A COMPARATIVE STUDY ABOUT COMMERCIAL BANKS AND NON-COMMERCIAL BANKS SAVINGS SCHEMES

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Abstract
Even though profits can be positively related to savings, when this is measured in monetary terms, there is no relation whatsoever with savings rates. In this research paper savings schemes in Mexico are compared and analyzed using data from Mexican savings and first-tier banks.
One of the main reasons Mexico has a low savings rate is because of the country's slow growth, whereas inflation is incrementing at an accelerated pace.
People who save, which are considered as investors in banks, assume all the risks when they take their savings to any number of different renowned banks in the country. In contrast to banking institutions, who always end up having a benefit even when their investors suffer a monetary loss related to value of money.

Key words: *savings schemes, commercial Banks, non-commercial Banks.*

JEL Classification: *G240*

I. INTRODUCTION

Today the topic of financial education has become part of the global agenda, and specifically in the national context, it has been made part of a national resolution that needs to be engaged (Moreno-García, García-Santillan and Munguía, 2013). It has been proven in other studies that also when the user and non-user population of financial systems, have a financial education level from basic to acceptable, better decisions are taken in their lives (Mandell, 2008, 2009 and Lusardy and Mitchell, 2009,2010).

For many saving is the solution for the ills that befall them, being this a variable integrated in the revenue equation or national income. When promoting savings public spending is reduced, internal investment is promoted allowing the country to sustain itself with local resources and not to depend on foreign resources incrementing debt and committing to the interests that come with it (Villagómez, 1960).

Through the National Survey of Home Income and Expenses - "Encuesta Nacional de Ingresos y Gastos de los Hogares" – ENIGH in 2012, conducted by the National Institute of Statistics and Geography – "Instituto Nacional de Estadística y Geografía" - INEGI, and complemented with data from the National Banking and Securities Commission – "Comisión Nacional Bancaria y de Valores" - CNBV, regarding variables of financial services access, it was concluded that the difference between certain income and expenses elements is saving.

Valles and Aguilar (2005), state in their article Savings in Mexico: Evidence in homes, which translates to – "El Ahorro en México: Evidencia en Hogares" –, that income has a positive relation to savings when measured in monetary terms.

Financial education is encouraged at home, creating a conscience about the importance of not spending part of their income. The habit consists in reserving a portion of income that will be used for future plans. Having a stable economic status, access to health services provided by the state or payed for by the employer and having access to financial credits improve the saving habit in people (Valles and Aguilar, 2005).

Summarizing we can assume, that if savers have to analyze the opportunity cost their resource generates, if it is beneficial economically speaking, or if on the contrary their savings are destined more to satisfy family

needs than savings itself it begs to question: which is the savings scheme that generates better returns for savers?

II. LITERATURE REVIEW

To understand the study's target variables, which in this case are savings schemes offered by financial institutions both from first-tier banks and credit unions, the following is analyzed and discussed:

II.1 Savings

Savings is a factor of great importance for the development and strengthening of any economy. Savings refers to the process of taking aside a portion of the current income of a persona, minus their expenses. One of its main advantages is that it allows to cover for future expenses. Saving is influential at a personal level as much as at a family level, as a company, affecting a country's economy and the world's by generating a greater investment which, in turn, generates a greater economic growth.

The objective of any person is to have enough income to face retirement, however Mexico ranks last for retirement savings in Latin America with less than 10% of voluntary savers from all people registered in the Mexican Social Security Institute – "Instituto Mexicano del Seguro Social" - IMSS. This leads to several questions such as: do they not have access to the necessary information, or enough savings products? Or, is it an attitude of lack of interest, lack of conscience, low income? An answer will be sought for these questions (Vega, Rodríguez, Martínez and Hernández, 2016).

Bultemann and Gallego (2001), define home savings as the difference between income and total expenses. Income corresponds to the total amount available at home, excluding forced retirement savings deductions and taxes, and including public and private bank transfer and pension payments. It must be noted that education, health and housing among others, are not included as an expense nor an income.

Székely (1998) discusses three ways of calculating a home's savings. In general terms the easiest way to calculate a home's savings (S) is simply to subtract the present expenses to the present reported income. This can be expressed as:

$$S1 = y - c \ (A)$$

Where: S1 represents savings, "y" available income and "c" to expenses in durable and disposable goods. Hurioka (1995) and Dagenais (1992) mention that expenses should only include disposable goods that are useful to project present expenses to the future. Thus, "cd" is defined as durable goods expenses and "cnd" as disposables expenses (of current consumption), so that c= cnd + cd, resulting in the value of S defined as:

$$S2 = y - cnd \ (B)$$

Another option for calculating the value of S consists in value estimation for the home's assets through time. This approach follows the current account criterion by expressing S as:

$$S4 = \Delta W = (\Delta Af + \Delta Ap) - (RA - RL) - PA$$

Where Δ represents a change through time, W are the net assets of the home, Af are the financial assets, Ap are the physical assets, Lf represents financial liabilities (debts), RA and RL correspond to the re-valuation of assets and liabilities respectively and PA is the physical assets depreciation. It should be noted that S4 is of the same magnitude as S1 when not considering durable goods (cd) as a type of savings, and equal to S2 when they are considered as a way of savings, the reason being is that S4 identifies the origin or destination of the savings or non-savings resulting from equations (A) or (B) (Bosworth 1991; Avery and Kennickell, 1991).

Friedman (1957) states that "Total consumption at any given point in time is determined by the permanent consumption and a random component of transitory consumption, representing a change in permanent or normal consumption levels. Likewise, it assumes that transitory consumption is just a random variation surrounding permanent consumption. The main assumption of the permanent income hypothesis is that a sudden or unexpected rise in income due to a transitory fluctuation will not immediately affect the individual's consumption":

$$COV \ (Cip \ , \ yti \ ) = 0$$

It is a fact that to a higher financial education level corresponds a higher level of retirement savings and so do the pension payments. The challenge confronted by the National Commission for Retirement Savings System – "Comisión Nacional del Sistema de Ahorro para el Retiro" – CONSAR and the Retirement Funds

Administrators - "Administradores de Fondos para el Retiro" - AFORE, is promoting a higher financial education and retirements savings that lead to greater involvement of the worker with their "AFORE" account (CONSAR, 2015).

Burnside, Schmidt-Hebbel and Servén (1999) in their study titled "Savings in Mexico: The National and International Evidence" distinguish terms of trade, public savings, effective interest rate and inflation interest rate as key variables. Attributing a low saving percentage to the country's low economic growth.

II.2 Credit unions

Credit unions are nonprofit organizations founded in 1951, integrated by working class individuals whose main objective was to save as a community and obtain loans at a reasonable interest rate. Credit Unions were a result of actions by the catholic church (Eguía, 2001: 221; Gómez, 2008).

These unions were promoted as a financing solution, a main result of the industrial revolution phenomenon and an aiding tool for the development of Latin-American countries just half a century ago (Conejo, 2009).

The National Commission for the Protection and Defense of Financial Service Users – "Comisión Nacional para la Protección y Defensa de los Usuarios de Servicios Financieros" - CONDUSEF, states that in Mexico there are more than 600 authorized and unauthorized Savings and Credit Cooperative Societies - "Sociedades Cooperativas de Ahorro y Préstamo" - SOCAP. According to data from the Financial Inclusion National Survey – "Encuesta Nacional de Inclusión Financiera" - ENIF, 44% of adults are users of informal savings and 34% are users of formal banking services. Informal savings refers to saving money at home and loans among family members.

The Mexican Credit Union – "Caja Popular Mexicana" is established in 1951 by the Mexican Social Secretary, which then became autonomous.

They are a regulated and supervised institution since 1995, conforming to the regulations of the National Banking and Securities Commission - "Comisión Nacional Bancaria y de Valores" –CNBV and the sector's Assistant Monitoring Committee (AMC), heeding what is asked of them by The National Commission for Protection and Defense of Users of Financial Services – "Comisión Nacional para Protección y Defensa de los Usuarios de Servicios Financieros" -. CONDUSEF.

It seeks to offer their members competitive interest rates within the market (CONDUSEF magazine, 2015).

Credit Unions have adopted several laws and have become, in time, in profit organizations and even though they do not comply with every established bylaw they keep fighting to stay in the financial market (BANSEFI, 2005).

Currently credit unions in Mexico are called Popular Credit and Savings Entities – "Entidades de Ahorro y Crédito Popular - Sociedad Financiera Popular", whose purpose is to promote savings and the development of the sector, managed by The Bank of National Savings and Financial Services or Mexican Securities System - "Banco del Ahorro Nacional y Servicios Financieros" - BANSEFI.

The interest rates stated in the official page for Popular Mexican Banks or Credit Unions - "Caja Popular Mexicana" (Caja Popular Mexicana, 2016) are shown below:

Table 1: The interest rates

Range	Annual Interest Rate	Nominal Gross Annual Income * Before taxes	Real Gross Annual Income** Before taxes
$1.00 to $25,000.00	2.84%	2.88%	-0.58%
$25,001.00 to $50,000.00	3.07%	3.11%	-0.35%
$50,001.00 or more	3.18%	3.23%	-0.24%

II.3 First-tier banking

A country's banking system is considered as one of the main pillars to generate a solid economy. Not only because it is the foundation for the payment system, also attributing a certainty to daily financial transactions, but also and fundamentally because it contributes to the channeling and proper assignment of savings among several economic agents (Pineda, 2003).

An efficient banking systems allows a flow in savings, assigns capital, monitors and advises consumer's investment decisions. It also provides a risk management environment, all this in benefit to the economic development (Ortiz, Cabello and Jesús, 2009).

Within the financial system there exist organisms to regulate operations, one such organism is The National Baking and Stock Commission - "Comisión Nacional Bancaria y de Valores" -CNBV, which is part of the Secretariat of Finance and Public Credit – "Secretaría de Hacienda y Crédito Público" – SHCP. This organism has technical and operational autonomy to supervise and regulate financial entities to ensure their stability and correct functioning, as well as, promoting and maintaining a healthy and balanced development of the financial system as a whole; Protecting the interests of consumers together with the "CONDUSEF", a public institution dependent of "SHCP", to promote the population's financial education, the development of products and tools that support, advise and orient consumers of financial services and to always seek a just and fair relation between consumers and financial institutions.

Commercial banking is necessary in the economic life of a country, however, the percentage of banking users in Mexico is low in comparison to other world economies, due to the general financial culture existent in the country and its low per capita income (or average income) growth (Conejo, 2009).

A report by "CONDUSEF" states that from the total population with access to banking services within an average age of 18 to 70 years, only 40 million individuals make use of formal financial services for their savings. The study showed that 25 million adults have at least one deposits or formal savings product and approximately 24 million people have in their possession at least one debit card.

The most widely used formal banking product is the payroll account, with 15.1 million users (21.5% of total population), different types of savings accounts with 11.6 million users (16.5% of total population).

From the percentage of people that have the habit of saving, 64% have their money in banks, 13% have them in credit unions, while the other 7% and 5% keep theirs at home or through individual accounts that don't have an investment return (CONDUSEF, 2013).

For Marco Carrera Santa Cruz, CEO of Financial Education in the "CONDUSEF", a recommendable middle and long term savings alternative are "AFORES". They offer an average yield of more than 6.7% in real terms, which is, the highest value when compared to the inflation rate since AFOREs were created in 1998.

An article published by Leyva and Valdemar (2016) in "El Financiero" (A financial newspaper), says that in Mexico, instead of getting a return for their money deposited in the main country's banks, they just have losses in present time. This is because the Total Annual Income (TAI) has a negative real value generating instability; therefore, the yield for their savings is not equal to the generalized increment in prices.

Miguel Gonzales, who acts as the coordinator for the Financial Studies and Public Finance Centre – "Centro de Estudios Financieros y de Finanzas Públicas" - CEFI, from the Economics Faculty for the National Autonomous University of Mexico – "Universidad Nacional Autónoma de México" - UNAM); stated that risks are absorbed by the investor and not by the bank itself, and in his own words: "We have to understand the banking business. Their profit derives from the difference between the interest rate it charges to their debtors and the interest it pays to its investors. In order for banks to get a higher profit they prefer to lower the rate it pays out, however, people do not realize this situation".

Bank	**Period**	**Days**	**Amount**	**Profit**
HSBC	30 days	365 days	$1,000 a $10,000	1.34% a 1.36%
	90 days		$10,000	1.95%
	91 days		$50,000	2.54%
Banamex	30 days	365 days	$50,000	3.86%
BanRegio:				
New Clients	90 days	360 days	$50,000	4.99%
Existing Clients	90 days		$50,000	4.59%
New Clients	28 days	336 days	$50,000	4.78%
Existing Clients	28 days		$50,000	4.43%
Bankaool	30 days	360 days	$20,000	6.40%
Bancomer	30 days	360 days	$5,000	2.70%
	30 days		$50,000	2.90%
Banorte	28 days	360 days	$5,000	1.43%

III. PRACTICAL SCENARIO

Under the assumption that a saver engaged an investment plan, with an amount of $250.00 paying every 30 days for a full year.

Scenario A: Popular Mexican Banks or Credit Unions – "Cajas Populares Mexicanas"

$$Maa = ???$$
$$A = \$250.^{00}$$
$$i = 3.11\%$$
$$m = 30 días$$
$$n = 1 año$$
$$Maa = A\left(1+ {}^{i}\!/_{m}\right)^{1}\left[\frac{\left(1+ {}^{i}\!/_{m}\right)^{n}-1}{{}^{i}\!/_{m}}\right]$$

$$Maa = \$250.^{00}\left(1+{}^{.311}\!/_{360}*30\right)^{1}\left[\frac{\left(1+{}^{.311}\!/_{12}\right)^{12}-1}{{}^{.311}\!/_{12}}\right]$$
$$Maa = \$250.^{00}\left(1+.0259166\right)^{1}\left[\frac{\left(1+.0259166\right)^{12}-1}{.0259166}\right]$$
$$Maa = \$250.^{00}\left(1.0259166\right)\left[\frac{1.3593919-1}{.0259166}\right] = \$250.^{00}\left(1.0259166\right)\left[\frac{.3593919}{.0259166}\right]$$
$$Maa = \$250.^{00}\left(1.0259166\right)\left[13.8672472\right]$$
$$Maa = \$250.^{00}\left(14.2266391\right)$$
$$Maa = \$3,556.66$$

Where
Maa = Annuity Future Value
A = Annuity
i = Interest rate
m = Number of monthly payments
n = Time in months

Scenario B: HSBC (Banking Institution)

$$Maa = ???$$
$$A = \$250.^{00}$$
$$i = 1.31\%$$
$$m = 30días$$
$$n = 1año$$
$$Maa = A\left(1+ {}^{i}\!/\!_{m}\right)^{1}\left[\frac{\left(1+ {}^{i}\!/\!_{m}\right)^{n}-1}{{}^{i}\!/\!_{m}}\right]$$

$$Maa = \$250.^{00}\left(1+{}^{.134}\!/\!_{365}*30\right)^{1}\left[\frac{\left(1+{}^{.134}\!/\!_{12.1666666}\right)^{12.1666666}-1}{{}^{.134}\!/\!_{12.1666666}}\right]$$

$$Maa = \$250.^{00}\left(1+.0110136\right)^{1}\left[\frac{\left(1+.0110136\right)^{12.1666666}-1}{.0110136}\right]$$

$$Maa = \$250.^{00}\left(1.0110136\right)\left[\frac{1.1425541-1}{.0110136}\right] = \$250.^{00}\left(1.0110136\right)\left[\frac{.1425541}{.0110136}\right]$$

$$Maa = \$250.^{00}\left(1.0110136\right)\left[12.9434608\right]$$

$$Maa = \$250.^{00}\left(13.0860149\right)$$

$$Maa = \$3,271.50$$

Where
Maa = Annuity Future Value
A = Annuity
i = Interest rate
m = Number of monthly payments
n = Time in months

Comparing both of the above scenarios, we can see that with a lower investment over a full year, credit unions have better yields for investors than commercial banks.

III.1 Sinking Fund Tables

Scenario A:

Annuity	250.00
i=	3.11%
n=	12.00
Future value (annuity due)=	**3,570.26**
Future Value (annuity)=	**3,681.30**

Future Value=	3,570.26
i=	3.11%
n=	12.00
Annuity Due=	**250.00**

Future value=	3,681.30
i=	3.11%
n=	12.00
Annuity=	**250.00**

Savings Fund (Annuity Due)			
Payment	Annuity	Interest	Balance
1	250.00		250.00
2	250.00	7.78	507.78
3	250.00	15.79	773.57
4	250.00	24.06	1,047.62
5	250.00	32.58	1,330.21
6	250.00	41.37	1,621.58
7	250.00	50.43	1,922.01
8	250.00	59.77	2,231.78
9	250.00	69.41	2,551.19
10	250.00	79.34	2,880.53
11	250.00	89.58	3,220.12
12	250.00	100.15	3,570.26

Savings Fund (annuity)			
Payment	Annuity	Interest	Balance
1	250.00	7.78	257.78
2	250.00	15.79	523.57
3	250.00	24.06	797.62
4	250.00	32.58	1,080.21
5	250.00	41.37	1,371.58
6	250.00	50.43	1,672.01
7	250.00	59.77	1,981.78
8	250.00	69.41	2,301.19
9	250.00	79.34	2,630.53
10	250.00	89.58	2,970.12
11	250.00	100.15	3,320.26
12	250.00	111.04	3,681.30

Scenario B:

Annuity	250.00
i=	1.31%
n=	12.17
Future Value (annuity due)=	**3,274.32**
Future Value (annuity)=	**3,317.21**

Future value=	3,274.32
i=	1.31%
n=	12.17
Annuity Due=	**250.00**

Future Value=	3,317.21
i=	1.31%
n=	12.17
Annuity =	**250.00**

Savings Fund (Annuity Due)			
Payment	Annuity	Interest	Balance
1	250.00		250.00
2	250.00	3.28	503.28
3	250.00	6.59	759.87
4	250.00	9.95	1,019.82
5	250.00	13.36	1,283.18
6	250.00	16.81	1,549.99
7	250.00	20.30	1,820.30
8	250.00	23.85	2,094.14
9	250.00	27.43	2,371.58
10	250.00	31.07	2,652.64
11	250.00	34.75	2,937.39
12	250.00	38.48	3,225.87

Savings Fund (Annuity)			
Payment	Annuity	Interest	Balance
1	250.00	3.28	253.28
2	250.00	6.59	509.87
3	250.00	9.95	769.82
4	250.00	13.36	1,033.18
5	250.00	16.81	1,299.99
6	250.00	20.30	1,570.30
7	250.00	23.85	1,844.14
8	250.00	27.43	2,121.58
9	250.00	31.07	2,402.64
10	250.00	34.75	2,687.39
11	250.00	38.48	2,975.87
12	250.00	42.26	3,268.13

IV. CONCLUSION

The topic of savings should be an important one for Mexican people to focus on, since it is about the future of each. Every person desires to have economic stability, but not everyone takes action to reach there.

There are factors that influence this situation; one of the main reasons is the lack of information about savings, even though the vast majority of people claim to know everything about savings.

Another very important factor is the slow rate of financial growth of our country when contrasted against the inflation of consumer goods.

In spite of a significant percentage of people being affiliated to some type of banking institution, their accounts do not yield enough profits for them; on the contrary, it generates a loss in acquisitive power.

An article published in The Financial - "El Financiero", mentions that investors are the ones that assume the risks, whereas banks just generate profits for themselves. When a banking institution has to apply an interest to debtors, Total Annual Cost – "Costo Anual Total" - CAT, it will be an elevated rate. On the contrary, if banking institutions have to apply an interest rate to savors, Total Annual Return - "Ganancia Anual Total" - GAT, it will be a lower rate and will generate in present time, an acquisitive loss.

According to the practical scenarios established in this study, we arrive to the conclusion that the Credit Unions – "Cajas Populares Mexicanas", are a better choice in terms of return to investors.

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