, with the dotted red line representing the average between the dimensions. Bars that exceed this red line indicate higher-than-average participation. Based on the above, the first two dimensions contribute the most. Figure 7 shows the correlation between variables and the main dimensions.

Multiple Correspondence Analysis (MCA) shows that the variables most closely related to the first dimension are SUB (Subsidy), ARE (Savings resource activities), and DIN (Money available for savings), while the least related variable is GEN (Gender). For the second dimension, the variables most

closely correlated are PER (Estimated percentage of savings) and DM (Days in the individual's working month). Another noteworthy observation is that the variables "FAH/RAV" (Frequency of savings/Range of years for old age) and "SUB/ARE" (Subsidy/Savings resource activity) correlate similarly in both dimensions. With these results, it can be said that the variables that correlate most with the dimensions are those that contribute most to explaining the two main components.

Considerations and analysis of the theoretical model for retirement savings in the informal agricultural sector

Once the survey results were analyzed, variables were selected using correspondence analysis and principal component analysis. Consequently, the characteristics that are important for the model are:

Variable No. 1: Amount of money currently available for the individual's maintenance between \$500 000 and \$700 000 Colombian pesos.

Variable No. 2: Savings period between 25 and 30 years

Variable No. 3: Percentage of savings according to monthly income 6%.

Variable No. 4: Contribute with personal savings, including a government subsidy

Variable No. 5: Allocate savings to finance productive projects in the same region.

Therefore, a financial projection model is created to determine the future value of savings, assuming an annual increase in the Colombian consumer price index of 7% based on the average of the last 10 years. This reference may vary to perform simulations with volatility to determine different financial scenarios. This increase in value will be applied to income each year and should be considered as variable No. 6. In addition, the model assumes that informal employment entails the characteristic that, over the course of a year, the individual does not generate a stable income. Therefore, it is assumed that the saved values will be present for 75% of the year, meaning that the individual will not be able to cash in the savings for any reason in 25% of the time required during their plan.

Retirement savings model			
Variable No.	Name	Applied value	
1	Amount of money between \$500 000 and \$700 000	\$ 600,000	
2	Savings period in years	27.50	
3	Percentage of savings based on current income	6%	
4	Government subsidy, based on income	4%	
5	Return on investment in projects – Annual	10.00%	0.797 < mensual
6	Increase in individual income	7%	

Figure 8. Determinant variables of the theoretical model of savings
Source: created by the authors

Figure 8 shows the variables used to assess the accumulation of saved capital, based on the main characteristics of the analysis in the application of the instrument. This is used to model the approach, which aims to determine the saved and capitalized value over a total savings period of 27.5 years. The results are shown in Table 3.

The savings capital achieved is 183 797 793 Colombian pesos. This amount can be used to make a full refund to the individual after they have fulfilled their savings obligations. Once this amount has been reached and given that there are periods during which savings cannot be made, it is necessary to multiply by 75%, which indicates a total value of 137 848 345 Colombian pesos, which can also be established in monthly installments called “allowances,” which are intended to serve as additional support to the accumulated capital that the individual can generate through other types of economic activities.

Table 3
Return on capital accumulated over time

Year	Annual savings	Future value	Cumulative future value	Year	Annual savings	Future value	Cumulative future value
Year 1	752.432	9 405.319	9 405.319	Year 15	1 940.172	6 386.293	117 083.920
Year 2	805.102	9 148.810	18 554.129	Year 16	1 940.172	6 212.121	123 296.041
Year 3	861.460	8 899.297	27 453.426	Year 17	2 221.303	6 042.700	129 338.741
Year 4	921.762	8 656.589	36 110.016	Year 18	2 376.794	5 877.899	135 216.639
Year 5	986.285	8 420.500	44 530.516	Year 19	2 543.170	5 717.592	140 934.232
Year 6	1 055.325	8 190.850	52 721.366	Year 20	2 721.192	5 561.658	146 495.890
Year 7	1 129.198	7 967.464	60 688.830	Year 21	2 911.675	5 409.976	151 905.866
Year 8	1 208.242	7 750.169	68 438.999	Year 22	3 115.492	5 262.432	157 168.298
Year 9	1 292.819	7 538.801	75 977.800	Year 23	3 333.577	5 118.911	162 287.209
Year 10	1 383.316	7 333.197	83 310.997	Year 24	3 566.927	4 979.304	167 266.513
Year 11	1 480.148	7 133.201	90 444.198	Year 25	3 816.612	4 843.505	172 110.018
Year 12	1 583.758	6 938.659	97 382.857	Year 26	4 083.775	4 711.409	176 821.427
Year 13	1 694.621	6 749.423	104 132.279	Year 27	4 369.639	4 582.916	181 404.344
Year 14	1 813.245	6 565.348	110 697.627	Year 27.5	2 393.450	2 393.450	183 797.793

Source: created by the authors

The results presented in Table 3 are based on stable inflation estimated at 7% annually, which increases the value of savings. These amounts were projected into the future using an annual rate of return of 10% with the formula $FV = PV * (1 + i\%)^n$, where FV = Future value; PV = Present value; $i\%$ = Annual rate of return; and n = Number of years.

Discussion

The expected results in Future Accumulated Value explain the amounts saved and added to year No. 27.5, which would achieve a total capitalized value of COP 183 797 793 (approx. USD 42 000). These resources would be withdrawn from pension payments (monthly) after this year, as shown in Table 3, reducing the capital saved, which continues to generate a 10% annual return over time. Therefore, they will earn interest at the end of the period, thereby increasing capital over time and consolidating a greater benefit in the future.

Thus, a financial calculation is made, as shown in Table 3, to determine the value of said allowance and comply with the initial financial conditions, i.e., increase in the value of capital due to the rise in the consumer price index and the profitability of annual productive projects that prevails over the accumulated capital balance.

For the authors, the support currently provided by the state is relevant, based on the premise that no individual savings model could guarantee sufficient resources for the final stage of an individual's life, as has been seen today, in line with the views expressed by authors such as Atlatenco (2022) and Machicado (2022).

Likewise, the theoretical model represents an effective response to the informal sector, supported by the argument that the company makes a relevant contribution. This benefits the capitalization of savings and, consequently, savings in the informal sector, with the help of state resources, can generate greater coverage benefits that motivate individuals to make long-run savings for their own benefit. Currently, it only commits to the present by providing basic welfare, which at no time represents a satisfactory response for the people who provide for the livelihood of other citizens in an economy, thus complementing the theories put forward by authors such as Broten (2017), Casas & Gil (2011), and Modigliani & Miller (1958).

Conclusions

The determination of research results enables glimpsing different perspectives, as fundamental aspects of the topic can be established, which remain major challenges in determining how an individual can secure financial resources for their old age. Maintaining a state-supported model is quite advantageous because it develops a pillar that formally requires the model to be implemented with the support of the company where the worker is employed. Thus, in Colombia, it is mandatory to select a pension savings plan.

Likewise, in both the public and private sectors, the general contribution is sixteen percent (16%) of the individual's monthly income, of which three-quarters (3/4) must be contributed by the company and one-quarter (1/4) by the employee. This percentage applies to both fixed-term and indefinite employment contracts. Nevertheless, for informal employees in the agricultural sector, this is not possible since an employment contract does not govern their work; consequently, no savings are made. Nonetheless, it is essential to note that the state provides financial assistance for the current term and that it is not recognized as a retirement benefit.

Regarding the development of the stated main objective of designing a pension savings model for informal workers in the agricultural sector in the municipality of Cajicá that is sustainable in the long term for survival, which was carried out in its theoretical form, it presents positive results due to its characterization and the basic conditions for its implementation. Therefore, it is essential to develop an incentive policy that can be implemented and supported by the State, as without this assistance, the benefit is basic and not very sustainable in the long run.

The theoretical model supported the condition of generating a long-run resource that can maintain basic welfare needs for the individual, simulating changes or variations in the variables of inflation and the profitability of the invested resource. This is because it enables the subsidization of resources for a period that, on average, ranges from 8 to 15 years of survival after applying the simulations. It is important to maintain the state subsidy at the same level as savings, which is currently the case, as an expenditure to be used in the present. This model aims to use the subsidy as a vehicle to mobilize resources, allocating a small portion for current use and a larger portion for retirement, thereby representing savings for the national budget in the present that can be capitalized for future use.

Regarding productive projects in the regions, the following are proposed:

Design and implementation of regional and local aqueducts: By using savings, it generates benefits and economic development for the region by providing basic sanitation; on the other hand, the beneficiary of the savings becomes a capital contributor, with the consequent generation of profits for the public-private company that will manage the project, with the proceeds from the sale of drinking water and aqueduct services.

Improvement of tertiary roads: Generates benefits by improving communication routes to streamline logistics and the distribution of food and products in the region, thereby reducing and rationalizing production and other costs, and by participating in the profits from the placement of the resource that the state will pay in return.

Irrigation districts: Implementation of water supply projects for crops in different regions, generating an additional resource with easy access to water and distributing the results of the project's profits to those who finance the projects, in this case, savers, as they are a long-run resource.

Direct supply centers for inputs: Sale of inputs with own resources, financed by savings, as financial leverage, and with payment in installments, with savings cross-collateralization in emerging cases.

If savings resources are connected as a source of financing for the above regional projects, they will have a twofold benefit: the use of the resource in projects that benefit the region, thereby creating economic and social development, and the distribution of profits from the projects, which will capitalize on the savings over time.

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