

IFRS17: A Proposal for Disclosure Liabilities for Incurred Claims in Notes to the Financial Statements

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Abstract

Objective: In this study we examine the disclosure requirements in the notes to the financial statements of insurance companies, specifically in relation to the Liability of Incurred Claims (LIC) and Risk Adjustment (RA), in accordance with the new accounting standard IFRS17 (CPC 50). The type and form of disclosure of the requirements of CPC 50 are proposed, as well as additional disclosures are suggested.

Method: Adopting the classification of Hendriksen and Van Breda (1999), we define the type and form of the disclosures required by CPC50 (2021) related to LIC and RA. In addition, we suggested three complementary disclosures focused on risk aspects. In order to produce the disclosures, the Fulfilment Cash Flow (FCC) relating to the LIC and its respective RA was measured. Stochastic modeling (bootstrap) was used to estimate empirical probability distributions, and Value at Risk to obtain the confidence level, with its associated Expected Shortfall (expected loss beyond a threshold). Real data from a Brazilian insurance company was used, comprising an eight-year history of motor insurance claims (Hull and Third-Party Liability).

Results: The results show the importance of measures of risk of insufficient provision, a relevant aspect for the management and transparency of disclosure in financial reports.

Contributions: IFRS17 establishes new principles for recognizing, measuring and disclosing the financial information of (re)insurers. This new standard requires the measurement and disclosure of fulfillment cash flows (FCC), composed of the expected present value of actuarial obligations plus a Risk Adjustment (AR), which incorporates the uncertainty about their realization. Additionally, the suggested explanatory notes contribute to improving the ability of the user of accounting information to measure aspects related to risk and uncertainty associated with insurance companies' liabilities.

Keywords: Insurance; IFRS17; Technical Provisions; Risk Adjustment; Disclosure.

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Introduction

In May 2017, the International Accounting Standards Board (IASB), the entity responsible for publishing and updating the International Financial Reporting Standards (IFRS), issued the IFRS17 for insurance contracts to replace the IFRS4 of 2004. However, the IFRS17 only came into force in January 1st, 2023, after successive extensions since 2021. This new and complex standard is applicable to entities issuing (re-)insurance contracts and establishes principles for the recognition, measurement, presentation and disclosure of (re-)insurance financial information.

In Brazil, CPC50 is the equivalent standard for IFRS17. The Brazil's Securities and Exchange Commission (CVM) approved the CPC50, which creates the obligation for publicly traded (re-)insurers to adopt the new accounting standard for insurance contracts. Until November 2023, the Brazilian Private Insurance Agency (SUSEP) has not made a clear statement on how it will deal with IFRS17. The matter is listed as being discussed by the accounting working group of the agency, according to the minutes of the meeting dated of April 25, 2019, the latest information available.

The literature shows that the adoption of IFRS has positive effects on the quality and use of accounting information, comparability, capital markets and predictive ability of the analysts (Lourenço & Castelo Branco, 2015). According to Abdallah et al. (2018), despite the evidence of positive reactions from European insurance investors to the adoption of IFRS, there are concerns as to whether the benefits of this adoption (e.g. comparability/transparency) will exceed the associated costs (e.g. increase in audit fees/managerial discretion).

The objective of IFRS17 is to standardize the accounting of (re-)insurance contracts according to the characteristics of the insurance products. Among the main implications, the new accounting standard aims to improve the comparability between (re-)insurers so that relevant information can be obtained and their operations faithfully represented (Dahiyat & Owais, 2021; Mignolet et al., 2017). This will allow users of financial statements to assess the effect of issued contracts on the insurers' financial position, performance and cash flows.

One of the main requirements of IFRS17 is the calculation of the best estimate of fulfillment cash flows (FCF), which must be composed of the expected present value of future obligations and refers to the entity's capacity to estimate the expected probability distribution of commitments to be paid (IASB, 2017, p. 882). IFRS17 also requires that non-financial risk adjustment (RA) be added to the FCF in order to incorporate the cash-flow uncertainty (IASB, 2017, p. 884). Therefore, the new accounting

standard requires a risk metrics (e.g., standard deviation) associated with expected cash flows to be added to the entities' liabilities, which should have a relevant impact on financial statements, but is not being currently provided for in legislation (Carvalho & Carvalho, 2019).

The risk adjustment requirement is connected to the risk-based financial assessment of insurance liabilities, one of the fundamentals for measuring the probability of ruin for (re-)insurers, a concept already incorporated into the European regulatory environment through the Solvency II Agreement (Euphasio Junior & Carvalho, 2022). Therefore, the risk-based liability assessment under IFRS17 will be incorporated into how companies measure their financial position and performance (Palmborg et al., 2020).

However, unlike the Solvency II Agreement, in which methodological tools are either specific or general guidelines suggested by regulatory agencies, IFRS17 has a principled character and does not define the methods to be used for calculating cash flows and risk adjustment. Thus, it is up to each entity to determine an approach according to its risk profile. This requires actuarial science research for solutions and principles by means of mathematical formalization to guide the risk-based valuation of insurance liabilities under IFRS17 (Delong et al., 2019). Additionally, risk-related disclosures in the insurance industry proved to be a factor enhancing the market transparency, thus promoting security and solidity (Eling, 2012; Höring & Gründl, 2011; Malafronte et al., 2018).

The new features introduced by IFRS17 can raise a number of questions among preparers and users of financial statements, such as: Which risk adjustment methodology is the most appropriate for a given type of insurance? How will the new liability components behave and how will this impact the accounting profit/loss? Or even, what factors explain the variations in the new liability components? How should these new features be disclosed?

Specifically, the liability for incurred claims (LIC) must contain risk adjustment and financial discount, regardless of the measurement model used. As the accounting standard does not suggest a specific methodology for calculating these components, each company must develop its own model, which in turn generates the need for implementation by preparers of theoretical approaches fulfilling the requirement. Furthermore, as the constitution (or reversal) of technical reserves generates accounting expenses (or revenue), it is interesting to know the causes of variations in the liability components to explain their influence on the accounting result and thus adequately prepare the notes to financial statements.

In this article, LIC is evaluated in the context of non-life insurance in order to answer the following question: What would be the key elements related to LIC and RA to be disclosed in notes to financial statements?

To answer this question, it is necessary to measure the LIC and its respective RA based on information on paid and incurred claims (Quarg & Mack, 2004) by using stochastic modeling (i.e. bootstrap) to estimate the probability distribution of the liability and its moments (Verrall & Liu, 2010). Value at risk was used as a metrics to measure the confidence level and estimates calculated at two different moments: (i) initial measurement at the end of the 2020 financial year (12/31/2020) and (ii) subsequent measurement at the end of the 2021 financial year (i.e. December 31, 2021). This allows for analysis (and decomposition) of the variation in results and the proposition of key elements for disclosure in notes to financial statements.

2 Theoretical Background

2.1 Financial Disclosure in the Insurance Industry

The insurance industry is a sector in which financial statements are filled with subjectivity regarding criteria, assumptions and judgments which directly affect the estimates in the balance sheet and income statement. They are present from the primary source of revenue, the so-called premiums, whose pricing process consists in using statistical modeling (e.g., convolutions, econometric models) to estimate probability distributions for the frequency and severity of claims.

In an insurance contract, the insurer agrees to indemnify (i.e. offer coverage) the indemnitee in the event of an occurrence (i.e. claim) as provided for in the contract. In return, the indemnitee pays a premium before or during coverage. When the contract is issued, payments for possible claims are uncertain in their value or settlement period. Payment of the premium, period of coverage and payments due to materialization of claims may occur at different times, sometimes many years apart (Palmborg et al., 2020).

Curvello et al. (2018) found evidence of the use of discretion by managers with the aim of reducing or postponing the payment of taxes on profits, thus appearing to have better state of solvency in the eyes of regulatory agencies and the market. This avoided that regulators made more detailed interventions and resulted in information asymmetry. For the author, companies with better performance tend to overestimate the claims reserves by reducing their results to more common levels, which may be related to the practice of income smoothing.

Thus, the regulators' efforts to improve the quality of accounting information have had a positive effect on the preparation of notes to financial statements (Costa, 2019). However, even with the growing awareness of the

insurance companies' governance and risk management, information on risk assessment and solvency is disclosed in a limited way due to the current regulatory requirements. In fact, a few entities provide detailed information on risk appetite, risk tolerance limits and explanations about technical reserves (Macohon et al., 2017).

An interesting example of these limitations was found by Cazzari & Moreira (2022), who investigated whether it was possible to measure the uncertainty of claims reserves based on claims development data (a mandatory disclosure) appearing in the financial statements of Brazilian insurers. They found that there was no uniformity in the disclosure criteria, meaning that any comparison between insurers would be affected. Another intriguing aspect cited by Cazzari & Moreira (2022) is the gap in the literature on disclosure associated with insurance entities, as most existing studies do not relate the level of information disclosure to the user's ability in using accounting data to measure aspects related to risk and uncertainty associated with liabilities of insurers.

Therefore, despite the requirement for greater credibility in financial disclosures, which is reinforced by regulators, accounting standards bodies, external auditors and other intermediaries in the capital market (Healy & Palepu, 2001), there is a need for greater quality in disclosures related to risk in the insurance industry. This is an important topic for enhancing the transparency in the market and providing the users of financial statements with more relevant information (Höring & Gründl, 2011; Malafronte et al., 2018). Nevertheless, the question remains: Will the adoption of IFRS17 in the insurance industry solve these problems?

2.2 The Expected Impacts of IFRS17 Adoption

The IFRS standards are aimed to provide transparency, accountability and efficiency to financial markets around the world by (i) improving the quality of financial reporting and (ii) improving the comparability of financial statements between countries. These objectives align with the international accounting literature, which provides evidence that improving the quality of accounting information has economic consequences, such as reduced capital costs, greater capital allocation efficiency and international capital mobility (Ball, 2006; Florou & Pope, 2012; Gordon et al., 2012).

Soderstrom & Sun (2007) conducted a literature review on the consequences of changes in accounting standards and found that the voluntary adoption of better accounting principles, including IFRS, has a positive impact. Another aspect influenced by the adoption of IFRS is the improvement in the market analysts' ability in making better forecasts (Lourenço & Castelo Branco, 2015; George et al., 2016; Houqe, 2018). One explanation for such improvement in forecasts is that managers provide

more guidance on earnings after the adoption of IFRS, that is, a reduction of information asymmetry between analysts and managers favours the work of the former.

In the insurance industry, due to the idiosyncrasies of business dynamics (e.g., the time lag between recognizing revenue and expenses from the same group of insurance contracts), accounting has proven to be a challenging topic as it seems a “black box” for standardization bodies, preparers and users (Foroughi et al., 2012).

The adoption of IFRS in the insurance industry began with IFRS4, issued in 2004 by the IASB as a temporary standard, being the first of the two phases of a project aimed to develop a more comprehensive standard for insurance contracts (IASB, 2017). IFRS4 brought requirements for the accounting of insurance contracts, such as carrying out a liability adequacy test (LAT) to assess the level of sufficiency/insufficiency of technical reserves, separating accounting records of direct insurance operations (liabilities) from respective reinsurance operations (assets) and performing impairment tests for (re-)insurance assets.

However, IFRS4 allowed the co-existence and/or combination of these requirements with accounting practices already existing in each country, which resulted in a series of anomalies. First, the variety of accounting policies tied to local jurisdictions led to a comparability problem between insurers at an international level. This occurred because when a holding company presented its consolidated financial statements, it was not required that possible different accounting policies between subsidiaries were common (Dufasne, 2020; Foroughi et al., 2012).

All these anomalies caused the users of insurers' financial reports to experience weaknesses in the transparency of information due to a lack of uniformity in the accounting procedures established by the accounting standard to deal with some issues, such as differences in the treatment of assets and liabilities between historical and fair values (Dahiyat & Owais, 2021; Dufasne, 2020). In order to deal with these problems and develop a unified general framework to cover insurance contracts, the IASB issued the IFRS17 in 2017, which is the second phase of the project for the development of a more comprehensive standard for insurance contracts by seeking to achieve greater transparency in the quality of the financial reports.

In the European insurance market, there is evidence of positive reactions from investors to the adoption of IFRS17, with expectations that the new accounting standard would actually bring more transparency and comparability between insurance companies (Mignolet et al., 2017). However, there are also concerns about whether the benefits (i.e. increased transparency and comparability) exceed the costs (i.e. increased audit fees and/or managers' discretion in preparing reports), in addition to reporting divergent reactions among insurance

company investors who operate in different segments (i.e., life and non-life insurance). In the non-life sector, investors are more likely to adopt the IFRS due to their role in bringing more transparency to a market where the level of information asymmetry is high (Abdallah et al., 2018).

Dahiyat & Owais (2021) interviewed 120 insurance professionals in Jordan and found that the application of IFRS17 allows the possibility of comparison between different insurance companies through the calculation of revenues to be appropriated at the beginning of insurance contracts (i.e. contractual service margin). Furthermore, the recognition of insurance revenues and expenses will allow comparison between insurance and non-insurance activities.

Certain aspects tend to be significant challenges as they can impact the operating model of insurers who aim to successfully implement the IFRS17. Short-term businesses (mainly in casualty insurance) have a maximum contract coverage period of one year instead of following the general model (Building Block Approach, BBA), whereas the Premium Allocation Approach (PAA) is comparable to the current accounting under IFRS4 based on earned premiums. In the non-life insurance business, the biggest challenges to IFRS17 arise from long-term contracts and lines of business in which reserves for claims with long-term settlement are required (Winkler & Kansal, 2020; Zhao et al., 2021).

IFRS17 requires a high level of information granularity in which portfolios must be divided into cohorts (year of policy inception or year of loss occurrence) according to type of business and expected profitability. This data granularity must be maintained for many years throughout the risk life cycle, that is, from the beginning of coverage to the extinction of obligations to the insured (Yousuf et al., 2020). Therefore, the priority for many insurers has been to enable their IT systems to provide the necessary data (Axiaq, 2020; Dufasne, 2020).

The new accounting standard has disclosure requirements aimed at explaining the total value of financial income or expenses from insurance operations in the period. Therefore, it is necessary to highlight significant judgments used in the application of the accounting standard, including nature and extent of risks arising from insurance contracts, aspects of risk concentration, sensitivity analysis of how the entity's net equity would be altered by changes in insurance risk variables and market risk, maximum exposure to credit risk, and description of how liquidity risk is managed.

2.3 Risk Adjustment Modeling in the Insurance Industry

Risk adjustment modeling has been a topic present in the prudential regulation of insurance companies since the entry into force of the Solvency II in Europe. In the

Solvency II regime, the risk adjustment is called risk margin, but in essence, it has the same purpose as that required of IFRS17, namely: to be a value added to the entity's liabilities in order to face adverse fluctuations in the expected value of the obligations reflected in the technical provisions (Dreksler et al., 2015).

The Solvency II agreement already expressly stipulates the maximum probability of ruin regarded as permissible: 0.5% (i.e. the entity must maintain sufficient solvency capital to cover 99.5% of the possible scenarios). It is noteworthy that the Solvency II agreement (a European prudential regulation agreement) can be seen as a regulatory response to expand the scope of risk management in insurance entities after the subprime crisis in 2008. It is important to remember that, although the subprime crisis mainly affected the banking sector, it originated from the insurance sector (through credit default swaps). Although AIG was the largest insurance company in the world at the time, the company needed to be saved by the American Treasury. Therefore, by defining that 99.5% of the scenarios must be covered, entities are required to have a margin to cover the risk of insolvency (Harrington, 2009; Eufasio Junior & Carvalho, 2022).

Furthermore, unlike the IFRS17, the Solvency II agreement already defines the approach for calculating risk adjustment based on cost of capital. In the context of IFRS17, risk adjustment is defined as compensation due to uncertainty about the value and settlement period of its commitments with policyholders (IASB, 2017, p. 884). It is important to highlight that, regardless of the technique chosen, entities must prepare a disclosure statement containing the confidence level as a result of the risk adjustment estimate (IASB, 2017, p. 906).

Actuarial entities have published guidance to support insurers in selecting an approach to this topic. The International Actuarial Association (IAA) introduced important techniques and considerations regarding quantitative and modeling aspects in order to measure the risk adjustment for financial reporting purposes. The main techniques presented by the IAA are also exemplified by England et al. (2019), of which we can highlight three ones standing out among insurance companies, who are supposed to report their accounting information in accordance with IFRS17 as follows: (i) cost of capital and techniques based on confidence intervals, (ii) value at risk (VaR), and (iii) expected shortfall (ES).

These methods are relevant as they will be instruments for producing inputs to highlight risk aspects related to the insurers' liabilities in the notes to financial statements.

3 Methodology

Although this article involves quantitative aspects, it is important to emphasise that the aim was to cover the

literature gap in the disclosure process, as highlighted by Cazzari & Moreira (2022), in addition to presenting numbers. Therefore, this is qualitative study focused on accounting disclosure. Data description and quantitative framework used to measure the LIC are briefly presented below. For readers more interested in obtaining more details about AR measurement, we recommend the studies by Carvalho & Carvalho (2019), who provide a stochastic measurement of the expected value and standard deviation of IBNR reserve by using bootstrap techniques, and also by Signorelli et al. (2022), who developed a method to estimate the risk adjustment required by IFRS 17 by using the collective risk theory and Monte Carlo simulations. Finally, Artzner et al. (1999) pointed out problems in the structure of VaR and proposed the use of ES.

The database has real information on reported claims and premiums recorded in the statistics, as required by SUSEP, from an insurer eligible for PAA (i.e., one-year coverage) and Motor Hull and Third Party Liability (MTPL) insurance portfolios (8-year coverage). We calculate the FCC for each portfolio by using bootstrapping (Verrall & Liu, 2010) to estimate the empirical probability distributions of this cash flow and their respective statistical moments. Thus, it is possible to know the expected value of the fulfilment cash flow and value at risk through which RA is obtained.

With the nominal value of FCC in hand, the expected cash flow for payment of claims (Shapland, 2019) was calculated by allocating values to the expected vertices of fulfillment of obligations. The development pattern was calculated by using the chain-ladder method (Quarg & Mack, 2004) and then applied by using information on incurred and paid claims. Finally, cash flows were discounted to the present value according to the term structure of interest rates published by SUSEP (Franklin et al., 2012).

The procedures were carried out in two stages. First, claims reported until the end of the 2020 financial year were modeled (base scenario, initial measurement on December 31, 2020). Next, the same procedure was performed by adding one year of observed data in order to obtain estimates for the end of the 2021 financial year (replication of the base scenario, subsequent measurement on December 31, 2021) in order to evaluate its predictive quality. With the joint probability distribution, VaR and ES were calculated for a given confidence level (percentile) and risk adjustment, then being disclosed in a note to the financial statements, as required by IFRS17.

The results obtained in the initial and subsequent measurements were compared and discussed to determine the causes of variation in the compliance and risk adjustment cash flow between assessment dates before proposing key elements for the explanatory notes.

As a starting point for proposing suggestions for explanatory notes, we identified the item 93 (Disclosure) in the CPC50

(2021), which addresses disclosure requirements related to the classification set by Hendriksen & Van Breda (1999). Additionally, we propose that this topic (Table 1) should be further investigated by suggesting three other disclosures complementing those required by CPC50.

Table 1. Classification of disclosure items for Liability for Incurred Claims

Item disclosure	Disclosure description	Kind of disclosure	Form of disclosure	Reference
1	Reconciliation of the opening balance of liabilities for incurred claims, containing cash flow estimates, risk adjustment, claims incurred, claims paid and financial income/expenses.	Quantitative	Tables with demonstratives and supplementary information	Required by CPC50
2	Description of the methods, assumptions and significant judgments used in measuring insurance contracts.	Qualitative	Text explanatory Note	Required by CPC50
3	Description of the technique used for estimation and level of confidence adopted for Risk Adjustment.	Qualitative	Text explanatory Note	Required by CPC50
4	Statement of Risk Adjustment values for other confidence levels, in addition to that selected by the company.	Quantitative	Tables with demonstratives and supplementary information	Authors' suggestion
5	Statement of values at risk, if the threshold established by the average value of the liability plus risk adjustment is exceeded (ES).	Quantitative	Tables with demonstratives and supplementary information	Authors' suggestion
6	Development of claims, comparing calculated estimates and observed results.	Quantitative	Tables with demonstratives and supplementary information	Required by CPC50
7	Statement of the result of the development of claims – Claims Development Result (CDR), as per England et al. (2019).	Quantitative	Tables with demonstratives and supplementary information	Authors' suggestion

Source: own elaboration.

The disclosure items 1, 2, 3 and 6 in Table 1 are already explicitly required by CPC50, whereas items 4, 5 and 7 are specific suggestions aiming to complement the requirements of CPC50, in addition to detailing the entity's real situation in a more informative way.

The statement of risk adjustment values for other confidence levels, in addition to the one selected by the company (item 4), aims to inform the reader of the financial statement about the sensitivity of the expected results depending on the other confidence levels, in addition to the level of trust defined by the company. Thus, it becomes clear which would be the amount of insufficient capital the level chosen by the company might (or might not) provide. This disclosure may complement the information required by item 3.

One can highlight item 5 (statement of values at risk, if the threshold established by the average liability value added to the risk adjustment is exceeded), which aims to inform the expected value of unexpected loss if the incurred claims exceed the liability booked by the company. Thus, a risk measure related to the entity's exposure would be provided in the event of the materialization of extreme loss scenarios, whose financial resources are associated with the probability of ruin (Carvalho & Oliveira, 2024).

Finally, item 7 refers to the claims development result statement (CDR), as described by England et al. (2019), whereas item 6 refers to complementing the claims development by informing whether the movements in LIC generated revenue or expense in the income statement for the period.

4 Results

¹For comparison purposes, in the Solvency II regime capital requirements are determined based on a prescribed and pre-defined confidence level corresponding to the VaR of 99.5%.

²The Total column is the direct sum for FCC and DF, but not for AR due to the correlation benefit between portfolios, which is calculated as Monti et al. (2023).

Based on the average value of the cash flow estimated in nominal FCC and on the 95% confidence level for risk adjustment, it is possible to calculate the LIC. The choice of the 95% confidence level¹ to be used is a risk tolerance criterion which, in practice, must be linked to the company's risk management policy. The results of the initial measurement are presented in Table 2.

Table 2. Initial measurement results

Components of the Liability for Incurred Claims		Motor Hull	MTPL	Total ²
		(1)	(2)	(3)=(1)+(2)
A	Fulfillment Cash Flow (FCC)	43.859	54.042	97.902
B	Financial Discount (FD)	1.064	975	2.039
C	Risk Adjustment (RA)	7.333	6.879	10.055
D=A+B+C	Liability for Incurred Claims (LIC)	52.256	61.897	109.996

Note: values in thousands of Brazilian Reais
Source: own elaboration.

The replication of the procedure allowed us to carry out the subsequent measurement by adding one year of observed data for calculation of the PSI on December 31, 2021, as shown in Table 3.

Table 3. Subsequent measurement results

Components of the Liability for Incurred Claims		Motor Hull	MTPL	Total
		(1)	(2)	(3)=(1)+(2)
A	Fulfillment Cash Flow (FCC)	66.639	71.394	138.033
B	Financial Discount (FD)	(3.968)	(6.600)	(10.568)
C	Risk Adjustment (RA)	4.992	10.050	11.221
D=A+B+C	Liability for Incurred Claims (LIC)	67.663	74.844	138.686

Note: values in thousands of Brazilian Reais
Source: own elaboration.

With the results of the initial and subsequent measurements of the LIC and risk adjustment, we can now prepare key elements for the financial statements notes. From now on, we will refer to “key elements” as the set of information in the form of tables and/or auxiliary figures, including texts (explanatory note), so that the user of the accounting statement can understand the movement of balance sheet items. As described in Section 3, we define the following disclosures as the scope of this study:

1. CPC50 requirement: Reconciliation of opening balance of liabilities for incurred claims containing cash flow estimates, risk adjustment, claims incurred, claims paid and financial income/expenses.
2. CPC50 requirement: Description of the methods, assumptions and significant judgments used to measure insurance contracts.
3. CPC50 requirement: Description of the technique used for estimation and confidence level adopted for risk adjustment.
4. Author's suggestion: Statement of risk adjustment values for other confidence levels, in addition to the one selected by the company.
5. Author's suggestion: Statement of values at risk, if the threshold established by the average value of the liability plus risk adjustment is exceeded (ES).
6. CPC50 requirement: Development of claims by comparing calculated estimates and current observed development.
7. Author's suggestion: Statement of claims development result (CDR) according to England et al. (2019).

We begin by presenting the LIC reconciliation from the perspective of IFRS4, in which we have technical reserves for claims at the beginning of the year and their movements, as shown in Table 4. Next, as shown in Table 5, we have the same reconciliation presented from the point of view of IFRS17, highlighting the new components to be disclosed and the addition of the decomposition of movements between those referring to claims occurring in the financial year and those referring to claims occurring in previous years, but with an impact on the year-end on December 31, 2021.

Table 4. Reconciliation of Liability for Incurred Claims, in accordance with IFRS4

Reconciliation of Claims Liabilities	Motor Hull	MTPL	Total
	(1)	(2)	(3)=(1)+(2)
A Claims Liabilities (Case Reserves + IBNR) as of 12/31/2020	43.859	54.042	97.902
B (+) Claims reported in 2021	244.907	76.164	321.070
C (+) Claims paid in 2021	(227.349)	(68.771)	(296.120)
D=B+C (+) Case Reserves change	17.558	7.392	24.951
E (+) Change in IBNR reserve	5.222	9.959	15.181
F=D+E Change in Claims Liabilities	22.781	17.185	39.966
G=A+F Claims Liabilities (Case Reserves + IBNR) as of 12/31/2021	66.640	71.393	138.033

Note: values in thousands of Brazilian Reais
Source: own elaboration.

Table 5. Reconciliation of Liability for Incurred Claims, in accordance with IFRS17

Reconciliation of Liability for Incurred Claims	Motor Hull	MTPL	Total
	(1)	(2)	(3)=(1)+(2)
A Liabilities for Incurred Claims as of 12/31/2020	52.256	61.897	109.996
B Fulfillment Cash Flow on 12/31/2020	43.859	54.042	97.902
C=D+E (+) Claims reported in 2021	244.907	76.164	321.070
D Occurred in 2021	236.427	65.225	301.652
E Occurring in years prior to 2021	8.480	10.939	19.419
F=G+H (+) Claims paid in 2021	(227.349)	(68.771)	(296.120)
G Occurred in 2021	(184.107)	(47.122)	(231.229)
H Occurred in years prior to 2021	(43.242)	(21.650)	(64.891)
I=C+F (+) Change in claims to be settled	17.558	7.392	24.951
J=K+L (+) Change in IBNR reserve	5.222	9.959	15.181
K Occurred in 2021	5.588	14.415	20.002
L Occurring in years prior to 2021	(365)	(4.456)	(4.822)
M=I+J Occurring in years prior to 2021	22.781	17.351	40.132
N=B+M (+) Claims paid in 2021	66.640	71.393	138.033
O=P+Q Occurred in 2021	(5.032)	(7.575)	(12.607)
P Occurred in years prior to 2021	(4.857)	(6.487)	(11.344)
Q (+) Change in claims to be settled	(174)	(1.088)	(1.262)
R=S+T+U (+) Change in IBNR reserve	(2.341)	3.170	1.166
S Occurred in 2021	3.158	4.972	8.131
T Occurring in years prior to 2021	(5.500)	(1.802)	(7.302)
U Occurring in years prior to 2021			337
V=M+O+R (+) Claims paid in 2021	15.408	12.946	28.691
X=A+V Occurred in 2021	67.663	74.844	138.686

Note. The reconciliation of incurred claims liabilities demonstrates the decomposition of liability movements and the reconciliation between their initial and final position. It is worth highlighting the high amount of claims reported and paid regarding the cohort of claims that occurred in 2021, which caused changes in several lines such as an increase in claims to be settled (I), an increase in the estimate of IBNR claims (J), an increase in the risk adjustment, partially offset by reversal of previous years (R). Additionally, there is an increase in revenue from financial discount due to the higher interest rates announced by SUSEP for 12/31/2021. Values in thousands of Brazilian Reais
Source: own elaboration.

The disclosure proposed in Table 6 meets the CPC50 requirement for presenting the LIC reconciliation, in which the various components of the liability and its changes are decomposed in order to show how the liability position was changed, in addition to informing the cohort of claims involved. For the sake of space and presentation, we summarized the cohorts of claims occurring in the same year and those occurring in previous years of the financial year under assessment. However, the disclosure could be opened in as many lines as needed to explain the variations. Thus, when comparing Table 4 to Table 5, it becomes evident that IFRS17 requires a greater level of detail for this disclosure.

Next, as shown in Table 6, we present the

proposal for the explanatory note of methods, assumptions and judgments as required by CPC50.

Table 6. Explanatory note on methods, assumptions and judgments used in measuring liabilities for incurred claims

Methods:

To calculate the fulfillment cash flow, the Chain-Ladder method was used applied to data on paid and incurred claims to obtain the estimate of unknown claims, IBNR. The bootstrapping technique was used to simulate IBNR values which, added to the outstanding claims (Case Reserves) on the assessment base date, provides us with 10,000 simulations of expected fulfillment cash flows, thus generating an empirical probability distribution of these cash flows.

The calculated cash flow was distributed over quarterly periods in which claims were expected to be settled and then discounted to present value using the Interest Rate Term Structure (ETTJ) for IPCA coupon published by SUSEP on the assessment date. Applying the non-parametric Value at Risk (VaR), which defines the value at risk for a given confidence level (percentile) of the calculated empirical distribution, the Risk Adjustment was calculated representing the difference between the VaR and the average value of fulfillment cash flows. Additionally, the Expected Shortfall (ES) was calculated, representing the expected loss if the expected value of the liability plus risk adjustment is exceeded.

Assumptions:

■ Correlation structure between class of business: the assumption of no correlation between business classes was assumed, therefore, the Aggregate Risk Adjustment has a correlation benefit effect, which is why the Aggregate Risk Adjustment is not the direct sum view of individual Risk Adjustments.

■ Payment pattern: the claims payment pattern assumption, used to estimate the settlement period for actuarial obligations, was obtained by applying the Chain-Ladder method.

■ Interest rate: to discount compliance cash flows, the Interest Rate Term Structure (ETTJ) was used for IPCA coupon published by SUSEP on the assessment date.

Judgments

■ Data grouping: to calculate fulfillment cash flows, data was grouped by class of business, with administrative and judicial claims considered together.

■ Definition of cohorts: to calculate fulfillment cash flows, data was grouped into quarterly cohorts of occurred claims.

■ Risk Adjustment confidence level: the 95% Risk Adjustment confidence level was chosen as it significantly covers exposure to the risk of insufficient technical reserves, leaving a value at residual risk if the limit is exceeded.

Source: own elaboration.

addition to directly and succinctly presenting the main decisions made on methods, assumptions and judgments regarding the LIC measurement. This disclosure is useful to readers of the financial statement, mainly technical ones, who can assess whether the methods, assumptions and judgments adopted by the entity are appropriate to the types of insurance contracts it sells. It should be noted that the decision on the confidence level of risk adjustment is a judgment made by the company's management. The disclosure of its basis, mainly its connection with the entity's risk management policy, is fundamental for the reader of financial statements.

Table 7. Explanatory Note on the technique used for estimation and level of confidence adopted for Risk Adjustment

Technique used to calculate the Risk Adjustment:

To calculate risk adjustment, a stochastic simulation approach (bootstrapping) was adopted to obtain the probability distribution of the fulfillment cash flow of incurred claims liabilities. From the probability distribution, the Value at Risk (VaR) was used to obtain the risk adjustment confidence level. VaR is a risk indicator that considers the maximum possible loss for a given confidence level.

As VaR has the limitation of not informing the expected loss beyond its pre-established threshold, the Expected Shortfall (ES) was also calculated with an indicator of the residual value at risk.

Risk Adjustment Confidence Level:

The risk adjustment of R\$ 11.221 million, for the period ended at 12/31/202, corresponds to the 95% confidence level of the distribution of possible results of the fulfillment cash flows of the liability for incurred claims.

Source: own elaboration.

Table 7 shows the disclosure requirements related to risk adjustment, despite being incomplete as it does not inform the potential sensitivity of the results if other choices are made by managers. Therefore, it is pertinent to provide information to the reader of the financial statement about risk adjustment values for other confidence levels in association with VaR and ES. After all, this disclosure allows clarification on the amounts to which the entity is exposed if its claims reserves estimates are exceeded.

Table 8 summarizes this information, which meets the

The proposed note meets the requirements of CPC50, in

Table 8. Supplementary table to the explanatory note on Risk Adjustment

Confidence level	Risk Adjustment		Value at Risk		Expected Shortfall	
	31/12/2020	31/12/2021	31/12/2020	31/12/2021	31/12/2020	31/12/2021
50,0%	165	521	97.823	137.480	58.435	79.013
55,0%	683	376	98.838	138.549	54.253	73.705
60,0%	1.393	1.162	99.852	139.665	46.110	63.394
65,0%	2.099	1.939	100.859	140.731	41.762	58.617
70,0%	2.851	2.894	101.923	142.014	37.958	49.102
75,0%	3.704	3.934	103.131	143.402	30.895	44.293
80,0%	4.708	5.057	104.554	144.910	27.316	36.713
85,0%	5.913	6.471	106.260	146.800	20.875	25.991
90,0%	7.470	8.266	108.464	149.182	13.802	17.589
95,0%	10.055	11.221	112.114	153.075	7.066	8.882
99,0%	15.863	17.562	120.332	161.293	1.558	1.859
99,5%	18.351	20.098	123.845	164.617	776	1.078

Note. The table shows the Risk Adjustment, VaR and ES values for different confidence levels, highlighting the level selected by the entity. From these results, as of 12/31/2021, it is estimated that 95% of the possible cash flow realization scenarios are covered by risk adjustment. The remaining 5% represents the probability of insufficient resources to pay actuarial obligations related to incurred claims and, according to the ES calculated on 12/31/2021, its expected value is estimated at R\$ 8.882 million (6.41% of the liability for claims incurred as of 12/31/2021). Values in thousands of Brazilian Reais

Source: own elaboration.

author's suggestions 4 and 5 for quantitative disclosure.

As shown in Table 8, we have different scenarios for risk adjustment, VaR and ES at different confidence levels in addition to the one selected for LIC calculation (highlighted). This disclosure makes it clear to the reader of the financial statement that the 95% confidence level was chosen, although there are other confidence levels available to choose for increasing or reducing the entity's exposure to the risk of insufficient technical reserves. Table 9 presents the development table (run-off) of

reported claims and the value of claims paid before the assessment date (December 31, 2021). The balances of claims pending of payment (case reserves) and IBNR are also shown. The initial estimate made in the year in which the claim occurred, added to the IBNR estimate, is compared to the amount actually paid in order to demonstrate any deviation between past estimates in light of the most recent information available (consistency test). The consistency test was carried out for nominal liability estimate as well as for estimates discounted to present value and adjusted for risk.

Table 9. Claims development

Incurred claims development triangle	2014 and previous years ³	Years of Occurrence							Total
		2015	2016	2017	2018	2019	2020	2021	
Accumulated incurred claims									
At the end of the year	190.930	192.550	189.851	235.706	184.159	219.338	221.886	301.652	301.652
1 year later	213.535	202.663	199.482	245.975	189.669	227.335	232.752		232.752
2 years later	221.123	203.886	201.552	246.431	190.767	229.990			229.990
3 years later	225.370	205.342	202.381	247.616	191.584				191.584
4 years later	230.199	206.517	202.983	248.194					248.194
5 years later	235.299	207.227	203.591						203.591
6 years later	239.648	207.911							207.911
7 years later	252.285								252.285
(A) Claims incurred until 12/31/2021 (main diagonal of the triangle)	252.285	207.911	203.591	248.194	191.584	229.990	232.752	301.652	1.867.959
Paid claims development triangle									
Accumulated paid claims									
At the end of the year	153.190	156.177	156.407	192.235	144.804	172.875	175.090	231.229	231.229
1 year later	196.705	199.692	197.454	242.622	187.769	225.199	230.526		230.526
2 years later	197.615	200.602	198.788	244.246	189.040	227.661			227.661
3 years later	199.236	202.224	199.496	244.896	189.699				189.699
4 years later	200.523	203.510	200.089	245.519					245.519
5 years later	201.247	204.234	200.862						200.862
6 years later	233.198	204.654							204.654
7 years later	237.716								237.716
(B) Paid claims accumulated up to 12/31/2021 (main diagonal of the triangle)	237.716	204.654	200.862	245.519	189.699	227.661	230.526	231.229	1.767.866
(C=AB) Claims pending payment on 12/31/2021	14.569	3.257	2.729	2.675	1.886	2.329	2.225	70.423	100.093
(D) Estimated IBNR claims on 12/31/2021	381	709	1.160	2.063	2.595	4.690	6.347	19.996	37.941
(E=C+D) Nominal Incurred Claims Liabilities on 12/31/2021	14.950	3.966	3.889	4.738	4.480	7.019	8.573	90.419	138.034
Nominal Estimate Consistency Test									
(F) - Initial Estimate (first line of the triangle)	190.930	192.550	189.851	235.706	184.159	219.338	221.886	301.652	1.736.073
(G=F+D) Initial Estimate + IBNR Claims estimated on 12/31/2021	191.311	193.259	191.011	237.769	186.754	224.028	228.234	321.648	1.774.014
(H=GB) Deviation from the Initial Estimate in relation to payments	(46.405)	(11.395)	(9.851)	(7.750)	(2.945)	(3.633)	(2.293)	90.419	6.148
(I=G/B-1) Deviation from Initial Estimate (%)	-19,5%	-5,6%	-4,9%	-3,2%	-1,6%	-1,6%	-1,0%	39,1%	0,3%
Consistency Test of the Estimate adjusted to present value and risk									
(J) Risk Adjustment	109	203	318	584	746	1.344	1.851	6.066	11.221
(K) Financial Discount Effect	(1.318)	(354)	(347)	(391)	(380)	(601)	(722)	(6.454)	(10.568)
(L=G+J+K) - Initial Estimate + IBNR Claims + Risk Adjustment + Financial Discount on 12/31/2021	190.102	193.108	190.982	237.962	187.119	224.772	229.363	321.259	1.774.667
(M=LB) - Deviation from the Initial Estimate in relation to payments	(47.614)	(11.547)	(9.880)	(7.557)	(2.580)	(2.889)	(1.164)	90.031	6.802
(N=L/B-1) Deviation from Initial Estimate (%)	-20,0%	-5,6%	-4,9%	-3,1%	-1,4%	-1,3%	-0,5%	38,9%	0,4%

Note. A The claims development table shows the development (run-off) of reported claims and the value of claims paid up to the assessment base date (12/31/2021). To assess the consistency of the initial estimates in relation to the most recent data available and events already materialized, the initial estimate made in the year in which the claim occurred, added to the IBNR estimate, is compared with the amount actually paid. The results show that, in the period analyzed, the deviation between the initial estimate and the amounts actually paid is R\$6.817 million (0.4%), representing a proportionally low and immaterial deviation compared to the value of the liability. It is worth noting that the deviation in the period "2014 and previous years" is the result of a limitation in the data, as the complete history of claims that occurred before 2014 is not available. Parsimony is recommended in evaluating the most recent year, 2021, as the claims are still in the early stages of development.
Values in thousands of Brazilian Reals
Source: own elaboration.

³ We consider it appropriate to aggregate the year 2014 with the development of claims from previous years in order to eliminate the isolated effect of claims prior to 2014, the complete development of which is not possible to track in the database, as there is data only from Jan/2014. We understand that this procedure does not prejudice the understanding of the elements necessary to prepare the explanatory note for the development of claims.

As can be seen in Table 9, we meet the CPC50 requirement to disclose the development of claims and compare the calculated estimates to actually observed results. In addition to this disclosure, we have the result of the development of claims, as shown in Table 10 and described by England et al. (2019).

Table 10. Result of claims development

Components of the claims development result	Years of occurrence									Total	
	< 2014	2014	2015	2016	2017	2018	2019	2020	2021		
Motor Hull	(A) - Fulfillment Cash Flow on 12/31/2020	1.348	280	79	52	1.402	844	1.556	38.299		43.859
	(B) - Payments in 2021	457	52	291	232	326	172	989	40.723	184.107	227.349
	(C) - Fulfillment Cash Flow on 12/31/2021	1.372	562	371	378	1.427	1.033	1.470	2.129	57.897	66.639
	(D=ABC) - Result of claims development	(481)	(333)	(583)	(558)	(351)	(362)	(902)	(4.553)	(242.004)	(250.128)
MTPL	(A) - Fulfillment Cash Flow on 12/31/2020	11.462	2.902	2.937	3.590	3.367	3.653	5.871	20.260		54.042
	(B) - Payments in 2021	3.503	505	129	541	297	487	1.474	14.714	47.122	68.771
	(C) - Fulfillment Cash Flow on 12/31/2021	10.058	2.958	3.595	3.511	3.311	3.447	5.549	6.444	32.522	71.395
	(D=ABC) - Result of claims development	(2.099)	(562)	(787)	(462)	(241)	(281)	(1.152)	(897)	(79.644)	(86.124)
Total	(A) - Fulfillment Cash Flow on 12/31/2020	12.810	3.182	3.016	3.642	4.769	4.496	7.428	58.559		97.902
	(B) - Payments in 2021	3.960	557	420	773	623	659	2.462	55.437	231.229	296.120
	(C) - Fulfillment Cash Flow on 12/31/2021	11.430	3.520	3.966	3.889	4.738	4.480	7.019	8.573	90.419	138.034
	(D=ABC) - Result of claims development	(2.580)	(895)	(1.370)	(1.020)	(592)	(643)	(2.054)	(5.450)	(321.648)	(336.251)

Note. The result of the development of claims shows how the liability for claims incurred affected the entity's accounting result in the 2021 financial year. During 2021, the entity's accounting result was impacted by R\$336.251 million (expense) due to the relevant increase in reported claims (according to the reconciliation of liabilities for claims incurred) relating to claims occurring in the year 2021 itself. This fact had a direct impact on the company's cash flow, entity that paid 296.120 million in claims during the year, with 231.229 million relating to the cohort of occurrence in 2021.

Values in thousands of Brazilian Reais

Source: own elaboration.

We demonstrated in Table 10 how the liability for incurred claims affected the result for the period. This disclosure is important because it informs how the entity reacts to possible increases in its claims rate during the year. Therefore, if more claims are reported, maintaining constant levels of premium collection, it is expected that there will be an increase in claims provisions reflecting this scenario.

5 Conclusions

IFRS17 came into force on January 1, 2023, bringing with it what must be the biggest structural change in the accounting standard for insurance contracts of all time. In this context, the insurance market is preparing for a new era regarding preparation and disclosure of financial information. In this article, we address some of the new features brought by the new accounting standard by proposing key elements for disclosing the LIC and risk adjustment in the notes to financial statements.

The initial and subsequent measurements allow comparing the results of the two assessment dates to obtain key elements to produce the disclosures required

by IFRS17. With this procedure, it is expected to contribute to filling the gap in the disclosure literature, as mentioned by Cazzari & Moreira (2022). In fact, most of the existing studies do not relate the level of information disclosure to the user's ability to measure aspects related to risk and uncertainty associated with liabilities of insurers. This is explained by the lack of uniformity in the criteria for disclosing risk aspects in the notes of financial statements issued by insurance entities. This advancement brought the following: we proposed additional disclosures aiming to provide additional information to users of the financial statements. Furthermore, the proposed suggestions have the potential to contribute to achieving one of the objectives of IFRS17: providing information on financial reports to improve the comparability between companies.

The present study is not immune to certain limitations as it was limited to LIC, meaning that estimates and disclosures relating to the liability for remaining coverage (LRC) were not included. As the modeled portfolio has risks with 1-year overage and is eligible for the simplified measurement model (PAA), elements of the remaining coverage liability (e.g. risk adjustment and contractual

service margin) were not the scope of the study.

The results may be useful to (i) regulators, who may require standardization of notes for users of accounting information in order to ensure comparability between entities; (ii) accounting and actuarial practitioners in the insurance sector, who can be inspired by the suggestions brought here to explain the observed variations which may have an effect on the entities' financial results, and; (iii) the academia, by contributing to the training of researchers specializing in accounting standards in the actuarial industry, in addition to decomposing the explanatory factors influencing the companies' profits.

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