





## Navigating the economic fallout of COVID-19: A study of credit unions financial ratios in Ecuador

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### Abstract

This research aims to identify the performance of Credit Unions in Ecuador during the COVID-19 pandemic. Based on the information reported by the National Financial Regulator for Credit Unions<sup>1</sup>, a CAMEL<sup>2</sup> model is used to assess their financial performance. An analysis of Credit Unions was analysed spanning the years 2019 (before the pandemic), 2020, 2021, (during the pandemic) and extending through 2022 (after the pandemic). In all cases, the adverse consequences experienced during the most severe periods of the pandemic, particularly in 2020, were contained. This was mainly achieved by the implementation of forced credit rescheduling, which effectively curtailed the escalation of past due credit indicators. Credit Unions demonstrate operational and structural strengths over traditional banks, particularly in their capability to effectively engage with the Popular and Solidarity Economy. Although there are numerous studies that identify the impact that the COVID 19 pandemic has had on Credit Unions and the strategies that were implemented to combat this impact, but there is a lack of specialised studies that clearly determine the situation of financial ratios in Credit Unions during the pandemic, particularly in the context Ecuador. This research aims to address this information gap.

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## 1. Introduction

Credit Unions are important financial institutions for the Latin American economy. They play a significant role in the process of financial inclusion, especially in the least served regions. For example, Credit Unions have a higher level of financial inclusion in Ecuador compared to private banks. Their proximity to socially disadvantaged areas and understanding of community needs make Credit Unions essential for local social and economic development. These organizations provide crucial support to low-income households with micro-credit, savings, and insurance services. Furthermore, Credit Unions play a significant role in promoting economic growth through their facilitation of credit accessibility and provisions of financial guidance to their

<sup>1</sup> Superintendencia de Popular and Solidarity Economy (SPSE).

<sup>2</sup> CAMEL derives from CAMELS, the informal name for the *Uniform Financial Rating System*, a supervisory rating system developed by U.S. Financial Regulators to classify a bank's overall solvency condition based on Capital Adequacy, Asset Quality, Management Capability, Earnings Quality and Quantity, Adequacy of Liquidity, and Sensitivity to Market Risk. For this study, the Sensitivity to Market Risk is not considered.

members. Credit Unions provide individuals with the ability to create revenue and establish small enterprises. These institutions provide more flexible terms and interest rates that can rival any traditional bank. This particularly benefits the small and medium-sized businesses, so they can be able to expand their operations by accessing financial resources. Credit Unions keep expenditures low which invariably results in lower interest rates, and thus benefitting their borrowers. Playing a key role in financial inclusion and economic growth (Álvarez-Gamboa, Cabrera-Barona, & Jácome-Estrella, 2023), it is clear that Credit Unions have become an integral aspect of the Latin American economy. Credit Unions have evolved as a reliable provider of financial services for a broader demographic when compared to commercial banks. The market-oriented Credit Unions of Guatemala have adeptly collected savings and distributed interest-bearing loans amongst a vast array of customers. This has effectively relaxed the credit constraints of most of the buyers who were previously susceptible to restrictions imposed by traditional financial institutions. Traditional banks frequently impose non-monetary constraints on customers with lower economic status. As a result, Credit Unions have emerged as the sole viable choice for these customers to get financial services. Additionally, Credit Unions have charged minimal transaction costs and user fees in contrast to traditional banks, also enabling them to be more accessible to the public. It is also significant to mention that Credit Unions in Ecuador have attained a higher level of financial inclusion than private banks. The Credit Unions' contribution to improve financial inclusion in underprivileged areas of Ecuador has been noteworthy, allowing financial access to those who were neglected by financial institutions. Undoubtedly, the effective engagement of Credit Unions in the provision of financial services has shown to be highly advantageous for numerous individuals. Undoubtedly, the successful involvement of Credit Unions in the provision of financial services has shown to be highly advantageous for many individuals (Barham, Boucher, & Carter, 1996).

Credit unions play a vital role in the provision of financial services to individual who lack access to traditional banking or have limited access to such services. This is particularly in developing nations (Sundaram-Stukel & Deller, 2021). During the recent COVID-19 pandemic, Credit Unions have become increasingly important in extending financial assistance to their members. Helping those who are in need, Credit Unions across the globe have donated food to volunteer workers in the Philippines (Hill, 2021). Despite the persistent efforts of Credit Unions, they have been negatively impacted by the economic consequences resulting from the pandemic. Research has been undertaken to analyze the pandemic's influence on Credit Unions, revealing the critical repercussions experienced by these institutions, which have been further compounded by the global financial crisis (Ramdhan, Gunariato, & Nurhayati, 2023). At the same time, Credit Unions seem to have experienced divergent repercussions compared to commercial banks during the pandemic, despite diminished profitability margins, not-for-profit Credit Unions have exhibited a swifter recuperation and a sustained commitment to their lending practices (Nguyen, Luu, & Nguyen, 2022).

The pandemic has had a devastating impact on regions like Latin America, making it critical to take action to address the effects on Credit Unions. It's important to consider how to minimize the negative impact of the crisis. Credit Unions have adopted numerous strategies to combat with the economic fallout of the Covid-19 pandemic (Al-Zyoud & Ordonez-Ponce, 2022). Several Credit Unions have implemented accommodating strategies such as debt restructuring, liquidity management, and digitalization (Nguyen et al., 2022). Small Credit Unions have been especially affected by the pandemic, as they are not able to access the same resources and support as larger Credit Unions (Losier, 2021).

In the wake of the Covid-19 pandemic, Credit Unions have been hit hard and have been experiencing insolvency problems (Lascano-Pérez, Cárdenas-Pérez, Proaño-Altamirano, Veloz-Jaramillo, & Chenet-Zuta, 2023). In order to cope with the crisis, Credit Unions have implemented strategies such as risk management, financial security and knowledge management (Parrales Choez, Valls Martínez, & Martín-Cervantes, 2022).

Thus, despite the existence of numerous studies that identify the impact of COVID 19 pandemic on credit unions and the corresponding strategies employed to mitigate these impacts, there is a dearth of research specifically investigating the state of financial ratios in credit unions during the pandemic, particularly in the context of Ecuador. This research seeks to fill this knowledge gap

The COVID-19 pandemic has had a significant economic impact in Ecuador. In 2020, Ecuador saw a decline of -6.3% in its Gross Domestic Product, as reported by the International Monetary Fund. The pandemic has caused the destruction of 532,359 jobs and a drop in USD income (Avila, 2021). The present analysis conducted by the Central Bank of Ecuador examines the patterns pertaining to the influence of the COVID-19 epidemic on specific macroeconomic indicators inside the nation. The pandemic has worsened the economic situation in a country that was already experiencing economic crises in previous years.

The COVID-19 pandemic has been a significant influence on Credit Unions operating in Ecuador. According to Torres and Guerra, (2020), the pandemic has brought about a slight increase in delinquency in cooperative credits. Another study analyzes the operational risk management of Credit Unions in Ecuador and concludes that the pandemic caused by Covid-19 has caused various restructuration actions in the financial system, since emerging measures were implemented in order to minimize the impact of the economic crisis, thus ensuring that the effects are not so significant, which allowed the financial system, especially banking, to contain and limit the effects on its financial results (Raza-Carrillo, Carrillo-Lanas, & Mejia-Ayala, 2022).

In addition, the Association of Private Banks of Ecuador reported that banks have implemented financial relief for more than two million Ecuadorians during the COVID-19 pandemic (ASOBANCA, 2022). In

attention to the preceding facts, this research report seeks to identify the performance of Credit Unions in Ecuador through the evolution of their main financial ratios since 2019 (before the pandemic), going through 2020 and 2021 (during the pandemic) and 2022 (after the pandemic).

## 2. Methodology

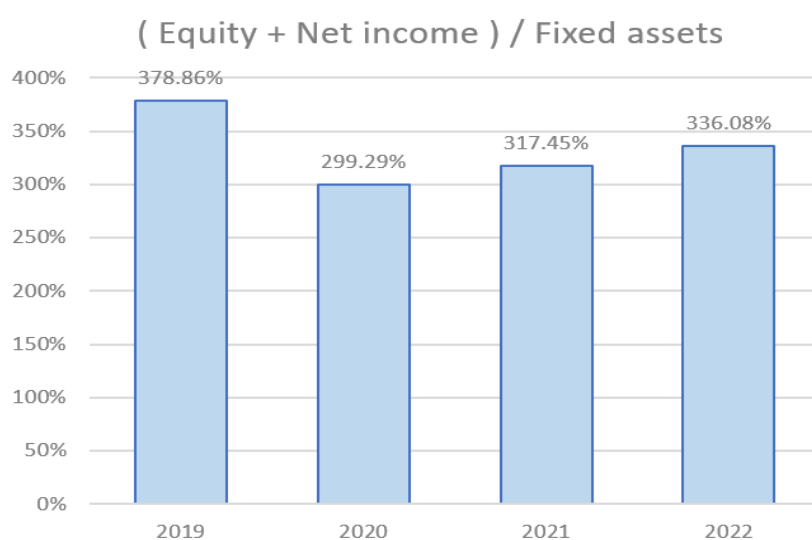
This research employs descriptive and quantitative design. The indicators comprising the CAMEL analysis model for the analyzed groups of Credit Unions have been constructed based on the information provided by the Superintendence of Popular and Solidarity Economy (SPSE). Credit Unions in segments 1, 2 and 3 were taken into consideration, in terms of their financial results for the year 2019 (before the pandemic), 2020, 2021 (during the pandemic) and 2022 (after the pandemic).

## 3. Results

The scholarly literature on banking and credit unions performance in Ecuador is scarce, with limited attention being given to this topic, except for a recent surge of interest in financial inclusion. In the aforementioned context, the analysis focuses on the evaluation of loan accessibility based on demographic, geographic, gender, and other social variables, while paying limited attention to the financial performance of entities. Thus, the few available studies in this financial subject which take account COVID19 pandemic mainly contrast the past situation with the effects of sanitary restrictions in relation to the evolution of financial inclusion in Ecuador. This paper represents a novel contribution to the existing literature by examining the effects of the pandemic on the financial performance of Credit Unions. It addresses a significant research gap in the Ecuadorian banking system, which has primarily focused on banks, lacking academic rigor and potentially influenced by the national banking syndicate and its affiliates. So, this section seeks to evaluate the possible impacts of the COVID19 pandemic on the operation of Credit Unions in Ecuador based on financial indicators and their evolution in recent years. For this purpose, it has been considered appropriate to use the CAMEL model as a reference for the selection of indicators. This model allows comprehensive assessments based on the main areas of the financial operation: i) Capital; ii) Assets; iii) Management; iv) Equity; and v) Liquidity. Through the analysis of the CAMEL ratios, evaluated individually, or combined, it is possible to identify characteristic elements and particular situations in the functioning of Credit Unions can be attributed to the influence of macroeconomic and social conditions resulting from the COVID-19 epidemic, including confinement and other sanitary restrictions. This analysis is carried out for each of the so called "segments" 1, 2 and 3 in which the Credit Unions in Ecuador are classified by size and operational characteristics, for financial indicators calculated for the period 2019-2022 (December). This time frame is selected since 2019 is the most recent year preceding the onset of the COVID-19 pandemic and the subsequent enforcement of lockdown measures and other health-related limitations. Therefore, it is presumed to serve as a benchmark for regular operations. The years 2020 and 2021 are considered to reflect the impacts of the pandemic and sanitary restrictions on the operation of Credit Unions, while 2022 is assumed the transition towards a new normality.

### 3.1. Assessment of the Capital Situation (C)

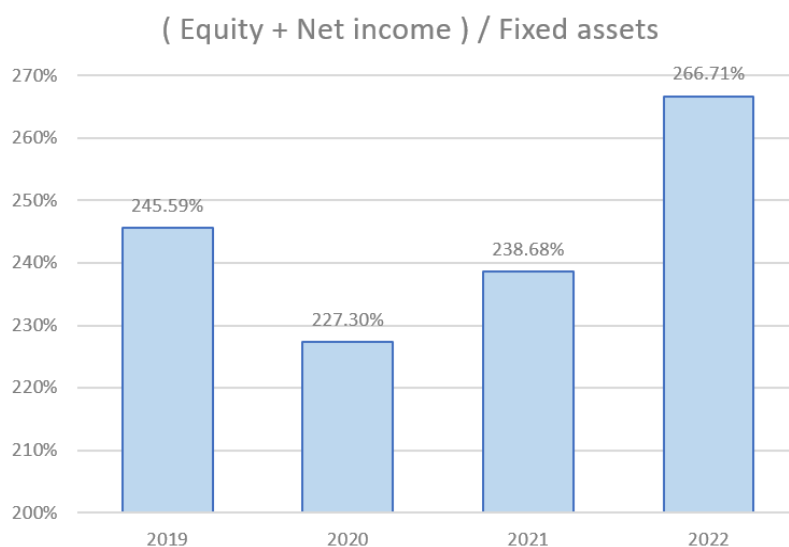
The capital adequacy assesses the capability of a financial institution to protect its liabilities against insolvency risk which is calculated as the ratio between the sum of equity and net income (or loss), and the fixed assets of each segment of Credit Unions.



**Figure 1.** Capital adequacy segment 1 credit unions in percentage; Dec. 2019 – Dec. 2022.

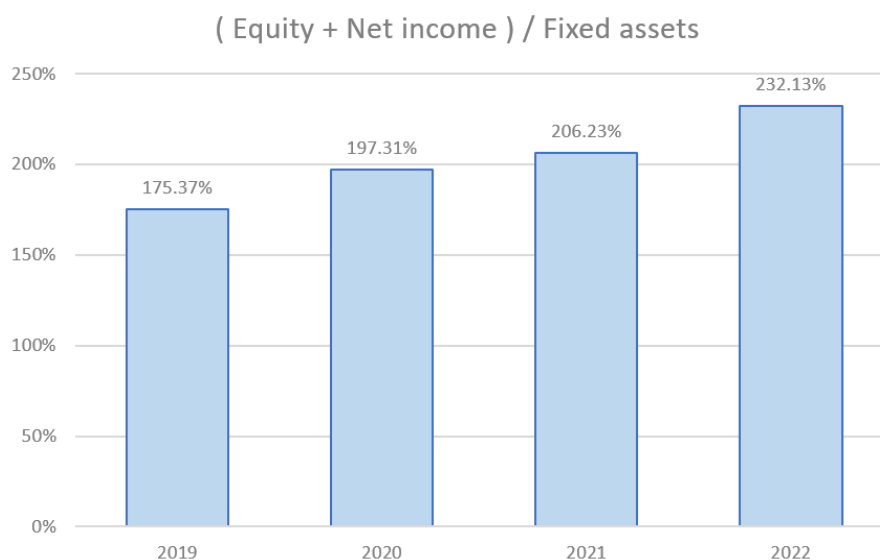
According to the premise that since 2019 was the final normal year, Segment 1 Credit Unions' evolution would reflect the detrimental effects of the macroeconomic climate brought on by sanitary limitations in 2020 and will then continue through the following years with a recovery trajectory. Thus, this indicator starts at 378.86% in 2019, significantly reduced to 299.29% during 2020, the first year of the pandemic, then presenting a recovery to 336.08% in 2022, a little below to the initial level of 2019 [Figure 1](#).

The explanation for this evolution lies mainly in the reduction of the index numerator. In the case of equity, the 2020 decline is brought about by the intentional increase in provisions, which, according to the accounting standard, are recorded as a reduction in assets, which implies a reduction in equity owing to the double entry concept. This statistic is also exogenously impacted by the macroeconomic contraction of 2020, which was measured by the Gross Domestic Product at -7.8%, as a result of the decline in net income (along with profits), to which provisions are subtracted. Since 2021, there has been an increase in this indicator along with the recovery of the Ecuadorian economy and the reversal of excessive provisioning.



**Figure 2.** Capital adequacy segment 2 credit unions in percentage; Dec. 2019 – Dec. 2022.

Segment 2 Credit Unions present an almost parallel evolution to Segment 1, although at a lower level of this indicator. The difference in the former is in their greater recovery of 2022 with 266.71% comfortably exceeding the 245.59% of 2019. The evolution of the past due portfolio, which contrary to intuition by being greater in 2019 (the usual year) than in the following years, explains this evolution, which was characterised by a decrease and then a dramatic rise. As a result, more provisions were made in that year than in the years that followed. Likewise, provisions in excess (not executed), by regulation, should be registered as an income in next year's statement of profit and loss, what was carried out as increase in equity and net income in 2021 and 2022 respectively [Figure 2](#).



**Figure 3.** Capital adequacy segment 3 credit unions in percentage; Dec. 2019 – Dec. 2022

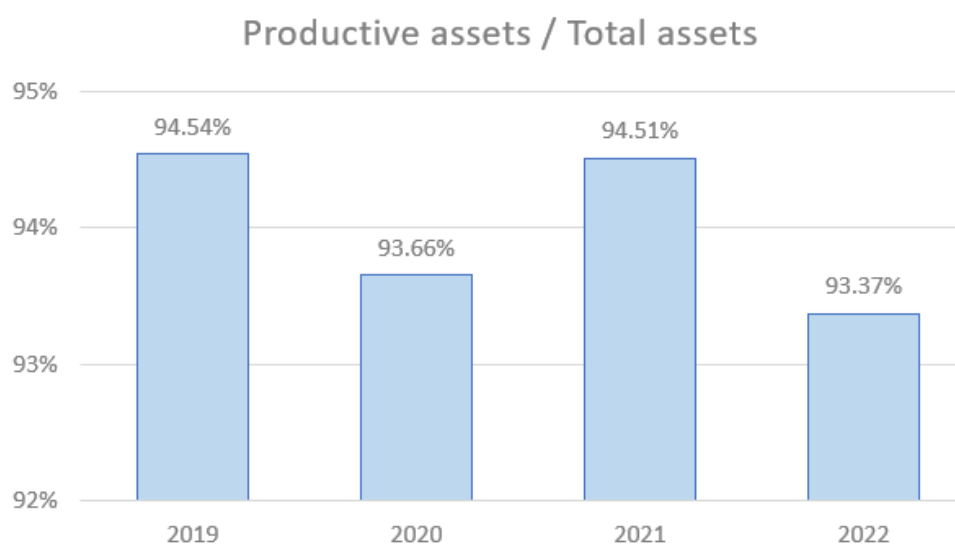
Segment 3 Credit Unions present a different evolution in this indicator compared to the evolutions of Segments 1 and 2. In this case, from a departure level of 175.37% in 2019, there is a notorious increasing trajectory, which reaches 232.13% in 2022 [Figure 3](#).

When evaluating the past due portfolio of this group of Credit Unions, we find that it has evolved in a uniformly descending manner over the time under study, which logically entails a descending constitution of provisions and the ensuing decreases in equity. In this way, the numerator of this index acquires an upward trajectory, compared to a relatively constant denominator.

What is difficult to determine accurately is why the past due portfolio of Segment 3 Credit Unions is decreasing in the analyzed period, even in an adverse macroeconomic environment that indeed had impacts in Credit Unions of segments 1 and 2. The only feasible explanation, which is also the most implausible, is that the national financial authority temporarily changed the norms, causing a large portion of the past-due portfolio to be registered as current credit.

### *3.2. Assessment of Assets' Situation (A)*

A first indicator for assets' evaluation is the assets' structure as the weights of classified, non-accrual, restructured, delinquent, and non-performing assets. The ratio between productive (performing) assets and total assets is crucial for determining the relative capabilities of credit unions to generate profits from lending in the current analysis. Since the financial business is dependent on credit and investments, this ratio in a financial institution must represent significantly high levels, almost 100%, while fixed assets must proportionally have a minimum participation in total assets.



**Figure 4.** Assets' structure segment 1 credit unions in percentage; Dec. 2019 – Dec. 2022.

For Segment 1 Credit Unions, a relatively volatile evolution is observed for the four years of analysis. There is an iterative "rise and fall" that begins the rise in 2019 with 94.54%, falls the following year to 93.66%, rises again in 2021 to 94.51%, and falls again in 2022 to 93.37% [Figure 4](#). The first descent between 2019 and 2020 can be explained by the subsequent drop in credit due to the contraction of economic activity that, as indicated previously, it is reflected in a reduction of -7.8% of the GDP. Although, the registered values do not reflect a significant impact on this indicator due to the pandemic and the resulting sanitary restrictions. The 2021 recovery can also be explained by a more favorable macroeconomic environment conducive to the reactivation of credit, considering that GDP increased by 4.2% that year. And it is in this same line of interpretation that the contraction of 2022 can be explained, consistent with a lower GDP growth that has been determined to be only 2.8% for that year.<sup>3</sup>

The latter phenomenon takes into consideration the potential occurrence of a "rebound effect," which suggests a substantial spontaneous recovery after the adverse consequences of the pandemic in 2020. However, as time elapses, the initial surge diminishes and is subsequently followed by a subsequent decline.

However, the aforementioned interpretation fails to adequately address the extent to which the indicator has declined in 2022, as it now stands below the level observed in 2020. This decline might be attributed to the significant impact of the pandemic on economic activity, hence justifying the observed trend. For this, the best possible explanation is again on the side of provisions that, if they had not been fully executed during 2020 and 2021, a widespread behavior throughout institutions of the national financial system, its reversal implies an increase in total assets and, therefore, in the denominator of this index.

<sup>3</sup> The variations of GDP have been obtained from the Monthly Statistical Information of the Central Bank of Ecuador for February 2023.

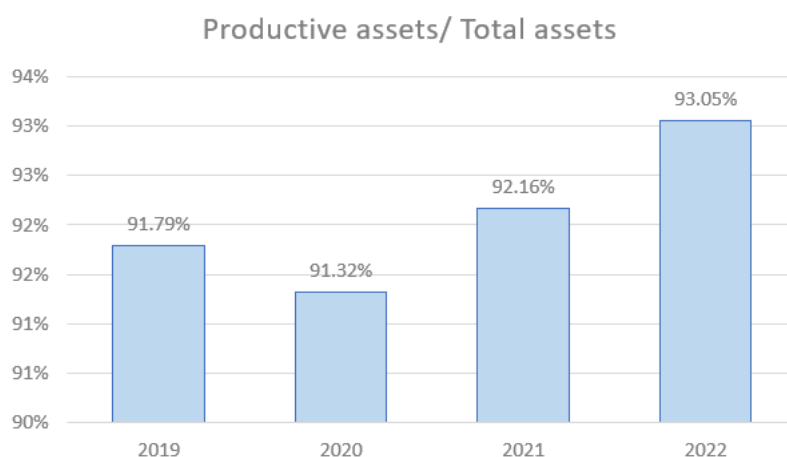


Figure 5. Assets' structure segment 2 credit unions in percentage; Dec. 2019 – Dec. 2022.

The evolution of this indicator in Segment 2 Credit Unions follows a logical pattern, with a decrease from 91.79% in 2019 to 91.32% in 2020, followed by a gradual climb to 93.05% in 2022. As for the Segment 1 of Credit Union, the index levels start in 2019 above 90%, that denotes a normal operation for what is expected of financial institutions, but the interesting thing in this case is a sustained increase for all the analyzed periods Figure 5.

In order to ascertain a rationale, the analysis of the past due portfolio proves to be highly valuable since it exhibits a parallel growth pattern in the same years as the aforementioned indication. This shows that there was more than proportional increase in credit with respect to the increase in total assets, perhaps in a kind of "acceleration" in the recovery after the pandemic, but not necessarily with low-risk credit operations. The aforementioned observation suggests that Segment 2 Credit Unions exhibit a lower degree of risk aversion than those in Segment 1. This disparity may arise from the perception of reduced scrutiny from regulatory bodies and/or structural factors resulting from the specialization of their credit sectors, primarily in microcredit. These Credit Unions operate with higher interest rates to compensate for elevated operational expenses, as they lack the economies of scale and operational efficiency enjoyed by larger Credit Unions in Segment 1.

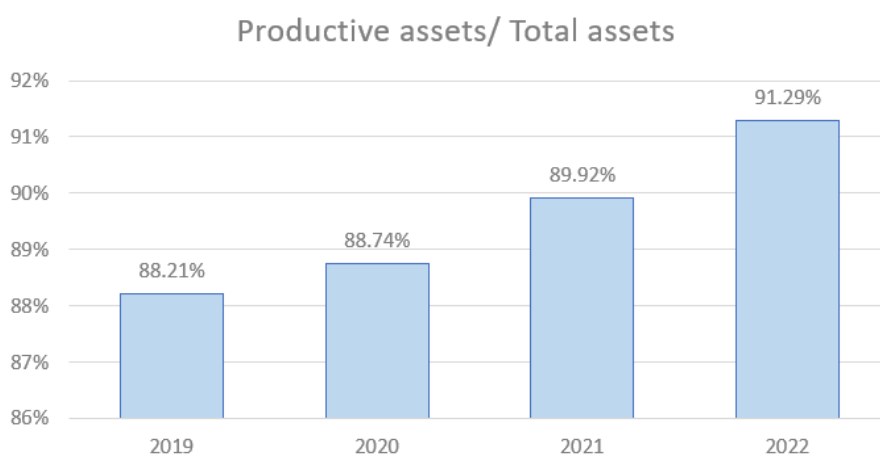
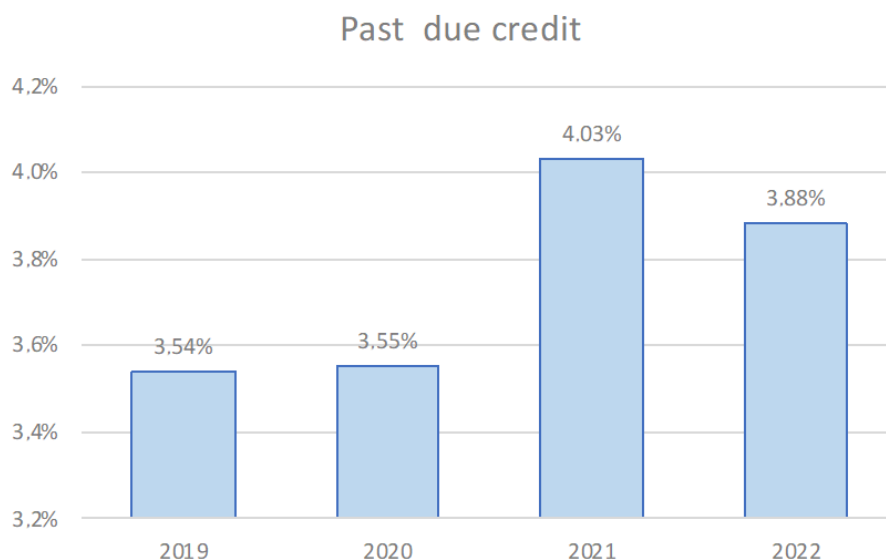


Figure 6. Assets' structure segment 3 credit unions in percentage; Dec. 2019 – Dec. 2022.

Segment 3 Credit Unions show positive evolution from 88.21% in 2019 to reach 91.29% in 2022. Again, it is difficult to explain this ascending path in an adverse macroeconomic situation. In this case, the past due portfolio does not help much since it has a negative slope for this segment throughout the analyzed periods. It can be hypothesized that the observed rise in the productive portfolio might be attributed to the augmented provision of credit resources by Credit Unions to their clientele. This was done to mitigate the adverse effects of the pandemic on their producing endeavors, as well as their consumption patterns Figure 6.

A second indicator used to assess the situation of assets is the ASSETS QUALITY as the adequacy of the allowance for credit losses and the financial institution's exposure to borrower's default, which in this case, is the PAST DUE CREDIT as percentage of the total amount of loans. This indicator should be studied from two perspectives. The first corresponds to the risk of non-recovery of loans by the financial institution, with its consequent impact on liquidity and profitability, which, in the long run, can put at risk the sustainability itself. In this scenario, concerning Credit Unions are characterized by elevated rates of unsuccessful credit

recovery. The second applies to the interpretation made by individuals who receive credit, suggesting that the presence of exorbitant financial costs increases the likelihood of them defaulting on their credit obligations. Additionally, this interpretation may contribute to a potential concentration of credit in sectors that are highly susceptible to adverse macroeconomic conditions, as well as in credit segments characterised by exceptionally high interest rates, such as microcredit.

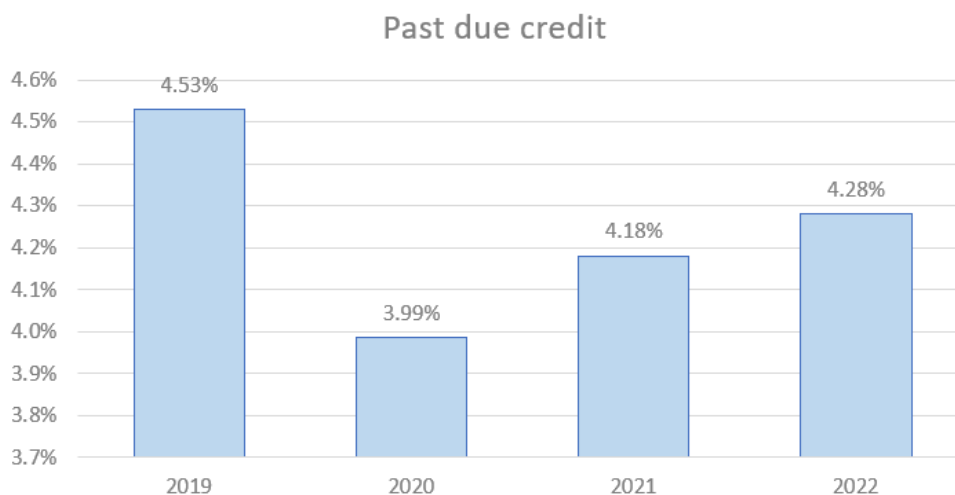


**Figure 7.** Assets' quality segment 1 credit unions in percentage; Dec. 2019 – Dec. 2022.

Segment 1 Credit Unions exhibit comparable levels of delinquent credit in the years 2019 and 2020 with rates of 3.54% and 3.55% respectively. Subsequently, there is an increase to 4.03% in 2021, followed by a modest decrease to 3.88% in 2022.

The past due credit in 2020, without difference compared to the previous year, is explained by the restructuring of credits carried out within the framework of the regulatory provisions that were implemented in the framework of the pandemic during that year, which constituted only a delay in the disclosure of the payment problems of those who maintained current credits, which became visible in 2021 [Figure 7](#).

For its part, the reduction in 2022 is consistent with the macroeconomic climate improving following the pandemic's effects.

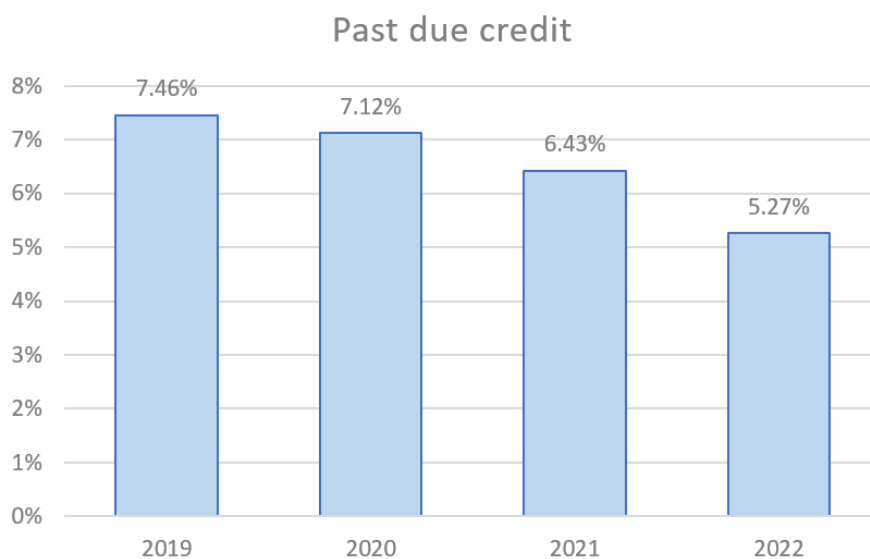


**Figure 8.** Assets' quality segment 2 credit unions in percentage; dec. 2019 – dec. 2022.

Segment 2 Credit Unions show an interesting evolutionary decrease in the past due credit portfolio between 2019 and 2020, from 4.53% to 3.99%. In response to the regulatory constraints imposed in 2020 to tackle the reorganization of credit portfolios inside financial institutions in the wake of the pandemic.

This evolutionary process implies that the aforementioned reorganization encompassed not just the problematic operations that arose within the context of the macroeconomic recession caused by health limitations, but also those that had been ongoing since 2019 [Figure 8](#).

On the other hand, the growing evolution of past due credit since 2020, which for 2022 reaches 4.28%, denotes that in Segment 2 Credit Unions there is a structural failure recovered portfolio that was temporarily hidden by the palliative measures of the pandemic and that were directed to financial activity.

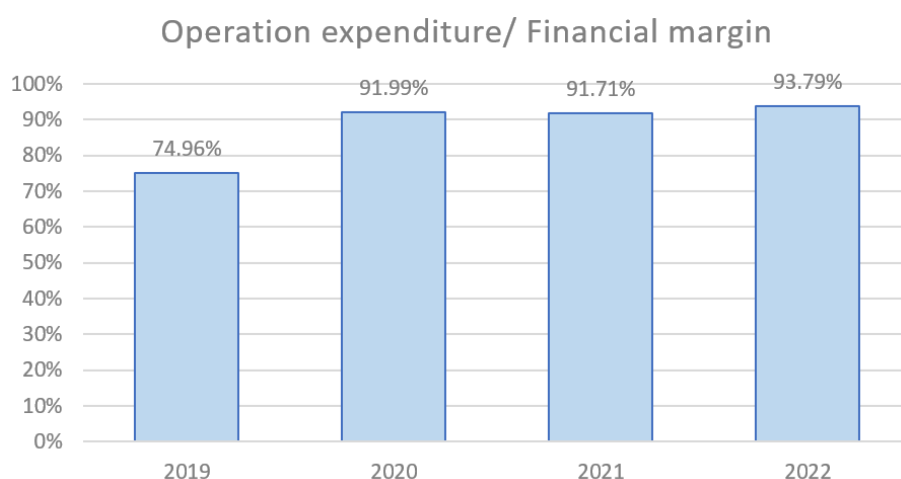


**Figure 9.** Assets' quality segment 3 credit unions in percentage; Dec. 2019 – Dec. 2022.

Segment 3 Credit Unions show a decrease in the past due credit from 7.46% to 7.12% between 2019 and 2020, which is explained by the palliatives already mentioned that implied the restructuring of the problematic portfolio of financial institutions. But the subsequent decreasing evolution of this indicator, which in 2022 reached 5.27%, evidence, unlike the Segment 2 Credit Unions, an improvement in portfolio recovery that is difficult to explain beyond justifying it with an improvement in credit recovery procedures in an environment with the still present negative effects of the pandemic [Figure 9](#).

### 3.3. Management Assessment (M)

Management of a financial institution has several edges from which it can be evaluated, but within this broad space, an adequate evaluation could be done based on operating expenses and the profitability that is generated by the deposit-credit process. Therefore, management capability, understood as the set of management strategies, measured by costs, applied in Credit Unions towards achieving profits (microeconomic efficiency), defined for this analysis as the ratio between operating expenses and financial margin. The lower this index, the more microeconomic efficient an entity is in profit generation by its management strategies.

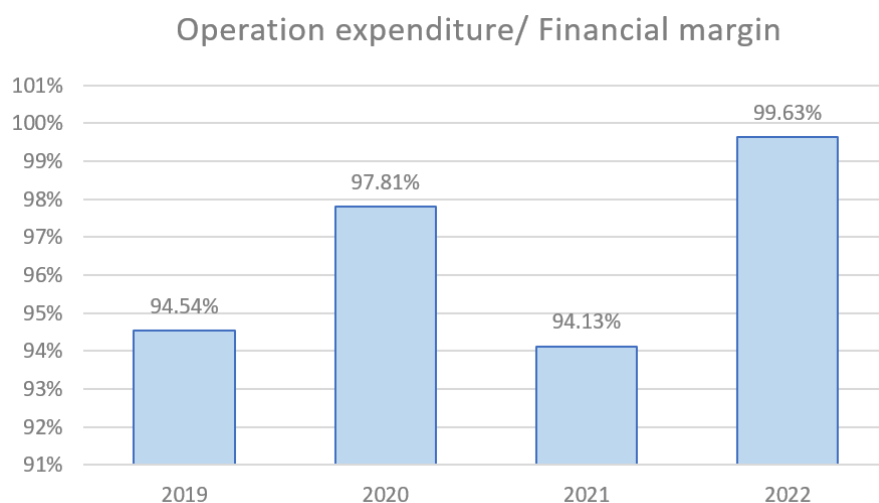


**Figure 10.** Microeconomic efficiency segment 1 credit unions in percentage; Dec. 2019 – Dec. 2022.

For Segment 1 Credit Unions, microeconomic efficiency shows a significant increase (deterioration) from 74.96% in 2019 to 91.99% in 2020, which remains with little variation reaching 93.79% in 2022. This "jump" produced in 2020, the year of the greatest economic impacts of the pandemic, is understandable due to the



reduction in the financial margin (interest and commission revenues collected from credit and investments minus interest paid on deposits) [Figure 10](#).



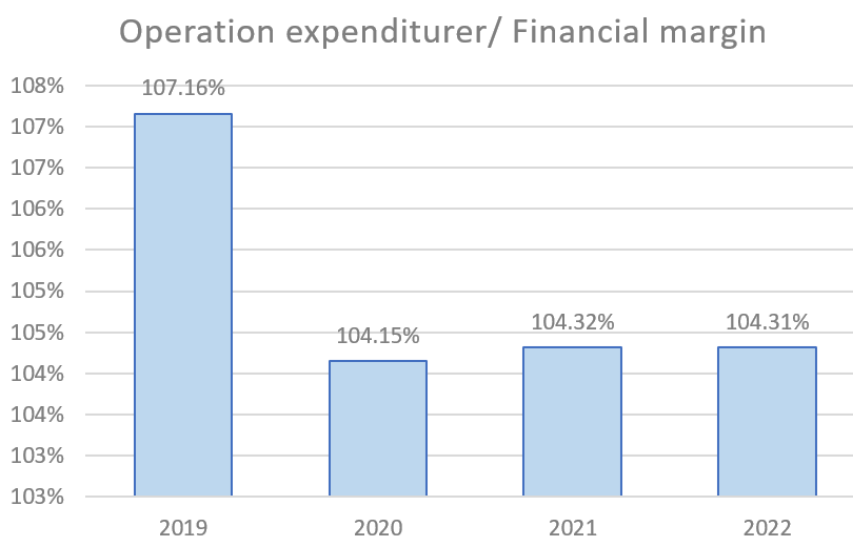
**Figure 11.** Microeconomic efficiency segment 2 credit unions in percentage; Dec. 2019 – Dec. 2022.

Segment 2 Credit Unions show a somewhat volatile evolution, reproducing a characteristic "rise and fall" precisely with an increase from 84.54% in 2019 to 97.81% in 2020, to then fall to 94.13% in 2021 and stand at 99.63% in 2022 [Figure 11](#).

As for Segment 1 Credit Unions which also showed an increase between the first two years of the analysis, for Segment 2 in 2020 it is understood that the financial margin fell because of the deterioration of the country's macroeconomic situation, because of the health restrictions imposed in the pandemic, naturally worsening the microeconomic efficiency.

But the reduction of this indicator between 2020 and 2021 sounds more compatible with a reduction in operating expenses that may have resulted from optimization processes by these Credit Unions to mitigate the negative impacts of the pandemic.

What is curious is the "jump" that occurs between 2021 and 2022 that, in a context of prior operation optimization, could only be explained by a fall in the financial margin, consistent with the increase in the past due credit of the loan portfolio. Thus, with greater necessary provisions, assets and equity are reduced, while negatively affecting the statement profit and loss.



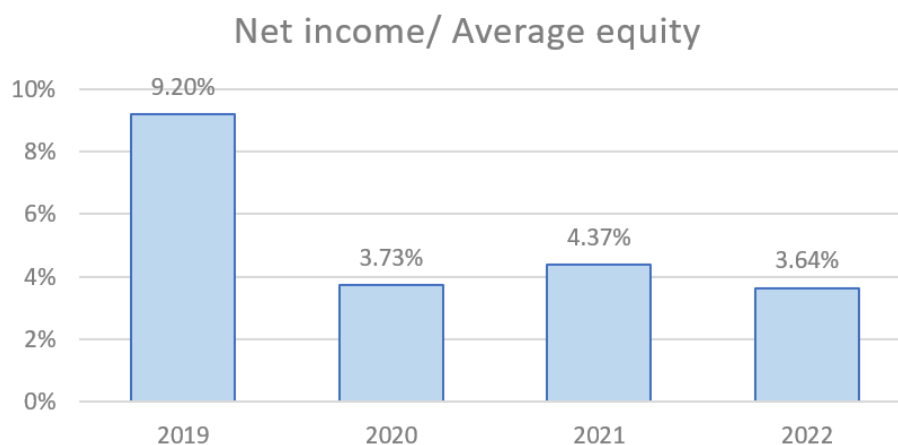
**Figure 12.** Microeconomic efficiency segment 3 credit unions in percentage; Dec. 2019 – Dec. 2022.

Microeconomic efficiency for Segment 3 Credit Unions improves with the pandemic and is maintained in the following years, falling from 107.16% in 2019 to 104.15% in 2020 to reach 104.31% in 2022, with a level almost identical to that of 2021. In this case, either operating expenses were reduced, which is unlikely, or the financial margin improved because of the reduction in past due credit of the loan portfolio, which also

motivated a slight upwards adjust of interest rates in credit segments where the maximum ceilings were not yet reached<sup>4</sup> Figure 12.

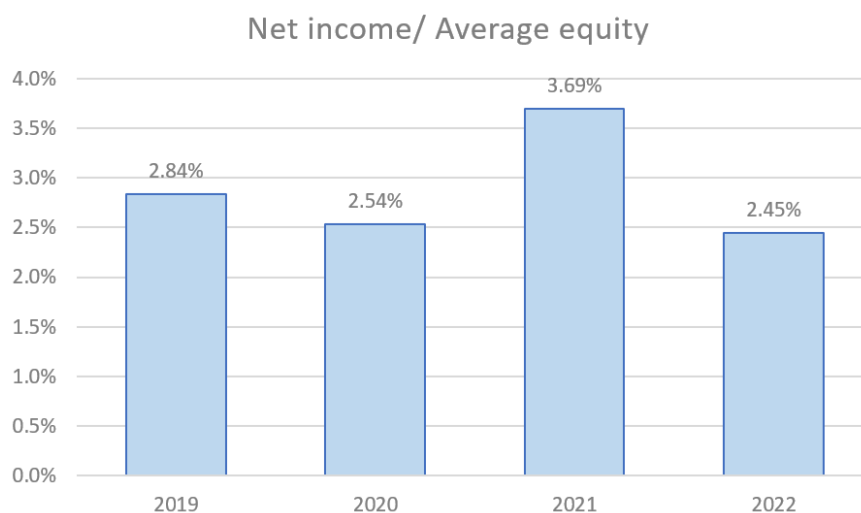
### 3.4. Equity Assessment (E)

The ROE (return on equity) is a commonly used metric that quantifies the relationship between profits and average equity. It serves as an indicator of the extent to which profits contribute to the financial institutions' internal resources. Specifically, it evaluates the return on capital or equity for investors engaged in economic activities, such as Credit Unions.



**Figure 13.** Profitability segment 1 credit unions in percentage; Dec. 2019 – Dec. 2022.

Between 2019 and 2021, the Segment 1 Credit Unions present an evolution of the ROE with a trajectory consistent with the effects of the pandemic and a subsequent recovery, with indices of 9.20% for 2019, 3.73% for 2020, and 4.37% for 2021. The fall in ROE between the first two years is clear, which is explained by the macroeconomic contraction of 2020 due to health restrictions and the increase of provisions. The subsequent slight recovery between 2020 and 2021 can also be explained by the evolution of macroeconomic activity itself when the health crisis started reducing. But the subsequent decline to 3.64% registered in 2022 could only be understood by appealing to the fact that the recovery of the previous year had characteristics of a "rebound effect" that loses strength over time, as explained in several indicators Figure 13.



**Figure 14.** Profitability segment 2 credit unions in percentage; Dec. 2019 – Dec. 2022.

Segment 2 Credit Unions exhibit a comparable evolutionary pattern to those in Segment 1, albeit at a significantly diminished magnitude. There is a decline in this metric from 2.84% in 2019 to 2.54% in 2020, followed by a recovery to 3.69% in 2021. However, in 2022, the indicator experiences a further decrease, falling below the 2020 level to 2.45%.

This again is consistent with the already explained "rebound effect" Figure 14.

<sup>4</sup> In Ecuador, effective lending rates are fixed for a maximum in 13 different credit sectors.

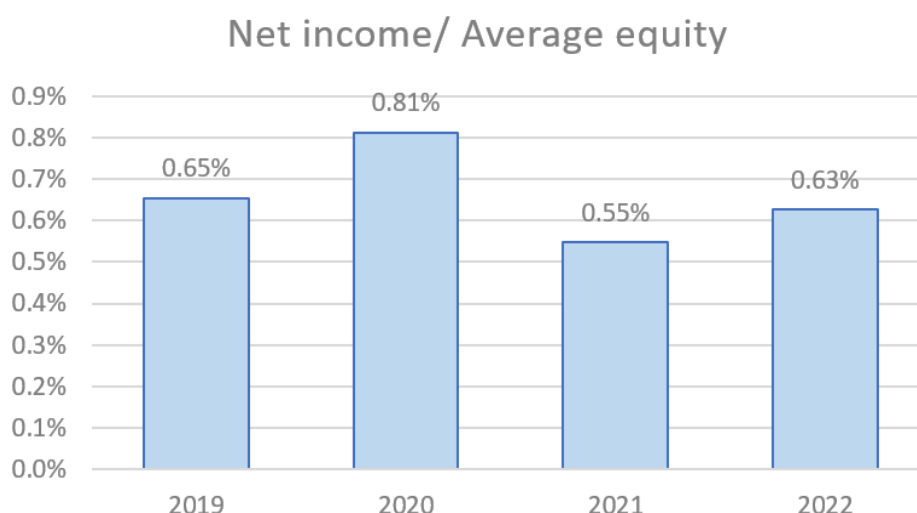


Figure 15. Profitability segment 3 credit unions in percentage; Dec. 2019 – Dec. 2022.

Segment 3 Credit Unions in segment show exactly an opposite trend to those in segments 1 and 2. Indicator shows a considerable improvement from 0.65% in 2019 to 0.81% in 2020, the year when the epidemic had the worst effects. Then, in 2021, contrary to a logical evolution in terms of macroeconomic recovery, this indicator falls to 0.55%, to resume its rise in 2022 with 0.63% [Figure 15](#).

The first point to highlight is that this indicator's level of evolution is far lower than that of segment 1 Credit Unions and well below that of Segment 2 Credit Unions. This distance reflects the enormous differences in the financial structures and operating characteristics of Credit Unions between the different segments.

These differences also mark different performances and responses to macroeconomic conditions that, in this case, are difficult to identify in terms of the values presented by the evolution of this indicator.

### 3.5. Liquidity Assessment (L)

The characteristic assessment of liquidity, as an evaluation of the capability of a financial institution to attend its short-term liabilities, is the ratio of available funds to total short-term deposits constituting the readily available deposits in financial institutions. This pertains to the collection of liquidity indicators in the sense that a financial institution's greatest vulnerability to potential large withdrawals or runs on deposits is precisely in the availability of liquid resources.

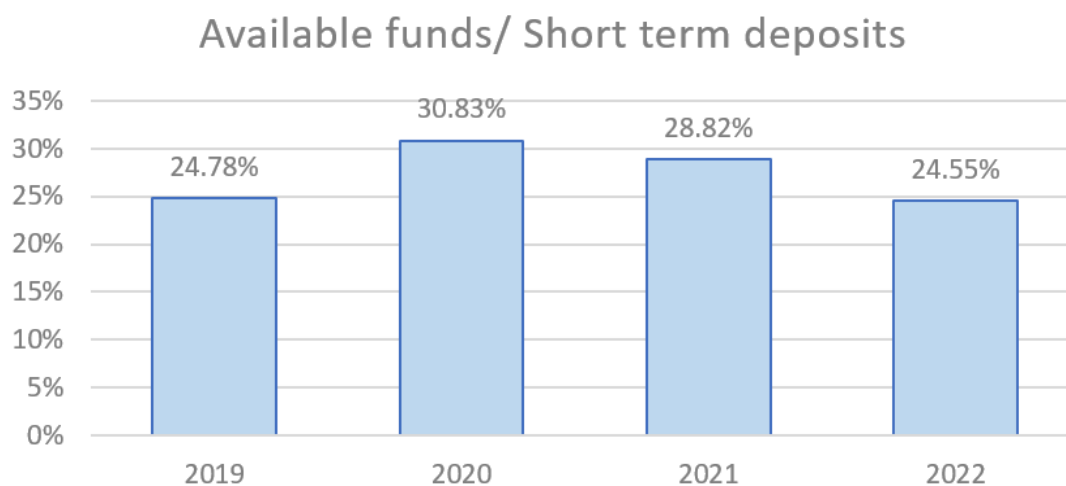


Figure 16. liquidity segment 1 credit unions in percentage; Dec. 2019 – Dec. 2022.

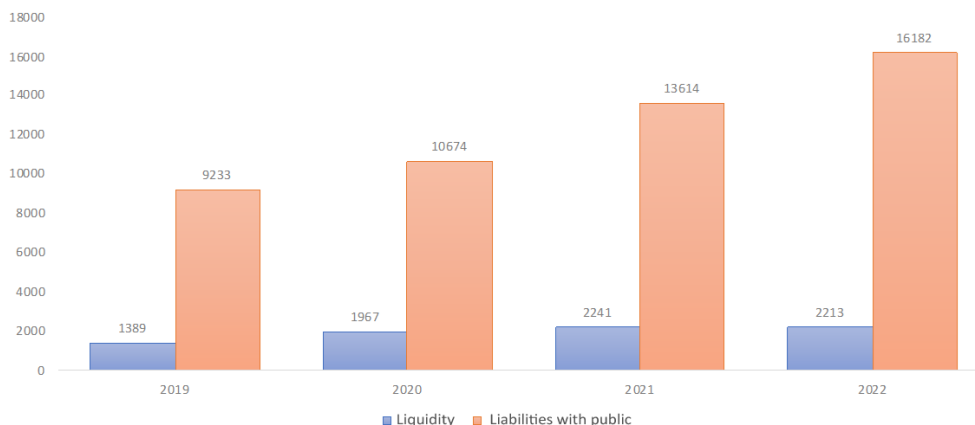


Figure 17. liabilities with public and liquidity segment 1 credit unions In USD millions; Dec. 2019 – Dec. 2022.

Segment 1 Credit Unions show an improvement in liquidity between 2019 and 2020 with levels of 24.78% and 30.83% respectively. The subsequent reduction of this index, which reaches 28.82% in 2021 and 24.55% in 2022, shows an increase in deposits in terms of proportional increase in available funds of Credit Unions (liquidity), which even falls in the last year of the analysis Figure 16.

This evolution can be understood as the exclusive result of internal management translated into a faster increase in the liquid assets of Credit Unions with respect to short-term deposits between 2019 and 2020 Figure 17, shows, the year of the greatest effects of the pandemic, with the forecast of a possible increase in past due credit. Under this logic, it is explained that this indicator will fall from 2021, and that in 2022 the level of available funds of Credit Unions will be reduced in the face of a reduction in the probability of significant withdrawals of freely available deposits (short term).

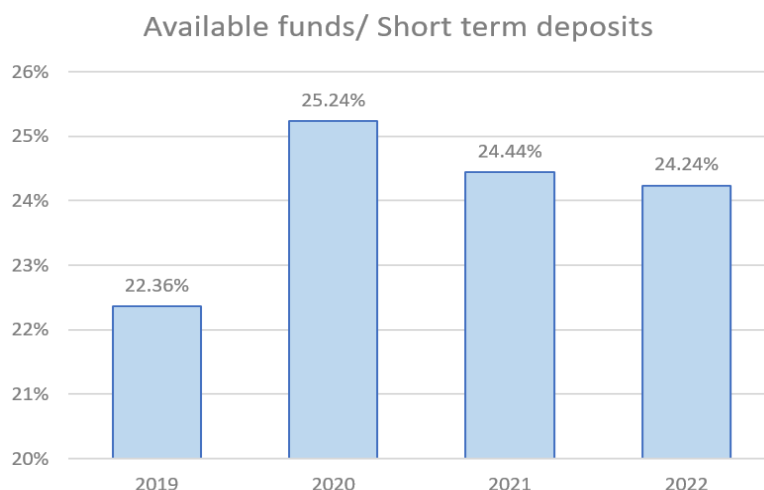


Figure 18. Liquidity segment 2 credit unions in percentage; dec. 2019 – dec. 2022.

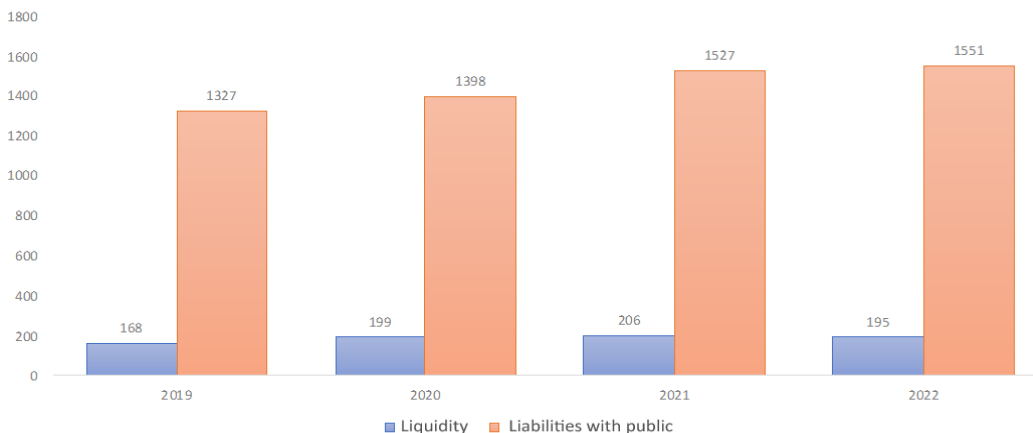
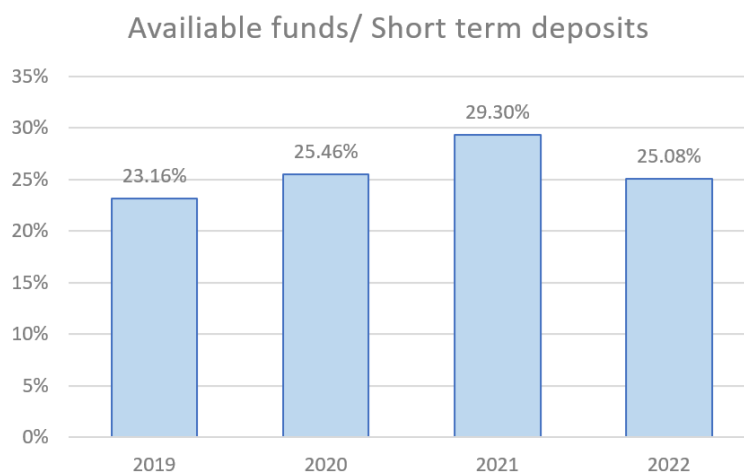


Figure 19. Liabilities with public and liquidity segment 2 credit unions In USD millions; Dec. 2019 – Dec. 2022.

Segment 2 Credit Unions replicate the evolution of this indicator for those in Segment 1, even at a slightly lower level [Figure 18](#).

Similar to the previous instance, the increase in relative liquidity from 22.36% in 2019 to 25.24% in 2020 can be explained by a less than proportional increase in the denominator with respect to the numerator, meaning that deposits increased in a smaller proportion than the recomposing of assets towards available funds (liquidity), understood as a deliberate action of managers to be able to attend potential massive withdrawals of deposits. This segment replicates the sustained increase in deposits in Credit Unions even in the most difficult moments of the pandemic [Figure 19](#).



**Figure 20.** Liquidity segment 3 credit unions in percentage; Dec. 2019 – Dec. 2022.



**Figure 21.** Liabilities with public and liquidity segment 3 credit Unions in USD millions; Dec. 2019 – Dec. 2022.

Segment 3 Credit Unions replicate the same pattern as those in segments 1 and 2 with the sustained increase in liquidity between 2019 and 2020 with 23.16% and 25.46% respectively. But unlike the other segments, this increase continues in 2021 reaching liquidity a level of 29.30%, and only drops to 25.08% in 2022 [Figure 20](#).

The pattern of the evolution of available funds and deposits replicates the "advance" in liquidity availability [Figure 21](#).

#### 4. Policy Implications

Several years ago, the government financial policy enhanced Credit Unions' situation to create competition against the banking system which is highly concentrated. The main goal was to lower local interest rates by increasing the credit volume through these entities. In this effort, even the control and supervision were divided among banks and Credit Unions with separate institutions based on the concept that these latter have different characteristics which need a particular treatment.

These efforts put Credit Unions as a threat to bank's interests which are now derived in non-favorable government financial policies. However, as evidence shows, the COVID19 pandemic proved the strength and resilience of Credit Unions, despite challenges with administration and access to technology, which did not have an impact on their significant prior growth. Credit Unions appear to be closer to the requirements of

regular people, who are primarily unbanked, as a result of the social and cultural aspects of the Ecuadorian population. This puts these organizations in a better position in the efforts for financial inclusion. Thus, Credit Unions may take an important share in the Ecuadorian financial market with operational and structural strengths over the banks in the future primarily in connecting with the so called Popular and Solidarity Economy.

## 5. Conclusions

The important differences in the characteristics of Credit Unions between the different segments are in their operating dynamics, operating costs, customer profiles, specialization of credit segments, among others, also mark different behaviors and evolutions in their various financial indicators analyzed.

Macroeconomic conditions are decisive in the operation of Credit Unions, and the pandemic with the sanitary restrictions imposed, had a clear effect on all areas in which these entities carry out their activity.

In all three segments of Credit Unions, but with nuances, elements of active and effective management are observed to minimize the negative impacts of the pandemic on their operation.

In general terms, the dictates of the nation's financial authorities, particularly related to the rescheduling of credits, they simply modified the criteria and deadlines for rating the situation of the portfolio. The negative effects in the most difficult moments of the pandemic, particularly 2020, were contained without affecting all analyzed Credit Unions.

As for the differences in how Credit Unions run in terms of the categories into which they fall, there are also notable differences in the management. It should be noted that these differences are influenced by various ways in which risk is perceived, how they are viewed in relation to the control bodies and big the operations.

Because of their proven strength and resilience, Credit Unions are based on their growth path several years ago, may substantially increase their share in the Ecuadorian financial market to the detriment of banks.

## References

- Al-Zyoud, H., & Ordonez-Ponce, E. (2022). COVID-19 and credit unions: CSR approaches to navigating the pandemic. *Business and Society Review*, 127(Suppl 1), 171-192.
- Álvarez-Gamboa, J., Cabrera-Barona, P., & Jácome-Estrella, H. (2023). Territorial inequalities in financial inclusion: A comparative study between private banks and credit unions. *Socio-Economic Planning Sciences*, 87, 101561. <https://doi.org/10.1016/j.seps.2023.101561>
- ASOBANCA. (2022). *Financial relief for more than two million Ecuadorians*. Retrieved from <https://asobanca.org.ec/alivios-financieros-para-mas-de-dos-millones-de-ecuatorianos/>
- Avila, B. (2021). *Impact of COVID on the Ecuadorian economy*. Retrieved from <https://ecovis.com.ec/impacto-del-covid-en-la-economia-ecuatoriana/#:~:text=El%20Covid%2D19%20le%20ha,marzo%20y%20diciembre%20de%202020>
- Barham, B. L., Boucher, S., & Carter, M. R. (1996). Credit constraints, credit unions, and small-scale producers in Guatemala. *World Development*, 24(5), 793-806. [https://doi.org/10.1016/0305-750x\(96\)00001-0](https://doi.org/10.1016/0305-750x(96)00001-0)
- Hill, D. (2021). A co-operative way forward: Co-Ops as a response to COVID-19. *Global Health: Annual Review*, 1(6).
- Lascano-Pérez, L., Cárdenas-Pérez, A., Proaño-Altamirano, G., Veloz-Jaramillo, M., & Chenet-Zuta, M. E. (2023). Application of altman's Z2 model in the characterization of financial risk in credit unions in Ecuador during the period 2019–2022. *Resmilitaris*, 13(2), 2473-2482.
- Losier, D. (2021). A passport to success: How credit unions can adapt to the urgent challenges they face. *CD Howe Institute Commentary*, 610, 0\_1-28.
- Nguyen, L. T. M., Luu, H. N., & Nguyen, T. T. P. (2022). The impact of interest rate policy on credit union lending during a crisis period. *Finance Research Letters*, 48, 103005. <https://doi.org/10.1016/j.frl.2022.103005>
- Parrales Choez, C. G., Valls Martínez, M. D. C., & Martín-Cervantes, P. A. (2022). Longitudinal study of credit union research: From credit-provision to cooperative principles, the urban economy and gender issues. *Complexity*, 2022, 1-17. <https://doi.org/10.1155/2022/7593811>
- Ramdhan, R. N., Gunariato, & Nurhayati, I. D. (2023). *Analysis of the impact of the Covid-19 pandemic on the effectiveness of credit in savings and loan cooperatives: Study on kosayu credit cooperatives, Blimbing District, Malang*. Paper presented at the Conference on Economic and Business Innovation (CEBI).
- Raza-Carrillo, D., Carrillo-Lanas, E. X., & Mejia-Ayala, L. C. (2022). Banking with COVID-19: Financial indices of private banks in Ecuador in the period 2019-2021. *European Journal of Applied Business and Management*, 8(4), 27-43.
- Sundaram-Stukel, R., & Deller, S. C. (2021). Locational factors in the competition between credit unions and banks after the great recession. *ArXiv Preprint ArXiv:2110.07611*.
- Torres, W., & Guerra, S. (2020). *Savings cooperatives, under the magnifying glass after the coronavirus pandemic*. Retrieved from <https://www.primicias.ec/noticias/economia/finanzas-protector-sistema-financiero-nacional-actual-crisis/>