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Analysis of the effect of cash management on the solvency and profitability of insurance companies in Benin

HOUNDJO André, Doctor of Management Sciences
Research Laboratory on the Performance and Development of Organizations of the University of Abomey-Calavi (LARPEDO/UAC) – Benin

National School of Applied Economics and Management, University of Abomey-Calavi, Cotonou, Benin- University of Abomey-Calavi (UAC) – Benin

E-mail Auteur correspondant : andrehoundjo1965@gmail.com ou hazacharie@yahoo.fr

Abstract : The objective of this research is to analyse the effect of cash management on the solvency and profitability of insurance companies in Benin. To do this, we used data from the financial statements for the period 2017 to 2021 published by the Conseil des Ministres des Assurances (CMA) and the Direction des Assurances du Bénin. The study covered twelve (12) insurance companies in Benin and was carried out using descriptive analysis (univariate and bivariate) and econometric analysis. The initial results show that there is a non-significant linear relationship between the company's cash position and solvency on the one hand, and economic and financial profitability on the other. This relationship is significant for operating and commercial profitability on the one hand and the net insurance margin on the other. The econometric results prove that the level of cash-flow does not significantly explain the solvency and the economic and financial profitability of an insurance company. However, the level of cash has a negative and significant effect on operating and commercial profitability on the one hand and a positive and significant effect on the net insurance margin on the other. To improve the effect of cash management on a company's solvency and profitability, operational recommendations have been made based on the results of our analyses. The study suffers from certain limitations, namely other types of profitability of an insurance company, such as underwriting profitability or technical profitability, net profitability and profitability by business segment, have not been addressed in this study. Other studies may be conducted to address these aspects of the subject. Operational recommendations have been made to them to control risks of all kinds. There is no funding for this study.

Keywords : Cash-flow ; profitability ; solvency ; insurance companies.

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1. Introduction

The technical and financial operation of insurance companies is governed by regulations designed not only to guarantee their solvency, but also to manage the investments resulting from the premiums and contributions collected from policyholders. Consequently, the management of an insurance company must be financially balanced and profitable if it is to meet its commitments to its customers on a regular basis, and if it is to play a lasting role in the economy. And since all the company's activities translate into financial flows, cash management is a necessity for better management of these flows. Cash management is an essential financial function that plays a significant role in financial health and is central to the success of every company, whether small, medium-sized or large (Matton, 2018). Good cash management ensures that the company has the funds it needs to meet its day-to-day obligations (staff salaries, supplier debts, social security charges and tax), to prevent financial risks and, above all, to ensure a good relationship between the company and its financial partners. It also involves mastering rigorous banking techniques and handling sophisticated financial instruments (Bruslerie & Eliez, 2017).

An insurance company's cash flow is essentially made up of premiums or contributions paid by policyholders. Non-payment or late payment of these premiums can jeopardise the company's cash flow, which in turn can jeopardise the payment of claims to customers, as well as covering operating and technical expenses. According to article 84 of the CIMA Code (Conférence Interafricaine des Marchés d'Assurances des Assurances), the financial account is drawn up in accordance with the rules laid down by authorisation of the Commission de Contrôle and after justification of the proportion of profits that the company has had to allocate to equity in order to maintain the regulatory solvency margin. In addition, according to article 310 paragraph 5, relating to "Supplementary Supervision", if, as a result of these operations, it appears that the solvency of the insurance company is compromised or likely to be compromised, the Commission requires the company to take the necessary measures to restore or maintain its solvency. Failure to propose or implement these measures within the conditions and time limits prescribed or accepted by the Commission is punishable by the penalties listed in article 312 (warning, reprimand, limitation or prohibition of all or part of operations, any other limitations on the exercise of the profession, suspension or compulsory resignation of the directors responsible, withdrawal of authorisation). To this end, the insurance company must ensure its profitability to avoid sanctions from the sector's regulator, CIMA.

Since an insurance contract is a synallagmatic contract, it requires obligations from both parties: paying the premiums for the insured and paying the indemnity, if the conditions are met, for the insurer. Given that a claim can occur at any time, the insurer must be able to meet its financial obligations in real time, maintaining a minimum level of collections. This situation is all the more critical for life insurers, which can be faced at any time with a policyholder surrendering his mathematical provision. In actuarial jargon, a surrender is the payment to the policyholder of part (partial surrender) or all of their capitalised premiums (also known as the mathematical reserve) before the policy matures. In the case of a total surrender, the contract is terminated early. Article 702 of the CIMA Code stipulates that: "for life insurance and capitalisation insurance, the insurer may not refuse to reduce or surrender the policy when 15% of the premiums or contributions provided for in the policy have been paid. In any event, the right to surrender or reduction is acquired when at least one annual premium has been paid". In other words, when the policyholder meets the conditions, the company is obliged to pay the amount requested. As a result, unforeseen disbursements by the company, particularly in the event of surrender, have a negative impact on cash flows and therefore on the solvency of the entity. In addition, beyond the convergence rules imposed by CIMA, and the risks of buy-outs, the insurance company, like any other business, must make a profit from its activity. In a

constantly changing world where competition is fierce, an insurance company must be profitable if it is to survive. This is why profitability is one of the primary concerns of managers (Trainar & Thourot, 2017). According to (Ramage, 2001) profitability can be defined as "an efficiency indicator that establishes a comparison between the results obtained and the means used to obtain this result. In other words, it is the ability of a capital asset to generate a profit". This definition of profitability shows us that profitability is a return on investment (Linda & al., 2018).

The technical and financial operation of insurance companies is governed by regulations designed not only to guarantee their solvency, but also to manage the investments resulting from the premiums and contributions collected from policyholders. As a result, insurance companies must be financially balanced and profitable if they are to meet their commitments to their customers on a regular basis, and if they are to play a lasting role in the economy. And since all a company's activities translate into financial flows, cash management is a necessity for better management of these flows. But over the past decade, it has become clear that, despite efforts, the penetration rate of insurance companies in Benin has been very low, given the lack of an insurance culture in Africa in general and the low standard of living of the Beninese people[1] . This situation is the result of the way the company is managed and operated. Cash flow needs to be well managed, because good cash flow management means ensuring the company's solvency at the lowest possible cost. This means that the company must be able to meet its financial obligations at all times, while maintaining a minimum cash position. It must also seek to maximise the return on its investments.

The concept of profitability has multiple facets, each of which relates to a very specific objective in the contribution of value created. This concept refers, among other things, to financial profitability, economic profitability and commercial profitability. According to (Ginglinger, 1991) financial profitability measures the company's profitability from the point of view of each provider of funds, whether shareholders or lenders. The company must seek to maximise the return on the investments it makes and its assets (Ramage, 2001). Commercial profitability refers to the company's pricing policy and the gross margin it generates on the cost price of the products it sells (Redjem, 2005). The three profitability ratios have net profit as the numerator. Poor cash management will have an impact on the denominators of the profitability ratios, which are equity, assets and sales respectively. Hence the main research question :

What effect does cash management have on the profitability and solvency of an insurance company in Benin ?

The benefits of this research are twofold. Firstly, from a theoretical point of view, the results can enrich the findings of previous studies. Secondly, from a managerial point of view, the results of this research may enable managers to better identify changes in the profitability and solvency of their company through cash flow management. This could have an impact on management decision-making and, in turn, the company's overall performance.

The first part presents the literature review and the formulation of the research hypotheses. The second deals with methodological aspects. The third part is devoted to analysis of the empirical results and discussion.

1. Literature review and formulation of research hypotheses

1.1 Definitions of concepts

Cash: Cash is the difference between cash coming in and cash going out. Cash management can therefore be defined as the way in which this difference is manipulated within certain constraints. Good cash management is the ability to transfer longer-term assets into short-term assets, such as cash. This is crucial to a company's financial strength. According to (Matton, 2018)excessive accumulation of cash in bank accounts leads to an opportunity cost, i.e. a loss

[1] Direction des Assurances Benin, 2021

of return. Conversely, if the company does not have sufficient liquidity, it could be subject to penalties if it is unable to meet its short-term liabilities.

Profitability: Etymologically, the word profitability is derived from the word "rente", which in turn comes from the popular Latin "rendita" meaning "what the invested money returns", which in turn comes from the verb "rendere" meaning "to give in return". It refers to the capacity of capital to generate income. According to (Bouquin, 2008) profitability is a concept very close to performance and refers to "a company's ability to generate a result expressed in monetary units". According to (Rouach & Naulleau, 2000) profitability is the most synthetic performance indicator there is, and it is through the introduction of cost accounting that this element can be understood.

Return on equity (ROE): ROE is a measure of the capacity of equity capital (i.e. that contributed by shareholders or partners) to generate a certain level of profit. For (Selmer, 2019) financial profitability assesses a company's efficiency in generating profit from its assets, and how it uses its investments to grow. Its formula is as follows:

ROE = (Net Profit)/(Equity).

Economic profitability (ROA): the return on assets (ROA) measures a microfinance institution's ability to use its assets to generate a profit. (Tchakoute Tchuigoua, 2012). It is the expression of net operating income divided by the average amount of assets. The calculation formula is :

ROA= ((Operating profit - Income tax))/ (Shareholders' equity + Financial debt).

Commercial profitability (CPR): in commercial terms, profitability is a financial ratio used to measure a company's performance according to its business volume. In other words, how much a company earns from the sale of its products/services. This ratio makes it possible to judge whether a company is profitable in its sector of activity. The higher the commercial profitability, the higher the company's gross margin on the sale of its products/services. Commercial profitability is equal to net profit divided by sales, i.e. profitability when selling products. In this case, insurance products. ROC= (Net profit)/ (Sales).

Solvency: solvency means that a company is able to repay its debts with its cash flow, in the short, medium or long term, without defaulting. According to (Juhel, 1978) it is the ability of an economic agent to meet its debts when they fall due. In the insurance context, solvency refers to the company's ability to meet its obligations over the long term. Insurance companies are referred to as having a solvency margin. It is defined as the minimum amount of eligible equity capital a company must have in order to be able to pursue its insurance activities without restriction. The method for calculating this amount is defined in article 337 of the CIMA code. To assess the solvency of an insurance company, the solvency ratio is the most common. The Solvency Ratio compares the assets held by the company with its future obligations, such as potential claims and benefits. A high solvency ratio indicates a greater capacity to honour these commitments. It is calculated as follows:

Solvency ratio= (Total assets)/ (Liabilities to policyholders).

A solvency ratio of over 100% indicates that the company's assets exceed its obligations to policyholders, which is favourable in solvency terms.

1.2 Theoretical review

The results of a study conducted by (Soet & al., 2018) show that cash flow management had a significant and negative effect on return on assets and return on equity. For these authors, the relationship between cash flow management and financial performance is negative. It is therefore recommended that company managers reduce overinvestment through expansion programmes, but strive to increase company productivity. (Pike & al., 2018) have shown that proper liquidity management allows a company to meet payment deadlines without compromising its solvency. Thus, companies that manage their cash effectively are able to maintain an optimal level of liquidity, which reduces the risk of default on long-term bonds.

Cash management also influences creditors' perception of a company's ability to repay debt. Sufficient cash reserves reassure creditors, which can translate into more favourable credit terms and lower interest rates (Brealey & al., 2014). This dynamic strengthens solvency by reducing the risks perceived by lenders. According to (Sagner, 2014 ; Sagner, 2010) by strictly adhering to cash management rules, companies can finance strategic investments while maintaining their solvency. Companies can use their cash surpluses for long-term projects without compromising their ability to meet financial obligations. This promotes growth while maintaining adequate solvency. In addition, the study by (Giarto & Fachrurrozie, 2020) shows that cash flow has a significant negative effect on financial distress. (Pradhan & Dahal, 2021) show that insurance premium and firm size have a positive impact on return on assets and earnings per share, then current ratio, solvency ratio have a negative impact on return on assets, finally solvency ratio has a positive impact on earnings per share. They also conclude that insurance premium, followed by current ratio and firm size, is the most influential factor explaining liquidity management and financial performance of Nepali insurance companies. (Ghasemi & Razak, 2016) show that liquidity has a significant effect on the overall capital structure. Since the solvency of insurance companies is more related to their capital structure, it can be concluded that liquidity has a significant effect on the solvency of insurance companies. A study of the determinants of the success of Tunisian insurance companies from 2002 to 2018 in Tunisia shows that the determinants of the performance of Tunisian insurance companies are capital structure, solvency, risk capital management, premium growth, capital volume, the age of the company and financial investments (Derbali & Jamel, 2007). (Derbali & Jamel, 2019). However (Abdel Jawad & Ayyash, 2019) show that claims have a positive effect on financial solvency and leverage has a negative effect on the solvency of insurance companies in Palestine, while investment and liquidity have an insignificant effect on financial solvency, investment and liquidity have an insignificant effect on financial solvency. In the same vein, (Dirman, 2020) will show that the profitability variable has a positive effect on financial distress; the liquidity, leverage and free cash flow variables have no effect on financial distress; and the firm size variable has a negative effect on financial distress. He concludes that liquidity and free cash flow have no influence on financial distress.

According to (Benthami & Cherkaoui, 2018) liquidity is undoubtedly a necessary condition for profitability. The results of a study conducted by (Mutesi & Mulyungi, 2018) revealed a strong relationship between cash management and financial performance. These authors conclude by stating that cash management is a key tool in the financial management of banks since cash is the bank's main asset. Cooperative banks should ensure that they develop effective cash management policies. (Waswa & al., 2018) conclude from their work that liquidity management has a positive effect on financial performance. (Mishra & Pradhan, 2019) show that the cash deposit ratio (CDR) and the investment-deposit ratio (IDR) have a significant negative effect on return on assets (ROA). However, in the case of return on equity (ROE), they find that there is no significant effect on return on assets (ROA). For these authors there is no significant relationship between bank profitability and liquidity taking all variables, for all the banks selected in India. This leads to the conclusion that commercial banks can focus on increasing their profitability without affecting their liquidity and vice versa. Internal resources are used optimally, thus contributing to profitability (Brealey & al., 2014). The results of studies carried out by (Ogbeide & Akanji, 2017 ; Babatunde & Sunday, 2017) reveal that cash flows determine the financial performance of insurance companies and are statistically significant. These authors state that cash flows from operating activities significantly increase the financial performance of insurance companies over the study period. On the other hand, cash flow from financing activities increases the financial performance of the insurance companies in the sample, but is not statistically significant. Furthermore, they show that the size of the insurance company does not increase the financial performance of the insurance companies and was not

statistically significant either. (Igbinosa & al., 2017) on the other hand, indicate that financial regulation has a significant impact on banking sector performance, while financial regulation has short and long run dynamic relationships with banking sector performance in Nigeria. The four-period lag in capital adequacy was found to negatively affect banking sector performance and was not statistically significant. They suggest that the Central Bank of Nigeria (CBN) should continuously make public the impacts that various financial regulations and reforms have on the performance of Nigerian banks, which may enable stakeholders, shareholders and the general public to have confidence in the Nigerian banking sector when they are critically assessed. (Nangih & al., 2020) established that cash flows from operating and investing activities have a negative and insignificant relationship with profitability, while cash flows from financing activities have a positive and significant influence on profitability. In addition, cash flows from financing activities have a positive and significant influence on the company's performance in the oil and gas sector. In addition, (Jagadish & Sharmila, 2021) at the end of their study, reveal that the variable of cash flow financing (CFF) is the most effective in organisations in the growth phase while the variable of net interest (NI) is also the most effective for companies in the maturity phase. (Liman & Mohammed, 2018) investigated the effects of operating cash flow and financial performance of listed conglomerate firms in Nigeria over the period from 2005 to 2014. The data were analysed using descriptive statistics, correlation analysis and regression of cash flow from operating activities and financial performance measured by ROA and ROE. The results show a positive and insignificant impact between cash flow from operating activities (CFO) and financial performance expressed as ROA, while the impact is positive and significant when financial performance is expressed as ROE for listed conglomerates in Nigeria. Kenya, (Soet & al., 2018) had the opposite result for the case of mutual funds. Indeed, they used causal analysis for the years 2011 to 2016, secondary data in the twenty-two (22) mutual funds. The results from this study show that, cash flow management has a significant and negative effect on return on assets and return on equity. (Margaret, 2019) investigated the influence of capital adequacy on the financial performance of Kenyan insurance companies. The results revealed that cash flow and asset quality of Kenyan insurance companies have a statistically significant affirmative relationship. Only cash flow, among the elements of capital adequacy, has a significant relationship with the financial performance of insurance companies. Capital adequacy has a statistically significant effect on the financial performance of insurance companies. (Rahman & Bahadur Sharma, 2020) conducted a comparative analysis between firms that take care of their cash management and those that relatively neglect it. The results of this comparative study show that the former are better than the latter in terms of financial and economic profitability. The authors conclude that the operating cash flow of companies in the insurance and manufacturing sectors has a positive impact on financial performance. However, excessive cash management can lead to a missed opportunity in terms of profitability. Unused cash could be invested in productive projects rather than sitting idle, which could reduce the company's overall return on investment (Hermalin & Weisbach, 2012). On this subject, (Eton & al., 2019) found that cash management has an insignificant effect on financial performance. According to (Weston, 2014) it can limit the company's ability to invest in projects with high profitability potential. Excessive cash accumulation can lead to sub-optimal investments and affect future growth and profitability. For (Afrifa & Tingbani, 2018) cash flow management has a major negative impact on SME results. On the other hand, the results of the authors' study (Lai & al., 2020) reveal that the independent variable, operating cash flow, has a substantial negative relationship with firm output calculated by ROA. The cash conversion cycle (CCC) is a powerful indicator of how effectively a company manages its working capital. The results of work by (Nwude & al., 2018) indicate that CCC has a negative and significant effect on the ROA of an insurance company. Even though (Idamoyibo, 2021) proved that liquidity indicator through current ratio has a

positive impact on Financial Return (ROE) of Nigerian companies, he states that this impact is insignificant. In the same vein, (Maya Rahayu & al., 2023) concluded that cash turnover has a negative but insignificant effect on economic profitability. (Idamoyibo, 2021) believes that current cash flow, a proxy for liquidity, has a negative and insignificant influence on financial profitability (ROE).

Optimal cash management will, in the coming decades, be the key determinant of competitiveness in the insurance sector, in the world of the finance market (Abubakar & al., 2018). In addition to the singularity of the laws of competitiveness of the insurance sector, one of the peculiarities of this sector is the optimal management of reinsurance. (Manning & al., 2015) highlight the importance of reinsurance in insurance cash management. Reinsurance makes it possible to transfer part of the risks to third parties, thereby limiting the financial impact of major claims. Similarly, (Lloyd & al., 2012) have discussed the advantages of reinsurance partnerships in the insurance context. Reinsurance appears to be a key strategy in cash management. But it is not the only one, there are others such as the implementation of management systems, the management of liquidity relating to reinsurance, etc. Reinsurance is a key strategy in cash management. Insurance targeting both financial viability and social impact, (Karlan & Appel, 2018) stress that these strategies must ultimately align with long-term social objectives while maintaining financial sustainability.

Cash reserves act as a cushion to mitigate liquidity risks and maintain the confidence of customers and regulators. In addition, the management of cash reserves must balance the pursuit of returns with the preservation of liquidity. Poor reserve management could lead to a lack of liquidity in the event of large claims payments, while an overly conservative approach could hamper overall portfolio performance. However, (Froot & Stein, 1998) point out that insurance companies can generate returns by investing their excess reserves in diversified assets, while managing the associated risks. Analysing the role of cash reserves in the performance of insurance companies is a complex subject that involves transparent financial management as they play a crucial role in the performance of insurance companies by enabling them to meet claims, regulatory obligations and financial risks.

The following assumptions follow from the above:

Hypothesis (H1): The evolution of cash flow has a positive and significant effect on the solvency of an insurance company;

Hypothesis (H2): Changes in cash flow have a negative and significant effect on the economic profitability of an insurance company;

Hypothesis (H3): Changes in cash flow have a negative and significant effect on the financial profitability of an insurance company ;

Hypothesis (H4): Changes in cash flow have a negative and significant effect on the commercial profitability of an insurance company;

Hypothesis (H5): Changes in the cash position of an insurance company have a negative effect and significant impact on its operating profitability;

hypothesis (H6): Changes in an insurance company's cash position have a negative effect and significant net insurance margin.

2. Research methodology

2.1 Data sources

The data used in this study comes from the financial statements of twelve (12) Beninese insurance companies, published by the Conseil des Ministres des Assurances (CMA) and the Direction des Assurances du Bénin for the period from 2017 to 2021. Our study is based on a sample of twelve (12) Beninese insurance companies. These are: CIF-Vie, AV, NSIA-Vie, SA-Vie, AAB-Vie, SUNU-Vie, AFRICAINE, NSIA, GAB, SUNU, NOBILA, SALAM, AMAB, AAB. The choice of these twelve (12) companies out of the thirteen (13) currently operating in

Benin was based on the availability of data relating to the variables used during the period selected.
The analysis tools used were R, STATA and Excel.

2.2 Choice and description of variables

A description of the variables (dependent and independent) used in the analysis and their sources are shown in table 1 below :

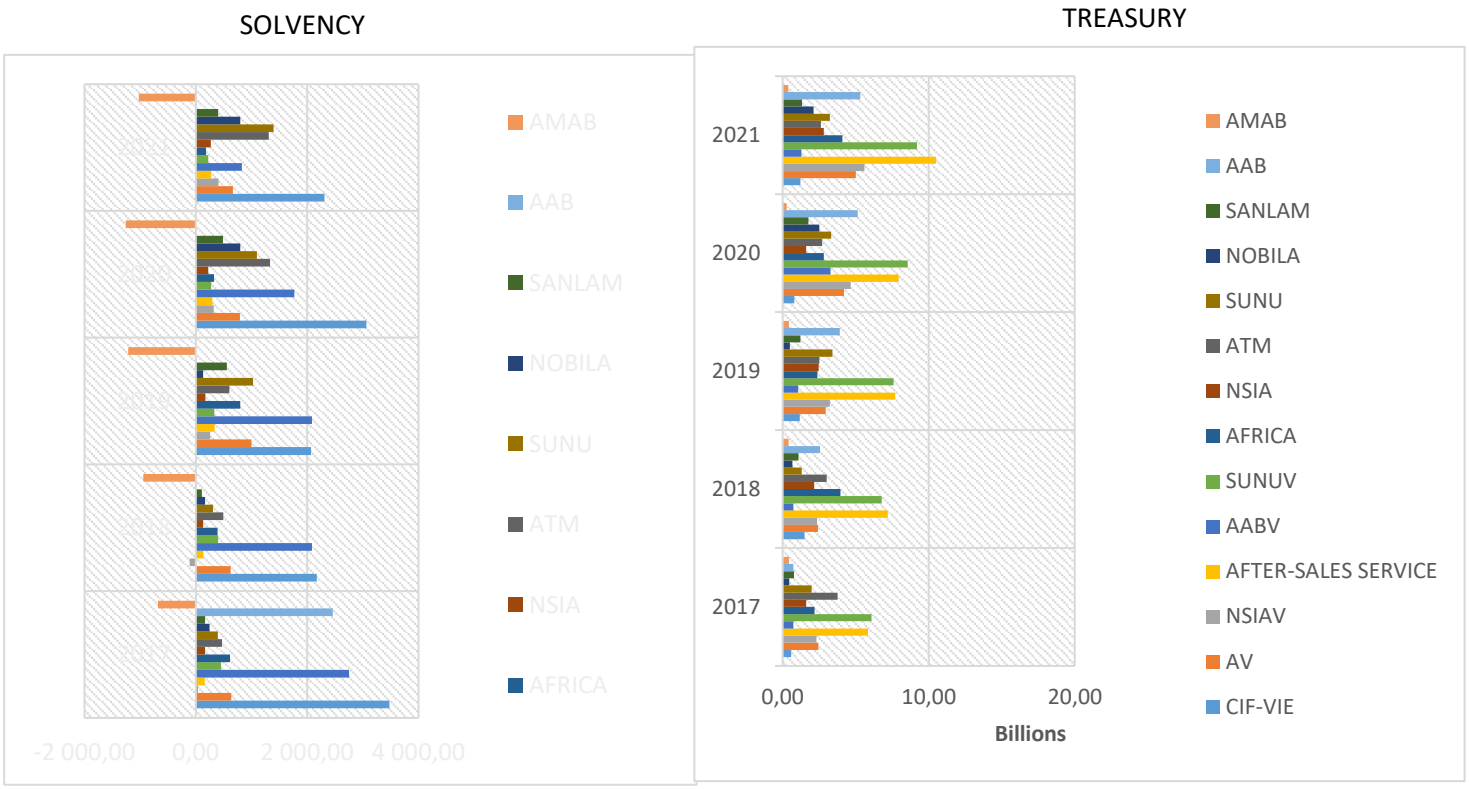
Table 1: Summary of variables and expected signs

N°	**Dependent variables**			
	Name (code)	Description	Inspired by the work of	Expected sign
1	MARGSOL	Prudential solvency margin	Burca & Batrinca, 2014)	No
2	ROA	Return On Asset, This is economic profitability	(Babatunde & Sunday, 2017); (Soet & al., 2018)	
3	ROE	Return On Equity, financial profitability	(Babatunde & Sunday, 2017); (Soet & al., 2018)	
4	RCO	Commercial profitability	(Babatunde & Sunday, 2017); (Soet & al., 2018)	
5	RE	Operating profitability	(Liman & Mohammed, 2018)	
	MAN	This is the Net Insurance Margin	Insurrance Regulatory Authority, 2020)	
N°	**Independent variables**			
	Name (code)	Description	Study using an identical source	Expected sign
1	TREASURY	This is cash flow	(Soet & al., 2018)	Positive
2	CA	That's the company's turnover	Insurrance Regulatory Authority, 2020)	Positive
3	FRAISPERS	Company staff costs	Insurrance Regulatory Authority, 2020)	Negative
4	CAPRO	This concerns the structure of shareholders' equity	Insurrance Regulatory Authority, 2020)	Positive
5	PROVDLMT	These are provisions and long- and medium-term debt	Insurrance Regulatory Authority, 2020)	Positive

Source: Recherches empiriques 2023

3. Analysis of empirical results and discussion
3.1 Univariate descriptive analysis

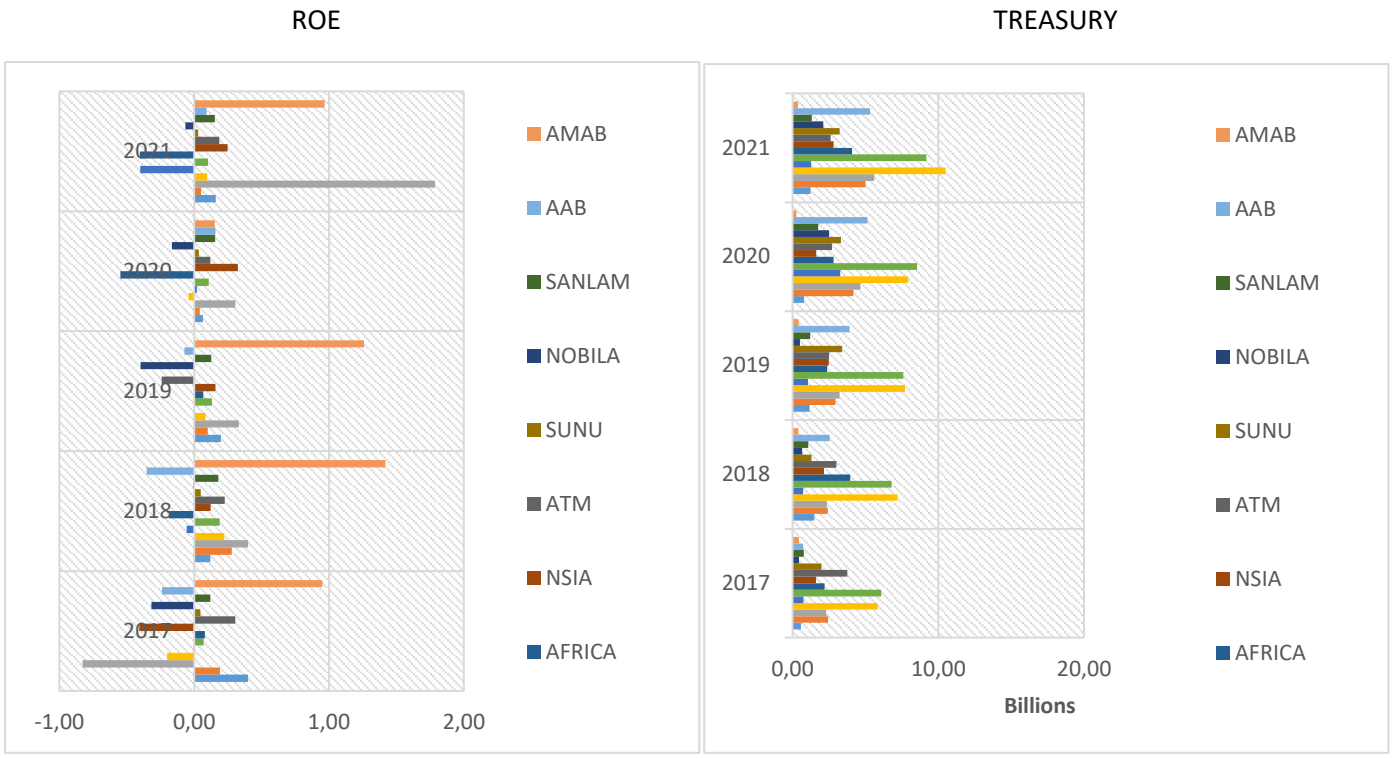
3.1.1 Univariate analysis
Figure 1: Trend in solvency margin and cash flow



Source : Auteur 2023

Figure 1 above shows the evolution of the solvency margin rate and the cash flow of the selected companies between 2017 and 2021. With the exception of AMAB, all the insurance companies in Benin are well within the solvency criteria. CIF-Vie, AAB and AAB-Vie are the best solvency performers in the Beninese market, while AMAB is insolvent.
Furthermore, observation of cash flow trends reveals an opposite reality. While AMAB, the least solvent of the companies, has the least liquidity over the period, the very solvent AAB and AAB-Vie have a very strong cash position. However, SA-Vie and SUNU-Vie do not comply with this rule. Although they have a strong cash position, they are not solvent.

Figure 2: Evolution of financial profitability and cash flow



Source : Auteur 2023

Figure 2 above shows the evolution of the financial profitability and cash flow of the selected companies between 2017 and 2021. In line with the results for solvency, companies with a large cash position are not very profitable over the period. This is the case for SA-Vie and SUNU-Vie. Similarly, companies with very little cash over the period are the most profitable over the period. AMAB is a good example of this.

3.2 Bivariate analysis: Correlation between cash flow management and performance

Table 2: Correlation between cash management and performance

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) TREASURY	1,000						
(2) MARGSOL	**0,168**	1,000					
	(0,164)						
(3) ROE	**-0,042**	-0,242*	1,000				
	(0,730)	(0,043)					
(4) ROA	**0,061**	0,007	0,269*	1,000			
	(0,617)	(0,956)	(0,024)				
(5) RCO	**0,275****	0,219	-0,087	0,164	1,000		
	(0,021)	(0,069)	(0,474)	(0,175)			
(6) RE	**-0,385*****	0,328*	-0,102	-0,107	0,281*	1,000	
	(0,001)	(0,006)	(0,403)	(0,380)	(0,018)		
(7) MAN	**0,275****	0,064	0,286*	0,225	-0,020	-0,505*	1,000
	(0,021)	(0,598)	(0,016)	(0,061)	(0,870)	(0,000)	

*(.) = p-values *** p<0.01, ** p<0.05, * p<0.1*

Source: Empirical research, 2023

Table 2 above shows the correlation coefficients (and their significance) between cash management and company performance. According to the results, there is a weak positive linear relationship between cash flow and the solvency margin ratio. The non-significance at 5% of the Pearson statistic confirms this description. As far as profitability is concerned, we can conclude that there is a positive linear relationship between cash flow and economic profitability, commercial profitability and net insurance margin respectively. While this relationship is not significant at 5% for economic profitability, it is for the other two. Similarly, there is a negative linear relationship between cash flow and financial profitability and operating profitability respectively. While this relationship is significant at 5% in the Pearson sense for the net insurance margin, this is not the case for financial profitability.

3.3 Econometric analysis

3.3.1 Multi-collinearity analysis

Table 3: VIF test results

VIF	With CA	Without AC
LogCA	5,08	
LogFRAISPERSO	3,207	1,738
LogPROVDLMT	1,869	1,694
LogCAPRO	1,6	1,598
LogTRESOR	1,57	1,365
Mean VIF	**2,48**	**1,545**

Source: Empirical research, 2023

The table3 above shows the results of the VIF (Variance Inflation Factor) test, in which company sales are highly correlated with the other explanatory variables. In fact, the VIF test gives it a statistic of 5.08 when it is present. In its absence, all the statistics are less than 2. Consequently, we will exclude turnover as an explanatory variable from the econometric analysis.

3.3.2 Presentation of estimation results

Table 3: Model estimation results

Tests	M1(MARGESOL)	M2(ROE)	M3(ROA)	M4(RCO)	M5(RE)	M6(MAN)
LogTRESOR	**-194,3**	**0,07**	**-0,0001**	**-0,02****	**-0,15*****	**0,06***
	(132,55)	(0,06)	(0,02)	(0,01)	(0,05)	(0,04)
LogFRAISPERSO	-967,62***	0,03	0,02	-0,07***	0,03	-0,003
	(172,63)	(0,09)	(0,03)	(0,01)	(0,06)	(0,05)
LogCAPRO	259,30***	-0,29***	-0,15***	-0,0002	0,005	-0,01
	(88,32)	(0,05)	(0,02)	(0,007)	(0,03)	(0,02)
LogPROVDLMT	160,42***	0,07**	0,008	-0,004	-0,06***	-0,02
	(63,88)	(0,04)	(0,02)	(0,005)	(0,02)	(0,02)
Constant	18 198,24***	1,07	1,30**	1,29***	4,72***	-0,39
	(3440,87)	(1,79)	(0,62)	(0,31)	(1,32)	(0,96)
Wald chi2 (6)	**55,05*****	**42,10*****	**98,66*****	**107,65*****	**27,36*****	**9,26***
R^2 (%)	**74,11**	**50**	**76,57**	**55**	**43,5**	**23,5**

(.) = estimated standard deviations of the coefficients
**** p<0.01, ** p<0.05, * p<0.1*

Source: Empirical research, 2023

Table 3 above shows the estimation results for the estimated models. The first five models are globally significant at the 1% level, given that the Wald statistics have associated p-values of less than 1%. The sixth model is globally significant at 10%. Cash management, staff costs, capital structure and medium and long-term provisions explain 74.11%, 50%, 76.57%, 55%, 43.5% and 23.5% respectively of the solvency margin, financial profitability, economic profitability, commercial profitability, operating profitability and net insurance margin of Benin's insurance companies. Independently of these factors, these companies have a solvency margin of 18,198, a financial profitability of 1.07%, an economic profitability of 1.3%, a commercial profitability of 1.29, an operating profitability of 27.36% and a net insurance margin of 9.26%.

At the 5% threshold, cash management has an insignificant effect on the solvency margin, economic profitability and financial profitability. At this threshold, it has a significant effect on commercial profitability, operating profitability and net insurance margin. This effect is negative for commercial and operating profitability and positive for the net insurance margin.

Commercial profitability is negatively affected by cash flow. In fact, when cash flow increases by one percentage point, commercial profitability decreases by 0.02 percentage points, ceteris paribus. In addition, staff costs have a negative impact on commercial profitability, with a marginal effect of -0.07.

Cash management has a negative impact on operating profitability. All other things being equal, a one percentage point increase in cash flow leads to a 0.15 percentage point decrease in operating profitability. In addition, medium- and long-term provisions also have a negative marginal effect (-0.06) on operating profitability. It should also be noted that the marginal effect of cash flow on trading profitability is greater than that of trading profitability.

The net insurance margin is positively affected by cash flow. In fact, a one percent increase in cash flow leads to a 0.06 cetéris paribus increase in the net insurance margin. However, a risk of 10% must be considered for this marginal effect to be significant.

Table 4: **Hypothesis testing**

Assumptions	**Expected sign**	**Sign obtained**	**Status**
Changes in cash flow have a positive and significant effect on the solvency of an insurance company	+(*)	-(.)	Nurse
Changes in cash flow have a significant negative impact on the financial profitability of an insurance company	-(*)	+(.)	Nurse
Changes in cash flow have a negative and significant effect on the economic profitability of an insurance company	-(*)	-(.)	Nurse
Changes in cash flow have a significant negative impact on the commercial profitability of an insurance company	-(*)	-(*)	Confirmed
Changes in an insurance company's cash position have a significant negative impact on its operating profitability.	-(*)	-(*)	Confirmed
Changes in an insurance company's cash position have a significant negative impact on the net insurance margin	-(*)	+(*)	Nurse

(*) = significant effect; (.) = non-significant effect

Source: Empirical research, 2023

3.3.3 Discussion of the results

According to the results obtained, (optimal) cash management has no significant effect on the solvency of insurance companies in Benin. This result was obtained by (Abdel Jawad & Ayyash, 2019 ; Dirman, 2020). This is understandable insofar as the solvency of an insurance company does not depend solely on the level of its cash flow. Several other factors explain the solvency of an insurance company, namely: the level of risk management, its profitability, the level of diversification of its portfolio of insurance assets, and the regulations in force. To better ensure its solvency, the insurance company should diversify its portfolio of insurance assets (Margaret, 2019). The principle of insurance is that the more customers a company has, the lower the risk of insolvency for each of them: this is the principle of risk mutualisation.
Finally, a change in insurance solvency legislation by CIMA could significantly affect the solvency of insurance companies, despite the availability of cash.
Cash management has a significant effect on the profitability of insurance companies in Benin. Authors (Benthami & Cherkaoui, 2018 ; Waswa & al., 2018 ; Mutesi & Mulyungi, 2018 ; Mishra & Pradhan, 2019 ; Brealey & al, 2014 ; Nangih & al, 2020 ; jagadish & sharmila, 2021 ; Liman & Mohammed, 2018 ; Soet & al, 2018 ; Margaret, 2019 ; Rahman & Bahadur Sharma, 2020) supported this result. On the other hand, cash management has no significant effect on the economic and financial profitability of Beninese insurance companies. This result is consistent with other authors (Hermalin & Weisbach, 2012 ; Eton & al., 2019 ; Weston, 2014 ; Idamoyibo, 2021 ; Maya Rahayu & al., 2023). Although it is theoretically and empirically established that cash management affects profitability, it is nonetheless a necessary but not sufficient condition. The reasons given for solvency could explain the lack of causality between the economic and financial profitability of insurance companies in Benin. Furthermore, it should be noted that an insurance company is a financial institution and not an industrial enterprise whose profitability can be summed up in economic and financial profitability. The effects on commercial and operating profitability are more intuitive for insurance companies, especially in developing countries.
Cash management has a negative and significant effect on the commercial and operating profitability of Beninese insurance companies. This result corroborates those of the authors (Afrifa & Tingbani, 2018 ; Lai & al., 2020 ; Nwude & al., 2018). Cash flow enables the insurance company to carry out its day-to-day transactions. This makes operating and commercial profitability naturally linked to cash management. However, keeping funds dormant in bank accounts is a sign that the company's business is sluggish. Moreover, these dormant funds generate storage and risk costs for the bank, resulting in (unnecessary) cash outflows.

- **Limits of the study**

There are several limitations to this work:

- Although we have used 5 profitability proxies, there are several other types of profitability for an insurance company. There is underwriting profitability or technical profitability, net profitability and profitability by business segment, which we have ignored in this work.
- The estimated models are not perfect. In addition to the subjectivity involved in choosing the random model, and their poor predictive power, the residuals of these models do not always satisfy the conditions of normality, homoscedasticity and non-autocorrelation. This situation reduces the robustness of our results.

- **Operational recommendations**

At the end of this work, we suggest that insurance companies in general :

1. Optimise cash management to ensure profitability;

2. Directing cash flow efforts to the company's operating and commercial activities to ensure the impact on profitability;
3. In addition to optimising cash management, recruit a risk manager, if you have not already done so, who will be responsible for identifying and managing the risks facing the company. This will help to consolidate the company's solvency in relation to cash management;
4. Diversify the portfolio of insurance assets as much as possible;
5. In addition to optimising cash flow management, insurance companies must ensure that their capital structure is sound over the long term, optimise staff costs by remunerating at marginal productivity, and set aside provisions for the medium and long term. According to our study, these factors have a significant effect on the solvency and profitability of insurance companies in Benin.

CIMA and the Benin Insurance Department should ease solvency requirements to enable insurance companies to improve their profitability by making optimum use of funds dormant in banks.

Conclusion

The aim of this study was to analyse the effect of cash management on the solvency and profitability of insurance companies in Benin. To do this, we used data from 2017 to 2021 for twelve (12) insurance companies in Benin. These are the financial statements published by the Conseil des Ministres des Assurances (CMA) and the Direction des Assurances du Bénin. As regards the analysis technique used, we carried out a descriptive analysis and an econometric analysis.

The econometric analysis consisted of estimating a panel linear regression model. The Hausman test helped us in the choice of random effects models. The initial results show that there is a non-significant linear relationship between the company's cash position and solvency on the one hand, and economic and financial profitability on the other. This relationship is significant for operating and commercial profitability on the one hand and the net insurance margin on the other.

In order to extend these descriptive results, the econometric results prove that the level of cash does not significantly explain the solvency and the economic and financial profitability of an insurance company. However, the level of cash has a negative and significant effect on operating and commercial profitability and a positive and significant effect on the net insurance margin.

In the light of these results, we suggested that, in addition to optimising cash management, better risk management should be ensured, the capital structure should be consolidated, and staff costs should be optimised with a view to ensuring both the solvency and profitability of the company. In addition, we have recommended that CIMA, in agreement with the Benin Insurance Department, ease the solvency requirements for insurance companies in Benin in order to increase their room for manoeuvre, so that they can simultaneously achieve the two objectives of economic and financial performance.

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