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EUROPEAN INSURANCE
AND OCCUPATIONAL PENSIONS AUTHORITY

Failures and near misses in insurance

Overview of the causes and early identification

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Luxembourg: Publications Office of the European Union, 2018

Print ISBN 978-92-9473-040-4 doi:10.2854/45364 EI-04-18-521-EN-C
PDF ISBN 978-92-9473-041-1 doi:10.2854/029317 EI-04-18-521-EN-N

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Executive summary

The financial crisis put a substantial amount of insurance undertakings and groups under severe financial distress. Although the majority of troubled institutions were banks, several insurers were also affected. Among other reasons, this was attributable to inappropriate investment decisions by insurers which led to significant losses, the interconnectedness with banks or, in general, evidence of poor governance.

The present paper strives to provide a better understanding of the leading causes of insurers' failures and near misses, hence the term "(near) failure" in insurance. It is the first in a series of papers aimed at enhancing supervisory knowledge on the prevention and management of insurance failures, based on the information contained in the European Insurance and Occupational Pensions Authority (EIOPA) database, which comprises a sample of 180 affected insurance undertakings in 31 European countries¹, dating back from 1999 to 2016.

EIOPA commenced in 2014 to create a dynamic database of insurance failures and near misses. The objective was to gather relevant information from national supervisory authorities (NSAs) on relevant cases of insurance failures and near misses occurred in the European Economic Area (EEA)², by means of gathering valuable information on the causes and early identification of insurance failures or near misses, as well as gauging their impact and the supervisory actions taken.

The first part of the report is devoted to explaining the underlying theoretical framework and the construction process of the database. Next, EIOPA puts the focus on what is actually the core of the paper, which is dedicated to examining the primary causes of (near) failure in insurance, as well as assess-

ing the reported early identification signals.

There are several conclusions that can be inferred based on the first aggregate results and findings of the EIOPA database of insurance failures and near misses.

Firstly, the **sample data** is composed of distressed insurance undertakings, which are generally small and represent a small share of the market. Moreover, non-life insurers are predominant in the EIOPA database, likely mirroring the structure of the EU insurance market. The aggregate results show that whereas the majority of non-life undertakings in the database are certainly of small size and have a small market share; life undertakings appear to be more evenly distributed across sizes (based on total assets), and thus they are larger on average than their non-life counterparts.

Secondly, the financial crisis was the period which resulted in the largest amount of failures and near misses, particularly in the case of life and composite undertakings. Indeed, about 37% of EU life undertakings registered in the EIOPA database suffered impairment or failure alone in the two-year period of 2008-09. This may indicate a higher degree of correlation of life insurers with the business cycle, contrary to their non-life counterparts (only 15% of them were affected in the same period).

The two most common **general causes of failure and near miss** reported in the EIOPA database are linked to underlying internal risks of the insurer, namely:

- The risk that management or staff lack the necessary skills, experience or professional qualities; and
- The risk of inadequate or failed systems of corporate governance and overall control.

¹ The EU-28 Member States, plus Norway, Iceland and Liechtenstein.

² Where applicable throughout the report, EU also stands for EEA.

Concerning the **primary causes³ of failure and near miss** that relate to “core” insurance and financial risks (disregarding the aforementioned underlying internal risks), several points deserve to be mentioned:

i. In **failures**, the most frequently reported primary causes appear to be, in this order, the technical provisions evaluation risk, the investment/asset liability management (ALM) risk, and the fraud.

ii. In **near misses**, the most frequently reported primary causes are, in this order, the technical provisions evaluation risk, the market risk, and the investment/ALM risk.

Perhaps more importantly, a close assessment of the primary causes of failures and near misses yields substantially different results, depending on whether the insurer is a life or non-life insurer. The table below summarizes the empirical findings of this segmentation:

	Life	Non-life
<i>Top 5 primary causes of failures and near misses for EU life and non-life undertakings</i>		
1	Management & staff competence risk	Technical provisions - evaluation risk
2	Investment / Asset-liability management risk	Internal Governance & control risk
3	Market risk	Management & staff competence risk
4	Technical provisions - evaluation risk	Underwriting risk
5	Economic cycle / condition risk	Accounting risk

On **early identification** of failures and near misses in insurance, the most commonly reported early identification signal, by a significant margin, is the deteriorating capital strength and/

or low solvency margin of the undertaking. After that, evidence of poor management comes second. Third on the list are the high expenses and low profitability.

³ For details on the methodology, please refer to chapter 5.

1. Introduction

The background is a dark blue gradient. A white diagonal line runs from the top-left towards the bottom-right. On the right side, there is a stylized American flag with stars and stripes. In the upper-left quadrant, there is a faint, light-colored grid pattern.

To date, the EIOPA database of insurance failures and near misses constitutes the most comprehensive sample of insurance failures and near misses in the EU, containing 180 cases that date from 1999 to 2016, of 31 European countries.

The establishment of a dynamic database of insurance failures and near misses, first undertaken by EIOPA in 2014, supported several objectives.

First of all, the financial crisis that decimated the banking sector in 2008 also put a considerable amount of insurers under severe stress. The fact that the financial crisis was not exclusive to banking institutions is apparent not only from the collapse of American International Group (AIG), but also seems evident after looking at the information gathered by EIOPA in the database of insurance failures and near misses.

There are not many recent studies aimed at understanding the dynamics of failure of insurers.⁴ On this topic, a previous study known as the “Sharma Report” (European Commission, 2002) provided comprehensive information on the reasons for such failures, among others, by formulating a map of the risks faced by EU insurers, as well as evaluating how supervisors may respond to these risks. As regards the influential work of Plantin and Rochet (2007), it provided a sound theoretical economics background in the analysis of insurance failures. In 2011, the IAIS presented an overall perspective focused on the financial stability issues of insurance; this also reflected the increasing trend of insurance topics gaining more weight in the global stage as macroprudential authorities become more concerned about the potential contribution of insurers to systemic risk. The present report strives to fur-

ther dig in and understand the leading causes of (near) failure in insurance.

Additionally, the database can help enhance supervisory knowledge on the prevention and management of insurance failures and near misses by gathering valuable information on the causes of these events, their impact and the supervisory actions taken. Further to the rationale mentioned above, collecting this information also aims at enhancing EIOPA’s role in crisis prevention, as well as assisting the NSAs in identifying potential early warning signals that may help predict situations of distress sufficiently in advance. In terms of crisis management, the objective is to shed light and/or identify the appropriate supervisory powers, or a lack of them, which are needed to manage insurance failures in an orderly manner (e.g., the resolution powers, which are a very important aspect of EIOPA’s Opinion on Recovery and Resolution (2017)).

To sum up, the inputs provided by the NSAs are extremely valuable information regarding the causes of insurance failures and near misses. Issues that will be discussed in the following chapters relate to the leading causes of these events and their early identification, among others.

The report is structured as follows. The theoretical framework for the database and the underlying concepts of “failure” and “near miss” are explained in chapter 2. Chapter 3 provides a description of the construction and updating of the database, noting advantages and limitations. Chapter 4 provides an overview of the database and discusses stylised facts and statistics. Chapter 5 discusses the identified causes of failure and near miss. Finally, chapter 6 focuses on signalling early warning indicators.

⁴ Notable exceptions, dating more than a decade ago, are Bohn and Hall (1998), HIH Royal Commission (2003), Grace et al. (2003), among others.

2. Theoretical framework

The background is a dark blue gradient. A prominent white diagonal line runs from the top-left towards the bottom-right. In the upper-left quadrant, there is a faint, light blue grid pattern. On the right side, there is a stylized representation of a flag with horizontal stripes and several stars, rendered in a lighter blue color against the dark background.

2.1. General approach

The approach to dealing with failures of financial institutions has witnessed significant changes since the eruption of the financial crisis in 2008, both from the crisis prevention and the crisis management perspective. A changing perspective in the interpretation of the causes, early identification and corrective measures used in the context of (near) failures may create difficulties when trying to compare past failures with current ones, particularly with the advent of recovery and resolution frameworks in finance.⁵

EIOPA has developed its own conceptual approach, which is followed throughout this report. It should be stressed that there is not a conceptual approach which is universally agreed.

The aim of the present chapter is to explain the approach followed by EIOPA,

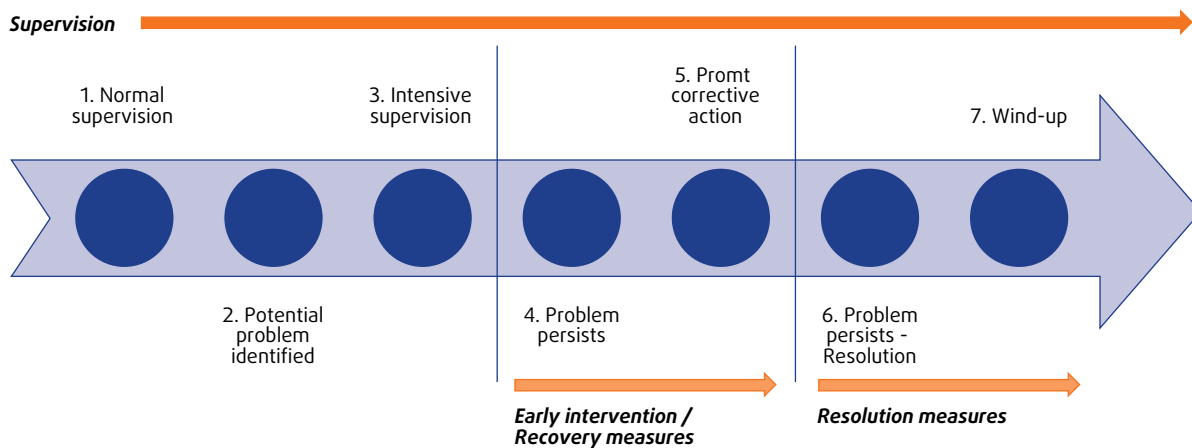
in order to achieve a common understanding and support the classification of the different cases of insurance failures and near misses.

This chapter focuses on the following two issues:

- The definition of the concepts of “failure” and “near miss”, which are essential to understanding the database construction process and the scope of the cases to be included.
- The need to have a common understanding of the framework for crisis prevention and management, as well as the recovery and resolution tools to be used.

In terms of crisis prevention and management, the fundamental approach followed by EIOPA can be understood as part of a continuum of supervisory activities. Illustration 1 below summarizes the whole process:

Illustration 1: The crisis flow



During business as usual, and in the normal stages of supervision, an initial problem can be identified, and insurers may seek to implement measures to overcome the problem. Supervisors would, in turn, normally intensify supervision and follow-up more closely on the developments of the insurer.

Should the initial problem become a real financial threat (e.g. being in breach of, or about to breach, solvency capital requirements) the insurer enters into a new stage, which is linked to an increased risk of failure, i.e. a near miss situation. In this context, the insurer should trigger certain recovery

⁵ In order to shed light on these issues, material from the FSB, the IAIS, the ESRB and the EBA is used, along with the Sharma Report.

actions to restore its financial position, while supervisors can intervene more intrusively. In general, there should be a reasonable prospect of recovery if effective and credible measures are implemented.⁶

Nevertheless, if the situation of distress is extremely severe and the measures taken do not yield the expected results, the insurer enters into resolution. Eventually, the insurer (or parts of it) is (are) wound-up and exits the market.

2.2. Near miss

In the context of this report, a near miss is defined as a case where an insurer faces specific financial difficulties (for example, when the solvency requirements are breached or likely to be breached) and the supervisor feels it necessary to intervene or to place the insurer under some form of special measures.⁷

The elements to identify a near miss are the following:

- The insurer is still in operation under its original form;
- Nevertheless it is subject to a severe financial distress to an extent that the supervisory authority deems it necessary to intervene; and
- In the absence of this intervention, the insurer will not survive in its current form and may eventually go into resolution or be wound-up.
- Underlying is the idea of success of the measures taken. As such, it should not involve public money or policyholders' loss.

In other words, a near miss presupposes that the supervisory intervention, either directly (e.g. replacing the management) or indirectly (e.g. request for an increase in capital), contributed in a clear way to overcome the insurer's

financial distress and bring it back to a "business-as-usual" environment. Shareholders generally keep their rights and could potentially oppose any of the measures undertaken.

On a day-to-day basis, insurers and NSAs might have to take different actions that require a certain degree of coordination. A "near miss" in the sense described in this report should be distinguished from these type of situations. Near misses only refer to cases where severe problems were detected or reported and supervisory measures were necessary to ensure the viability of the insurer.

Near misses actually constitute an area of particular interest for this report. In effect, their correct reporting and analysis would allow valuable lessons to be learned from successfully managed distress situations – prospective failure of an insurer and supervisory actions that permitted recovery.

2.3. Insurance failure

A failure, for the purposes of the present database, exists from the moment when an insurer is no longer viable or likely to be no longer viable⁸, and has no reasonable prospect of becoming so.⁹

The processes of winding-up/liquidation, which are usually initiated after insolvency, either on a balance sheet basis (the insurer's liabilities are greater than its assets) or cash-flow basis (the insurer is unable to pay its debts as

⁸ The FSB defines non-viability in the following terms:

The insurer is in breach of minimum capital, assets backing technical provisions, or other prudential requirements and there are not reasonable prospects of restoring compliance with these requirements;

There is a strong likelihood that policyholders or creditors will not receive payments as they fall due; and

Recovery measures have failed, or there is a strong likelihood that proposed measures will not be sufficient, to return the insurer to viability or cannot be implemented in a timely manner.

⁹ FSB (2014).

⁶ FSB (2014).

⁷ European Commission (2002): "Report on the prudential supervision of insurance undertakings" (Sharma report), p. 89.

they fall due)¹⁰, are also encompassed within the definition of failure for the purposes of the database.

Failure is thus triggered by “non-viability”. The failed insurer ceases to operate in its current form. Shareholders generally lose some or all of their rights and cannot oppose to the measures taken by the authority in charge of resolution, which has formally taken over the reins from the supervisory authority.

For classification purposes, any case is considered as a failure (regardless of the final result of the intervention) when:

- Private external support (e.g. by means of an insurance guarantee system (IGS)) has been received.¹¹
- Public funds by taxpayers were needed for policyholders’ protection or financial stability reasons.¹²
- Policyholders have suffered any type of loss, be it in financial terms or in a deterioration of their insurance coverage.

The following are examples of resolution tools that may be used by authorities in a case of failure:

- Sale of all or part of the insurers’ business to a private purchaser. A particular case is the transfer of an insurers’ portfolio, moving all or part of its business to another insurer without the consent of each and every policyholder.
- Discontinue the writing of new business and continue administering the exist-

ing contractual policy obligations for in-force business (run-off).


- Set-up a bridge institution as a temporary public entity to which all or part of the business of the insurer is transferred in order to preserve its critical functions.
- Separate toxic assets from good assets establishing an asset management vehicle (i.e. a “bad insurer” similar to the concept used in banking) wholly owned by one or more public authorities for managing and running-down those assets in an orderly manner.
- Restructure, limit or write down liabilities (including insurance and reinsurance liabilities) and allocate losses following the hierarchy of claims. This also includes the bail-in of liabilities when they are by converted into equity.
- Closure and orderly liquidation of the whole or part of a failing insurer.
- Withdrawal of authorisation.

Lastly, it should be mentioned that the flow of events shown in Illustration 1 does not necessarily take place in a sequential way. For example, there could be cases in which an insurer goes directly into resolution. Thus, what is relevant for the classification of a particular case is whether the insurer recovers (which would then be considered as a near miss or as a case resolution/return to market if some kind of resolution action/tool is used) or has to be fully resolved and/or liquidated.

¹⁰ EIOPA (2017).

¹¹ Shareholders capital injections do not, therefore, fall within this case.

¹² The use of public funds is a measure that the current initiatives on company resolution seek to avoid. In fact, the key objective of an effective resolution regime is to avoid exposing taxpayers to loss (see, for example, the FSB Key Attributes). It is, however, included because the database mainly focuses on past cases, in which the use of public funds may not have been an exceptional measure.



3. Construction of the database of failures and near misses in insurance

3.1. Introductory remarks

This report is based on the information contained in the EIOPA database of insurance failures and near misses.

The creation of a database of insurance failures and near misses was undertaken by EIOPA in 2014. The objective was to gather relevant information from NSAs on insurance failures and near misses. Therefore, EIOPA initiated a data collection exercise, in which NSAs were invited to provide information on their cases, by filling in a predefined template.¹³

The initial collection led to further annual updates conducted in the last quarters of 2016 and 2017, which resulted in the current database. It now covers all the 31 EEA Member States.

3.2. Key steps in the construction of the database

Step 1: Data gathering exercise

The data gathering exercise took place from 15 December 2014 to 30 January 2015, covering cases occurred until 31 December 2014. A first annual update

with the cases, covering the year 2015 (along with a significant number of 2014 carry-forward cases), took place in the fourth quarter of 2016. The last update was carried out from 15 November 2017 to 15 December 2017, and covered cases that occurred in the year 2016.

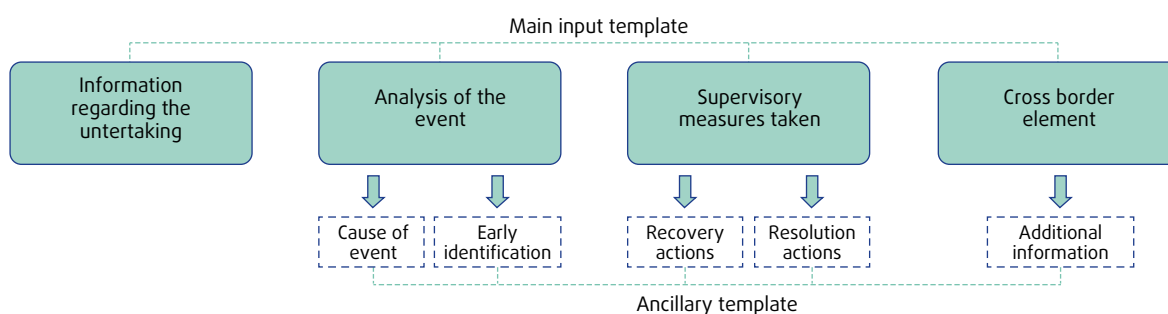
The data gathering exercise was built based on the following premises:

- NSAs were invited to report the five most “economically significant” cases involving recovery and resolution of (re) insurers that had taken place at national level.
- The cases reported should not be dated before January 2000.¹⁴
- The cases should be reported at solo level, regardless of whether they refer to stand-alone insurers or to insurers belonging to a group.

The “economic significance” of the case should be understood in terms of i) its cost of potential failure; or, if there was no cost involved, ii) the size of the firm involved. Since only this broad guidance was given, the rest was essentially left to the NSA so as to decide which cases should be reported.

The information was provided on a best-effort basis. Illustration 2 below provides an overview of the template used to gather the information.

Illustration 2: Elements of the database



¹³ A conceptual note was also drafted, to ensure a common understanding and help filling in the template.

¹⁴ One of the cases included, however, took place in 1999.

The current report focuses on the **analysis of the event**, that is to say, on assessing the causes of event, and early identification. Further elements of the EIOPA database are to be examined in a subsequent paper.

Step 2: Quality check of the reported information

After receiving the information, EIOPA staff carried out an in-depth quality check on a case-by-case basis, and reverted back to NSAs with questions or requested further information. The aim of the quality check was to address potential misunderstandings or inconsistencies, supplement the information where needed, and ensure its comparability. The database was then updated with the additional information received.

Step 3: Aggregation and anonymization

After the data gathering exercise and the quality check, a process of aggregation of data and computation of statistics was performed. For the purposes of the present report, all the data is presented in an aggregated manner and remains fully anonymized.

3.3. Other technical considerations

EIOPA is of the view that the overall quality of the database is high and the cases reported are sufficiently large in number. Hence, for the database provides a good overview on the causes of (near) failures, early warning signals, recovery and resolution measures adopted and cross-border issues that had arisen in the course of the process, based on the judgement and understanding of the experts involved in the exercise and the cases selected and reported by the NSAs.

In terms of scope, several factors could be noted:¹⁵

- **Number of cases.** There are 180 cases at the solo level documented in the database, which constitutes a fairly large sample size and should allow for a relatively high degree of statistical significance. Accordingly, in the present report, finite sample considerations are not deemed to pose serious issues to the significance of the findings in this report.
- **Number of countries.** The 31 EEA countries are represented in the database.
- **Timeline.** The sample of cases spans over 17 years, with incidents documented every year from 1999 until 2016. Thus, the covered period extends over the duration of a whole economic cycle: it comprises the boom of the early 2000s, the 2008 financial crisis, later phases of instability in the EU (the sovereign debt crisis), and other catastrophic events that affected the non-life and reinsurance sector, such as 9/11.
- **Typology of the cases.** The sample includes all types of insurers: life, non-life, composite, as well as reinsurers.

Nevertheless, some challenges are to be noted. The main limitation is that the database is subject to the NSA's expert judgement in selecting and reporting the cases. This is due to the following main reasons:

- **Limit in the number of cases to be reported.** Not all cases of failures or near misses might have been reported, given the reporting limit (5 cases per NSA on each data gathering exercise).
- **Subjectivity in the selection of cases.** As mentioned, the interpretation of the term "economic significance" and, therefore, the selection of cases to be reported to EIOPA relied on the understanding of the different NSAs.
 - ✓ Mitigation measure applied: The annual updates conducted by EIOPA (starting from the year 2015) have

¹⁵ Please refer to chapter 4 for more details on the below points.


already increased the sample size of the database, allowing for higher representativeness of the sample and contributing to reducing potential biases in data reporting.

- **Expert judgement.** Beyond the subjective selection of the five most “economically significant” cases for the initial 2000-2014 period, most of the answers to the questions posed on the data-gathering template are subject to the judgement and understanding of the NSA’s experts.

✓ Mitigation measure applied: A clear and comprehensive instruction document was drafted and circulated to the NSAs to achieve consistency.

- **Conceptual and practical limits.** The approach to recovery and resolution has evolved dramatically in the recent years.¹⁶ In the majority of cases, the database cases have been analysed using concepts and approaches developed recently, and thus analysed with an approach that did not exist when the events took place. Similarly, a comprehensive historical knowledge of each case could not always be achieved due to the lack of quality data (the case dated back more than a decade ago, small insurers, etc.).

¹⁶ It should be considered that, for instance, the Key Attributes, which constitute a reference in the field of recovery and resolution, were first published in 2011.



4. Database overview and empirical evidence

This chapter provides an overview of the characteristics of the sample data, focusing on specifics such as the timeline of the events, the main outcomes (encompassed within the categories of failure and near miss), the type of insurers involved (e.g. life, non-life), their size and the market share.

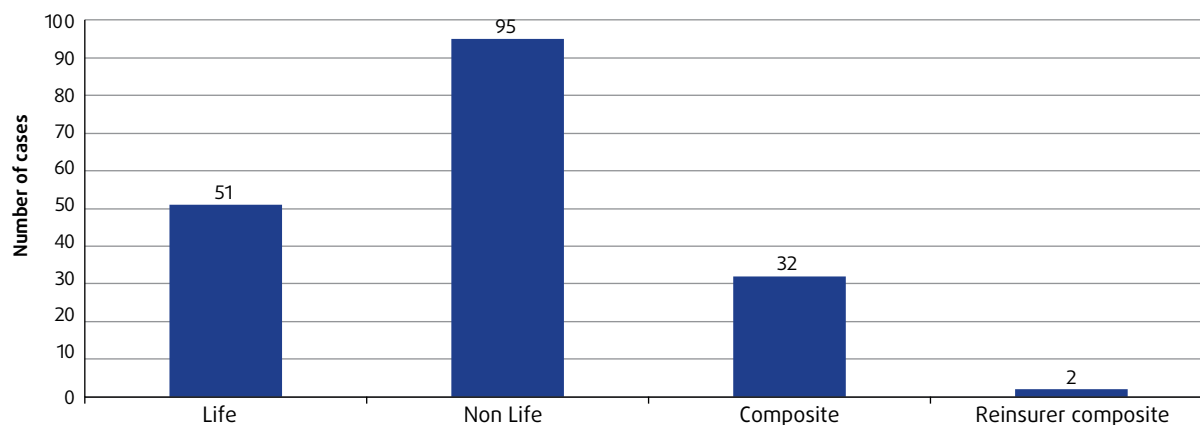
4.1. Sample of insurers

The EIOPA database contains 180 instances of failures and near misses reported at the solo level by a total of 31

European countries.¹⁷ It is made up of distressed or failed insurance undertakings from all the types of business; that is to say, life insurers, non-life insurers, composite insurers, as well as a few reinsurers and financial conglomerates.

As Figure 1 shows, a majority of the distressed insurers in the sample are non-life insurers (95). However, there is also a significant number of life insurers (51), in addition to composite (involved in both life and non-life activities) insurers (32). 2 reinsurers complete the sample

Figure 1: Total cases of failures and near misses, by type of insurer



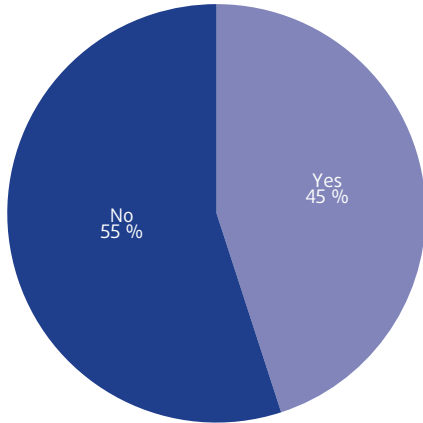
EU insurance undertakings, 1999 – 2016

Other relevant features of the sample refer to the group structure and the level at which the event took place, such as at parent company level, subsidiary or stand-alone level. In terms of group structure, around half of the un-

dertakings belong to a group (81 cases or 45% of the sample). Out of these 81 cases, the supervisor acted as a group supervisor in 22 cases, while in the rest of the cases the NSA was acting as solo supervisor.

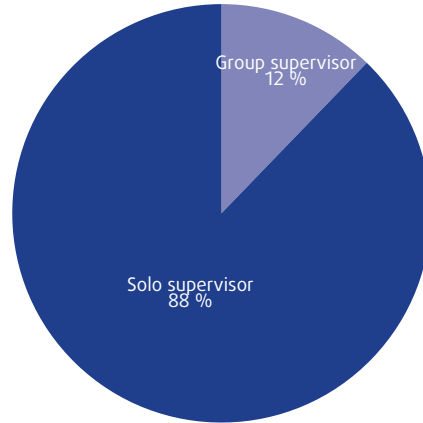
¹⁷ The EU 28 Member States, plus Norway, Iceland and Liechtenstein.

Figure 2: Part of a group?



EU insurance undertakings, 1999 – 2016

Figure 3: Group or solo supervisor?

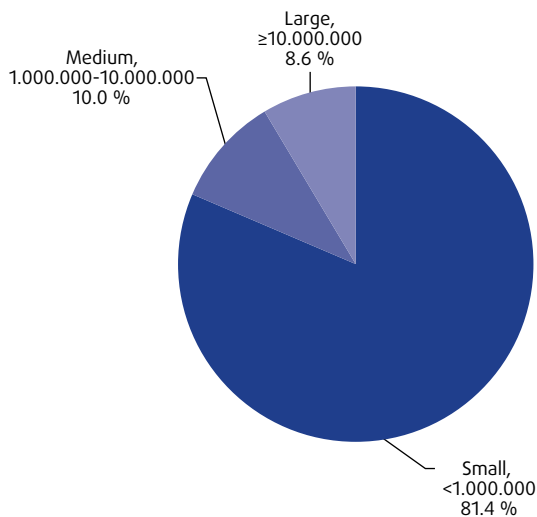


EU insurance undertakings, 1999 - 2016

The sample covers events affecting companies with an overall asset value of EUR 625 billion. As previously mentioned, non-life companies are quite predominant in the sample, and are on average small. This abundance of affected non-life undertakings in the EIOPA's database likely reflects the structure of the insurance market in Europe.¹⁸

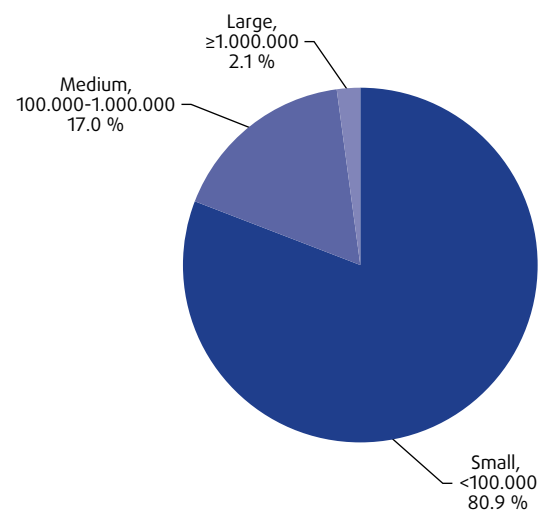
In terms of size, around two thirds of the sample is composed of small companies. Only 2% of the non-life insurers (measured in term of gross written premiums) and around 9% of the life and composite insurers (measured in terms of technical provisions) can be considered as large insurers. However, these conclusions very much depend on the thresholds defined, which are shown in the legends of Figure 4 and Figure 5.

Figure 4: Size of life and composite insurance undertakings reported



Technical provisions (in EUR Thousands), 1999 – 2016

Figure 5: Size of non-life insurance undertakings reported



Gross written premiums (in EUR Thousands), 1999 - 2016

¹⁸ Based on the statistics published by EIOPA on quantitative Solvency II reporting from insurance undertakings and groups in the EU/EEA, it results that the number of non-life undertakings reporting at the solo level approximately triples that of the number of life undertakings. <https://eiopa.europa.eu/Pages/Financial-stability-and-crisis-prevention/Insurance-Statistics.aspx>

An alternative way of showing the size of insurers is by observing the total assets. *Figure 6: Total assets of reported undertakings per type of insurer* provides an overview of the cases reported by total assets, differentiating into buckets for small insurers (<€100 million), medium insurers (€100mn<x<€1bn), and large insurers (>€1 billion).

These results show that whereas the majority of non-life insurers are indeed small (over 70%), life insurers in the sample are more evenly distributed in terms of total assets, with approximately 40% of life insurers categorised in the small bucket, 35% in the medium bucket, and 25% in the large bucket.

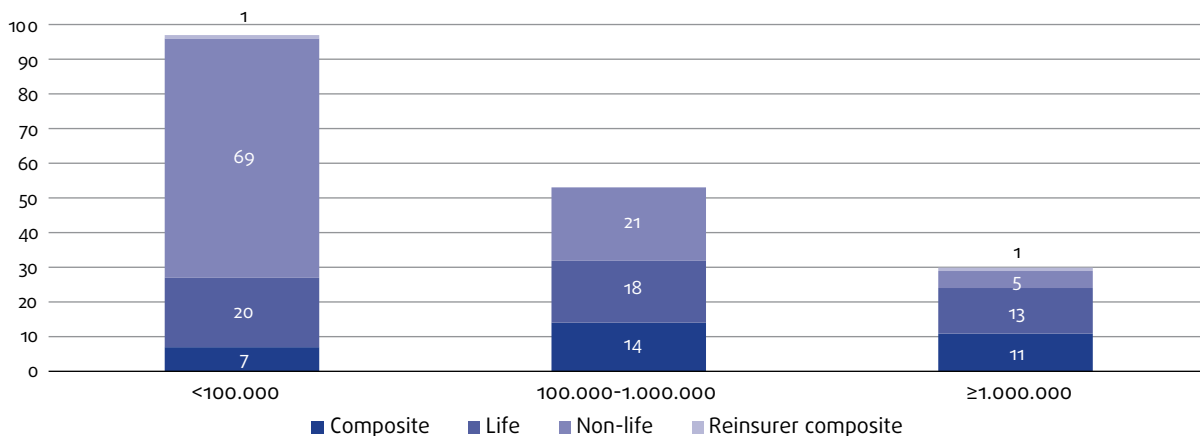
As regards composite insurers, in terms of total assets, the majority are essentially medium to large.¹⁹

Concerning the market share, most insurers in the sample appear to have a small market share.²⁰ However, there is perhaps a considerable difference when it comes to life insurers, where over 16% of the sample is classified as large in terms of the market share (compared to around 6% for non-life insurers).

In summary, the affected insurers in the sample are basically small companies representing a small share of the market. This is even more remarkable considering the fact that until the year 2014, only the five most “economically significant” cases were reported by NSAs.

Overall, this finding appears to be consistent with Sharpe and Stadnik (2007), which show that the general insurance companies most likely to be distressed

Figure 6: Total assets of reported undertakings per type of insurer

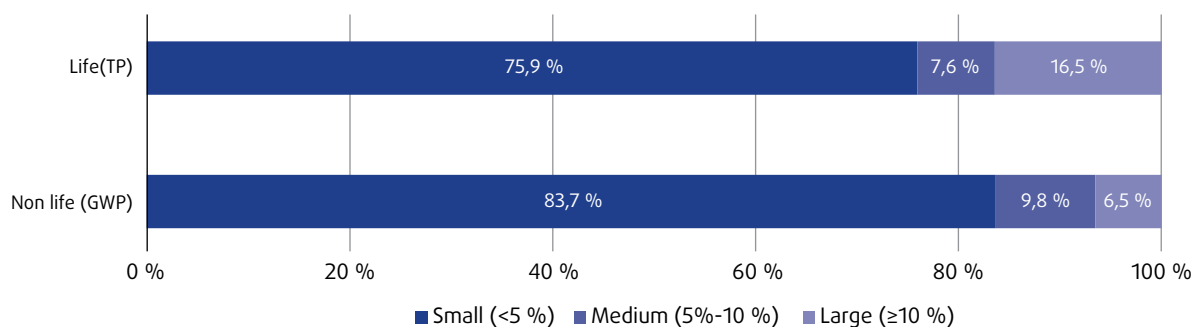


EU insurance undertakings (in EUR Thousands), 1999 – 2016

¹⁹ The same reasoning also applies here, where the thresholds used have an impact on the overall picture described.

²⁰ Ibid.

Figure 7: Market share of reported undertakings



EU insurance undertakings, 1999 - 2016

are usually small, using Australian non-life data for the 1999-2001 period. Previously, a similar conclusion was argued by Maloney along these lines, stating that in the US “smaller companies have a higher default rate, and the insurance industry is no different” (Atlanta Spring Meeting, 1999).

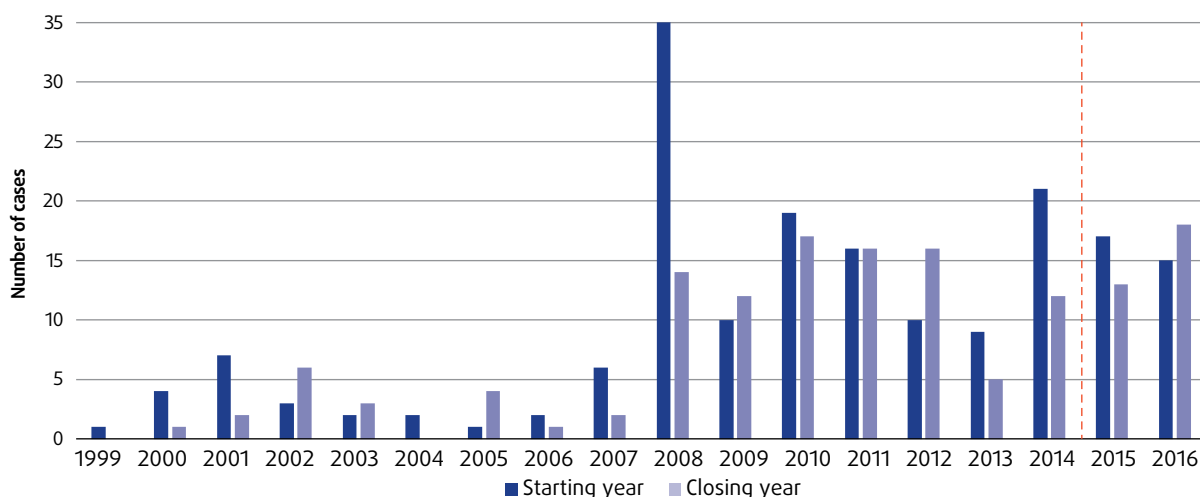
As regards life insurers, more prudence is warranted. Particularly in the case of total assets, the distribution of the distressed life insurers in the sample appears to be more uniform across the small, medium and large buckets.

4.2. Timeline

A significant share of the cases reported in the database of failures and near misses refers to the toughest years of the crisis, particularly in 2008.

This can be seen in *Figure 8: Starting and closing year of reported cases*, which shows the starting and closing year of reported cases. In this context, the “starting year” should be understood as the year in which the problem was identified by the supervisor and the first measures (be it in the recov-

Figure 8: Starting and closing year of reported cases



EU insurance undertakings, 1999 - 2016

ery phase or in resolution) were taken by them. In similar terms, the “closing year” refers to the year when the last measure for a concerned insurer was taken, i.e. the year in which the insurer returned to a “business-as-usual” environment or was resolved (failure).²¹

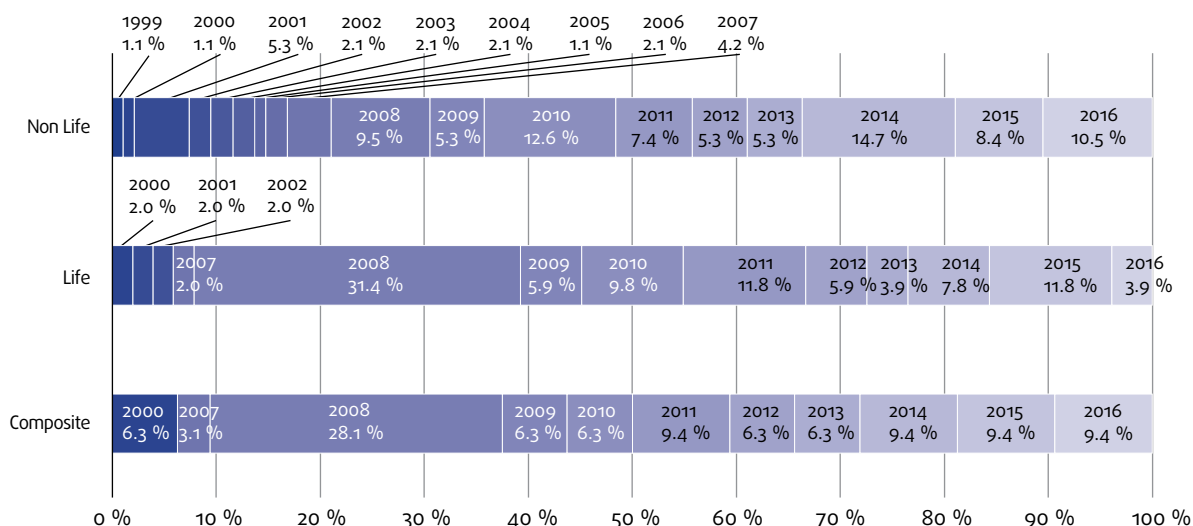
Given that the 2008 financial crisis effectively triggered the period with most failures and near misses in the sample, an analysis has been conducted segmenting the cases by the type of insurer. It should be noted, however, that the second highest peak in the number of failures and near misses as pictured above occurred in the starting year 2014 (and to a lesser extent from 2015 onwards). However, beyond the dotted line in Figure 8, the time series is somewhat distorted upwards by the fact that the subsequent annual updates conducted for the starting years

2015 and 2016 focused mostly on recent cases reported for that specific year (coupled with a significant number of carry-forward backdated 2014 cases).²²

As it can be visualised in Figure 9 below, the 2008 financial crisis resulted in a large amount of failures and near misses, primarily in the case of EU life insurance and composite undertakings. Indeed, out of 51 distressed EU life insurers registered in the database as failures or near misses, about 37% were struck in the two-year period 2008-09.²³

A similar conclusion is applicable for composite insurers. Out of 32 EU distressed composite insurers in the database, slightly over 34% are documented as a failure or near miss (with the starting years in 2008 or 2009).

Figure 9: Split of the percentage of cases occurred per starting year, by type of insurer



EU insurance undertakings, 1999 – 2016

²¹ In case the company was put in run-off, the year in which the decision was taken should be reported, as opposed to the year in which the last policyholder was paid.

²² Thus, whilst the initial data gathering process focused over the whole the 2000-2014 period, not all cases that occurred in the period might have been reported (given the maximum of 5 “most economically significant” cases to be reported), while in the subsequent updates most of the cases that occurred in the Member States in 2015 and 2016 should have been reported. 2014 cases also heavily featured on the first update.

²³ Same considerations as explained in the previous footnote also apply here.

Concerning reinsurers, 1 of the 2 cases of failure occurred during the two-year period 2008-09.

Conversely, the proportion of failures and near misses of EU non-life insurers appears to be much more stable and evenly distributed across the timeline

in Figure 9, which spans from 1999 to 2016.

All in all, the empirical findings show that failures and near misses in insurance can indeed occur collectively in several EU countries, which calls for a harmonised recovery and resolution framework (see Box 1).

Box 1: The financial crisis and its effect on life insurers

The 2008 financial crisis effectively triggered the period with the most failures and near misses in the database. The increase in the number of failures and near misses is striking, particularly in the case of EU life and composite insurers. Indeed, after 2007, the number of failures and near misses in the database for the mentioned insurers spikes dramatically (see Figure 8: Starting and closing year of reported cases).

The risk of collective failures occurring in a fragmented landscape was one reason behind EIOPA's Opinion on Recovery and Resolution (EIOPA, 2017). For the life insurance segment, particularly, it can be argued that the possibility of collective failures occurring in future financial crises cannot be ruled out, given the empirical indications of the database. This might confirm a higher degree of correlation of life insurers with the business cycle, likely due to the high exposure of life insurers to debt and securities markets (Minderhoud, 2003), the preponderance of mismatch risk and/or investment risk as a leading cause of (near) failure as discussed later on (see Figure 16: Primary causes of failure and near miss - Life), or to a lesser degree the involvement in NTNI activities (Bank of England, 2014).

As regards the non-life sector, conversely, the database seems to suggest a lesser degree of correlation with the business cycle, by means of the failures being more evenly distributed across years. This appears to indicate that the non-life sector might indeed be less cyclical than the life sector.

Another relevant question refers to the average duration of the event (see Table 1). This is calculated as the difference between the closing and the starting year for each of the cases in the sample.

According to the information received, the average duration of an event was of 1.7 years for all insurers in the sample.²⁴ While no substantial difference can be observed between life and non-life business, the data shows that there is a longer average duration in cases of resolution, as compared to the cases of full recovery.

Table 1: Average duration

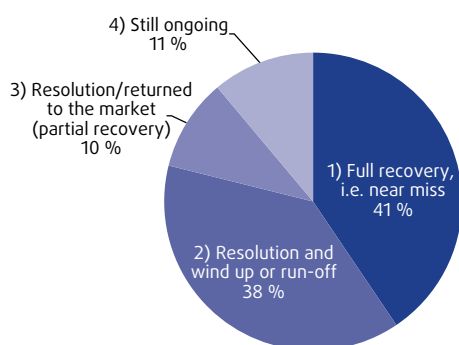
	All	Outcome of the case			Type of insurer	
		Full recovery (i.e. near misses)	Resolution and winding-up or run-off	Resolution / returned to the market	Life	Non-life
Average in years	1.7	1.4	1.9	1.9	1.9	1.5
Standard deviation	2.1	2.1	2.3	1.6	2.4	2.1

²⁴ Given that the duration is calculated on a yearly basis, the average might be underestimated to certain extent as events whose starting and closing date are the same would count as 0.

4.3. Outcome of the case

The sample data is quite comprehensive regarding the outcome of the process (see *Figure 10: Outcome of the cases below*). The following four “buckets”, which in turn can be understood as deriving from the concepts of recovery vs. resolution, were considered:

Figure 10: Outcome of the cases



EU insurance undertakings, 1999 - 2016

- 1) Full recovery (i.e. near miss). These are cases in which the insurer entered into the recovery phase, but managed to recover its financial soundness by means of implementing certain measure either triggered by the insurer itself (recovery measures) or by the authorities.
- 2) Resolution and wind-up or run-off (i.e. failure). In both cases the insurer was liquidated, either within a short period of time when the

existing assets were clearly insufficient to pay off creditors (wind-up), or within a lengthier period of time by winding-down its existing portfolio (run-off).

- 3) Resolution/returned to the market (i.e. failure²⁵). These were cases of partial recovery, in which the insurer or part of it managed to return to market after one or more resolution tools were used, or after receiving some kind of external financial support, be it in the form of public money or from funds coming from an IGS.
- 4) Still ongoing. These were cases where the insurer experienced financial distress, but the outcome of the process was still not final.

As seen above, in terms of outcomes, 73 cases or 41% of the total sample are insurers that fully recovered (i.e. near misses). On the other hand, 87 cases or 48% of the total sample are failures, where the outcome resulted in partial or total resolution. The remaining 20 cases (11%) are ongoing cases.

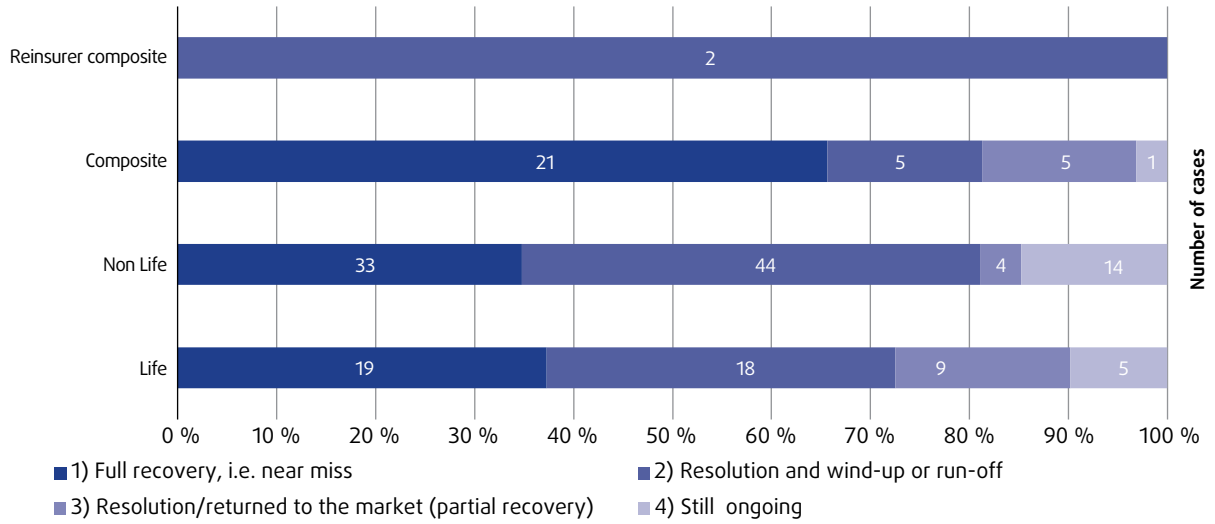
With regard to the reported outcomes, the majority of resolution cases reported (i.e. failures) refer to distressed non-life insurers. This is consistent with the fact that the database displays an abundance of affected non-life insurers. Furthermore, it has to be noted that the non-life insurers in the database enter into resolution in a higher proportion than their life counterparts.

²⁵ As stated in chapter 2, in all of the following situation a case is considered immediately as a failure: private external support (e.g. by means of an IGS) has been received; public funds by taxpayers were needed for policyholders' protection or financial stability reasons; or policyholders have suffered any type of loss, be it in monetary terms or in a deterioration of their insurance coverage.

Indeed, affected life insurers recovered more often than the non-life insurers (bucket 1.), with composite insurers in the database overall faring the best. This is portrayed in Figure 11 below,

whereby a full recovery (bucket 1.) is the leading outcome in the case of EU life insurers in the sample, compared to resolution and wind-up (bucket 2.) for most EU non-life insurers in the sample.

Figure 11: Breakdown of the resulting outcomes, by type of insurer



EU insurance undertakings, 1999 – 2016

5. Assessing the causes

The background is a dark blue gradient. A prominent white diagonal line runs from the top-left towards the bottom-right. In the upper right, there is a stylized flag with a white star on a blue field and white stripes on a blue field. In the upper left, there is a white grid pattern. The text '5. Assessing the causes' is centered in the upper half of the image in a white, sans-serif font.

5.1. Framework for identification of the causes

One of the objectives of the database is to help understand how and why insurers can face distress and fail. The aim is to help supervisors and policymakers to understand the leading causes of failure in insurers and potentially identify the most recurrent patterns.

As mentioned, the Sharma Report provides useful insights into the dynamics of insurance failures. Its general conclusion is that there is usually a causal chain of multiple causes occurring, starting with underlying internal problems in the insurer (usually coupled with poor management), that eventually lead to inadequate decision-making and neglectful risk decisions. This makes those firms vulnerable to external “trigger events” which in turn will lead to adverse finan-

cial outcomes, as well as policyholders’ losses in some cases.

The Sharma Report studied and categorised the different risks that insurers are exposed to, by using a cause-effect approach. The underlying assumption is that risks can be described and categorised either by their causes or effects. Therefore, cause-effect methodologies try to identify and categorise risks with a view to mapping the causal relationships between them.²⁶

EIOPA, for the purposes of identifying the main causes of impairment in the database (leading to failure or near miss), opted to use the risk categories identified in the Sharma report, supplementing them with additional categories, where deemed necessary.

Consequently, throughout the present report, the attention is put on the following causes/risks listed below:

Table 2: Map of risks for insurers identified in the Sharma Report

Management & staff competence risk	Internal Governance & control risk
Controller & group risk	Economic cycle / condition risk
Market competition risk	Social, technological, demographic, political, legal, taxation risk
Catastrophe / extreme event risk	Data risk
Accounting risk	Technology risk
Distribution risk	Administration risk
Loss of goodwill / reputation risk	Investment / Asset-liability management risk
Reinsurance risk	Expense risk
Underwriting risk	Business risk
Market risk ²⁷	Credit risk
Claims deviation risk	Loss of business risk
Technical provisions - evaluation risk	Asset evaluation risk
NTNI activities ²⁸	Fraud ²⁸
Problems associated with shareholders and conflicts of interest ²⁸	

For a precise definition of each of the risks, please refer to Annex A of the Sharma Report.²⁹

²⁶ Sharma Report, pg. 18.

²⁷ Includes interest rate risk.

²⁸ Added by EIOPA for the purposes of the database.

²⁹ http://ec.europa.eu/internal_market/insurance/docs/solvency/solvency2-conference-report_en.pdf

5.2. Overview of general causes of failure and near miss

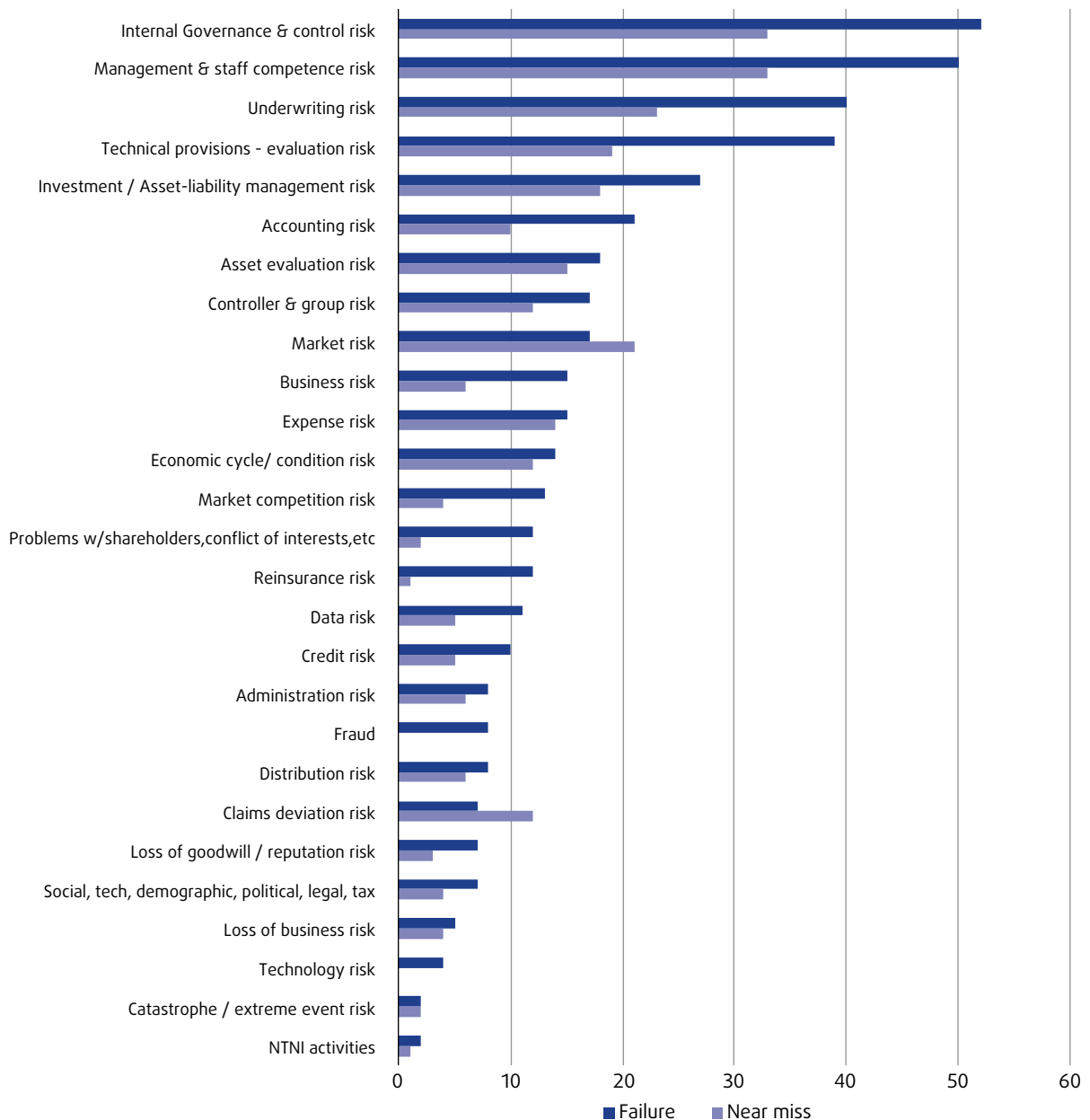
An overall analysis of the causes of failure and near miss for EU insurers in the database, as identified by supervisors, reveals a multiplicity of factors of impairment. This is a common theme in the Sharma Report, which states that it is rare for an adverse event to have a single cause. Hence, beyond the observed effects of a particular risk, it

often occurs that they were influenced by a wide range of interrelated causes.

Consequently, the causes here are to be understood as the risks perceived by the supervisors in distressed insurers, which materialized in a near miss or failure.

The aggregated results on the occurrence of the causes of failure and near miss are presented below in *Figure 12: Overview of the general causes of failure and near miss*.

Figure 12: Overview of the general causes of failure and near miss reported



For the purposes of data gathering, it is important to note that EIOPA asked NSAs to identify up to 5 causes of impairment for each and every case of failure or near miss. As mentioned above, provided that there is simultaneously a multiplicity of causes of financial distress, this approach sought to rank and prioritise the perceived causes.³⁰

The two most common general causes of impairment identified for EU insurers in the database (leading either to a failure or near miss), are linked to underlying internal risks of the company. To be precise, those are:

- i. The risk related that management or staff lack the necessary skills, experience or professional qualities (*Management & staff competence risk*); and
- ii. The risk of inadequate or failed systems of corporate governance and overall control (*Internal governance & control risk*).

These two causes are followed closely (particularly for failures) by the *Underwriting risk*, which is defined as the risk of inappropriately adopting or implementing inadequately an underwriting strategy.

Technical provisions evaluation risk is the fourth most common cause of failure identified, and relates fundamentally to under-reserving and holding insufficient technical provisions, a well-documented issue in the literature.³¹

Completing the Top-5 of causes of failure identified, there is the *Investment/Asset-liability management risk*, which is related to inappropriate decisions to invest the technical provisions in assets which lead to investment losses, as well as mismatch risk. The higher importance of *Market risk* in the cases of near misses (compared to failures), deserves to be mentioned and will be further analysed in the next sections.

In hindsight, it is also interesting to note that the most commonly reported general causes of (near) failure, as identified here, do not greatly differ from the findings published in the Sharma Report in December 2002. Fifteen years on, many risks identified there as key are still the same; namely, those related to poor management decisions and/or internal controls, underwriting, investment problems or technical provisions evaluation.

A different type of analysis is presented in Figure 13, which aims at splitting the most frequently reported causes³² amongst life and non-life impairments, according to their relative occurrence. The objective is to distinguish whether some of the causes of impairment reported occur more commonly in the case of distressed life insurers, or whether they are more typical of affected non-life insurers.³³ Composite insurers are excluded from this analysis, in view of the fact that they pursue both life and non-life activities.

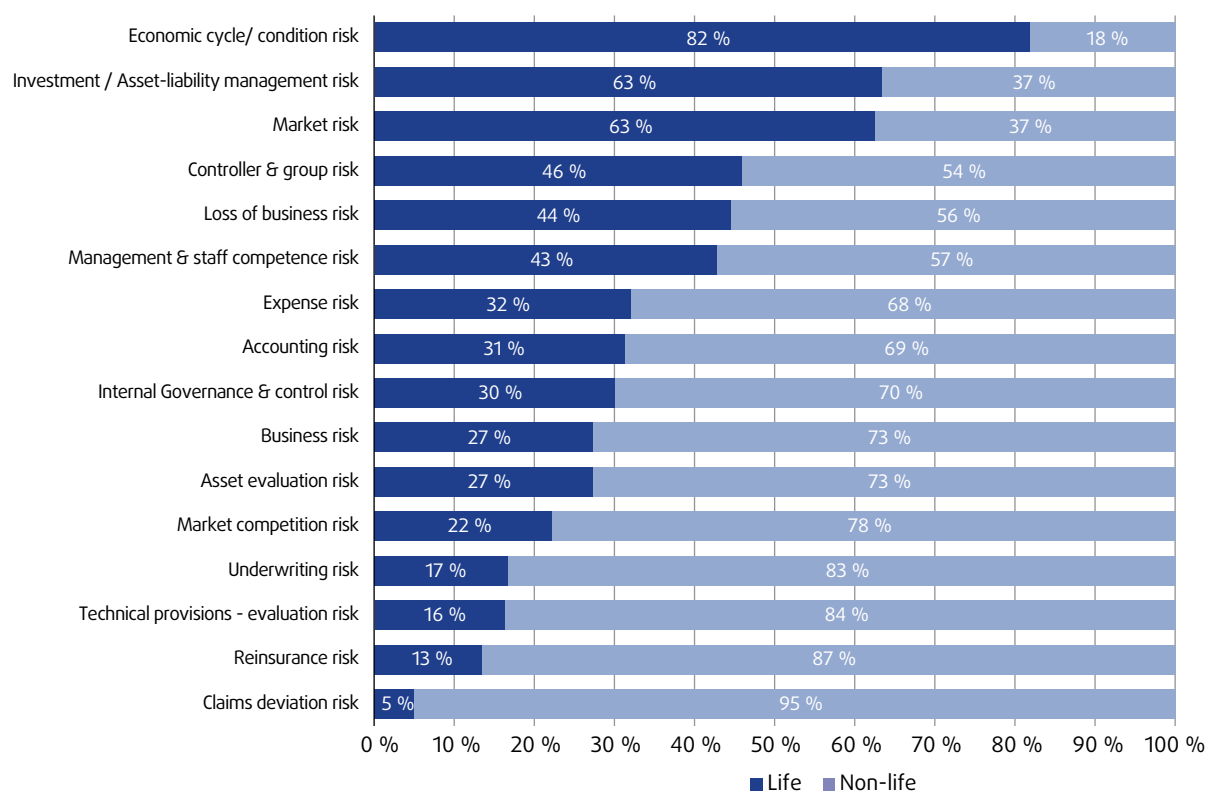
³⁰ Simultaneously, supervisors ranked the causes in terms of their importance, ranging from “key problem” to “slightly relevant”.

³¹ See Box 2 for further information.

³² The general causes, as seen in Figure 13: Split of the general causes of impairment reported (% Life vs. % Non-life), which have been reported and documented in the EIOPA’s database in a number of instances inferior to 15 (considering only life and non-life insurers), are excluded from this particular analysis.

³³ For instance, if a risk “X” is identified and reported 16 times in the case of life insurers, vs. 4 times in the case of non-life, the figure would show an 80% vs. 20% bar.

Figure 13: Split of the general causes of impairment reported (% Life vs. % Non-life)



EU life and non-life undertakings, 1999 - 2016

Based on Figure 13, some of the following patterns can be noticed:

- The economic cycle risk was prevalent in affected life insurers (82% of the occurrences of economic cycle risk correspond to life insurers vs. 18% to non-life insurers).
- The investment risk was more common in affected life insurers (63% of the occurrences correspond to life insurers vs. 37% to non-life insurers).
- The market risk was more common in affected life insurers (63% of the occurrences correspond to life insurers vs. 37% to non-life insurers).
- The underwriting risk was prevalent in affected non-life insurers (83% of the occurrences correspond to non-life insurers vs. 17% to life insurers).
- The reinsurance risk was prevalent in affected non-life insurers (87% of the occurrences correspond to non-life insurers vs. 13% to life insurers).

Two points deserve to be highlighted before proceeding to the next section:

- As previously mentioned, up to 5 causes of impairment were reported for each and every case. This actually reflects the aforementioned approach of a multiplicity of causes occurring simultaneously, while acknowledging the fact that the effects the NSAs observed in a particular case were not often ascribed to a single cause. Accordingly, Figure 12 and Figure 13 contained information from all the reported causes, not only the leading or primary cause of impairment perceived to be the “key problem”. For a weighted analysis, focusing on the “key problem”, please refer to the section 5.3.
- There is an element of subjectivity in the process of selection and ranking of causes/effects by the experts of the NSAs. However, EIOPA believes that the large sample size of the database can contribute to reducing any potential biases in data reporting and identification

of causes, allowing for counterbalancing effects.

5.3. Top 5 reported primary causes of failure and near miss

The above results are slightly different when the analysis of causes is performed disregarding all the other causes/effects, which were not considered to be the “key problem”.

Up to 5 causes per case were reported by the NSAs, and ranked accordingly to their perceived significance (as follows: “key problem”, “very relevant”, “relevant”, or “slightly relevant”). In general, there was only one key cause of failure identified per case.³⁴

Next, Table 3: Top 5 primary causes of impairment reported portrays the Top-5 key causes of failure or near miss for EU insurers, as identified by the experts of the NSAs.

In line with the findings of the previous section, management & staff competence risk, and internal governance & control risk feature conspicuously in the Top-5. Along the lines of the Sharma Report, both can be considered as *underlying internal causes*, originating in problems with management or other stakeholders; including “incompetence or operating outside their area of expertise, lack of integrity or conflicting objectives, or weakness in the face of inappropriate group decisions.

Notwithstanding the above mentioned underlying root causes, the Top-5 of primary causes of (near) failure are fundamentally linked to external, financial or insurance-specific causes, which acquire ample dimension as key drivers of impairment and potential failure for EU insurers. Indeed:

- The technical provisions evaluation risk features prominently, both for failures and near misses. Indeed, under-reserving or holding an insufficient level of

Table 3: Top 5 primary causes of impairment reported

	Failures	Near misses
<i>Top 5 most common causes of impairment for EU insurers*</i>		
1	Management & staff competence risk	Technical provisions - evaluation risk
2	Technical provisions - evaluation risk	Internal Governance & control risk
3	Internal Governance & control risk	Market risk
4	Investment / Asset-liability management risk	Management & staff competence risk
5	Fraud	Investment / Asset-liability management risk

* This information refers only to the primary cause of failure identified for each case, i.e., what the NSA identified as “Key problem”.

technical provisions is a practice widely documented in several insurance failures, as discussed in Box 2. It will be interesting to see the impact of Solvency II on this risk, once further evidence is available.

- The investment/ALM risk, which is connected to investment losses and/or mismatch risk, ranks also high up in the Top-5 causes of failure and near miss. Indeed, an adequate asset and liability management is at the core of the insurance business. As a result, mismatches are widely acknowledged as a major source of distress for insurers.

³⁴ Exceptionally some NSAs selected more than one as “key problem”.

- Concerning the risk of fraud, it appears to be an issue associated to the cases of failure only. Not a single instance of near miss is documented in the EIOPA database, with fraud singled out as the key problem.
- As regards, the market risk (which includes interest rate risk), was instead more predominant in insurers that stayed in the market, coming third on the Top-5 causes of near miss.³⁵

These findings are generally consistent with the International Association of Insurance Supervisors (IAIS) (2011)³⁶, which analysed US life and non-life insurers over a 40-year period, finding major impairment factors ascribed to the following leading causes: deficient provisioning (roughly corresponding to the technical provisions evaluation risk), inadequate pricing (related to the underwriting risk) and investment losses (investment/ALM risk).

Box 2: Under-reserving and the EIOPA database

Insufficient provisioning all-too-often appears in the literature as one of the most important factors of financial impairments of insurers, for instance, in Plantin and Rochet (2007). Earlier, in 2002, the Sharma Report concluded that technical provisions evaluation risk was as a significant reason for failure of insurers; nonetheless, it was “an effect of other, prior root causes rather than being a root cause itself”. According to the IAIS (2017b), during the period between 1969 and 2014, 45% of impairment cases of property and casualty insurers were caused by deficient loss provisioning and inadequate pricing.

The conclusions of the present database are similar. Undoubtedly, the phenomenon of under-reserving and underestimation of claims reserves is frequently reported as a significant cause of failure and near miss. As portrayed in *Table 3: Top 5 primary causes of impairment reported*, the technical provisions evaluation risk was often identified by supervisors as a key problem leading to both cases of failure and near miss.

In particular, in 27 (or 15%) cases of (near) failure contained in the present database, under-reserving is perceived as the key problem. While these results are lower than the figures rendered by the IAIS (2017b), this may be motivated by the broader scope of the methodology of the Sharma Report (which tends to identify under-reserving as an effect of other, prior root causes) as well as the fact that the IAIS reported figures³⁷ refer to property and casualty insurers.

As it will be discussed in the following sections, the risk that the technical provisions may prove to be insufficient gains a very prominent role in the case of non-life insurers (and to a lesser degree their life counterparts). Indeed, the technical provisions evaluation risk is the most significant primary cause of (near) failure in non-life insurers in the database, as depicted in *Figure 17: Primary causes of failure and near miss - Non-life*.

5.3.1. Primary causes of failure and near miss in relation to insurer size

Against the backdrop of work undertaken by international institutions in global fora, with respect to the threats that insurers may pose to the financial system, it is useful to examine the primary causes of impairment for medium

to large insurers (i.e. those whose balance sheet amounts to at least 100 millions of total assets).

As remarked by the Bank of England (2014), insurance groups that engage in activities which expose them to the economic cycle and movements in the financial markets or unrelated to traditional insurance, could contribute to

³⁵ This can be explained partially by the fact that market risk is generally linked to EU life insurers in the database (see below section 5.3.2). Likewise, EU life insurers in the database fully recover on average more than EU non-life insurers, which enter into resolution or liquidation more often. For more information, please refer to Figure 11.

³⁶ Pg 12.

³⁷ Pg 16, IAIS 2017b.

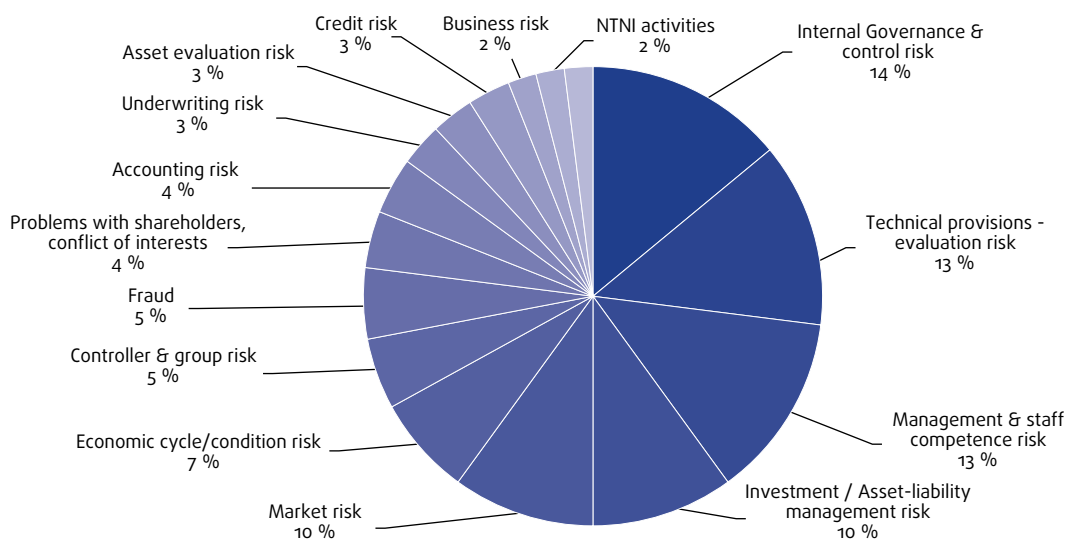
create systemic risk. More recently, EIOPA discussed how insurance can potentially create or amplify systemic risk (EIOPA, 2018).

The summary of key causes of (near) failure for EU large insurers as contained in the database is portrayed in Figure 14 below. In line with the findings of the previous section, the so-called underlying internal causes of management & staff competence and internal govern-

ance issues feature conspicuously in the Top-5 of primary causes.

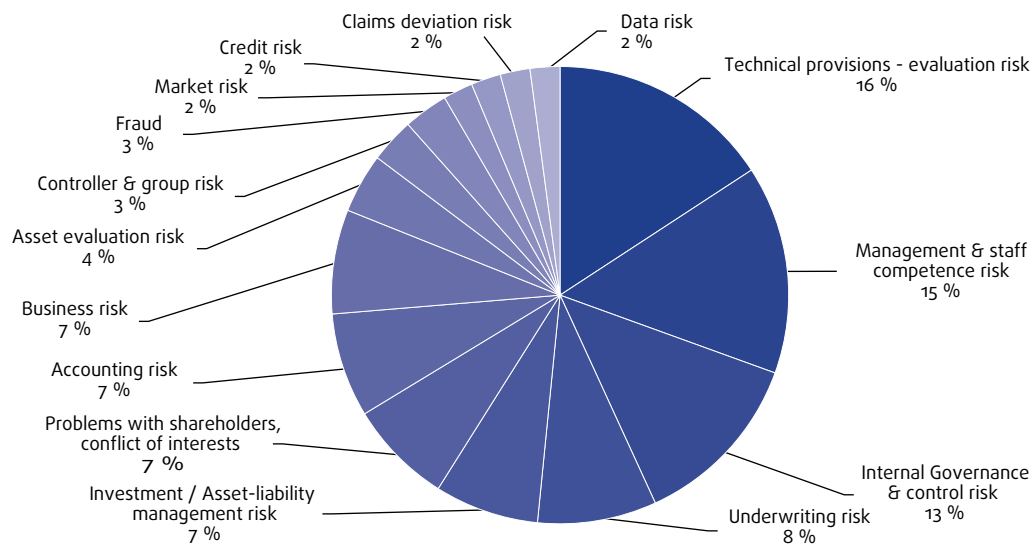
While it is remarkable that the technical provisions evaluation risk tops the list of primary causes in the case of small insurers and also comes second for large insurers, the differences between the primary causes reported for large companies vs. small companies do not show significant differences (see Figure 15).

Figure 14: Primary causes of failure and near miss - Large insurers



EU insurance undertakings (Large companies), 2000 - 2016

Figure 15: Primary causes of failure and near miss - Small insurers



EU insurance undertakings (small companies), 1999 - 2016

To be noted, specifically, is the relative weight that the economic cycle / condition risk appears to have in large insurers, as well as the risk of fraud, which has been identified previously as one of the primary causes of failures.

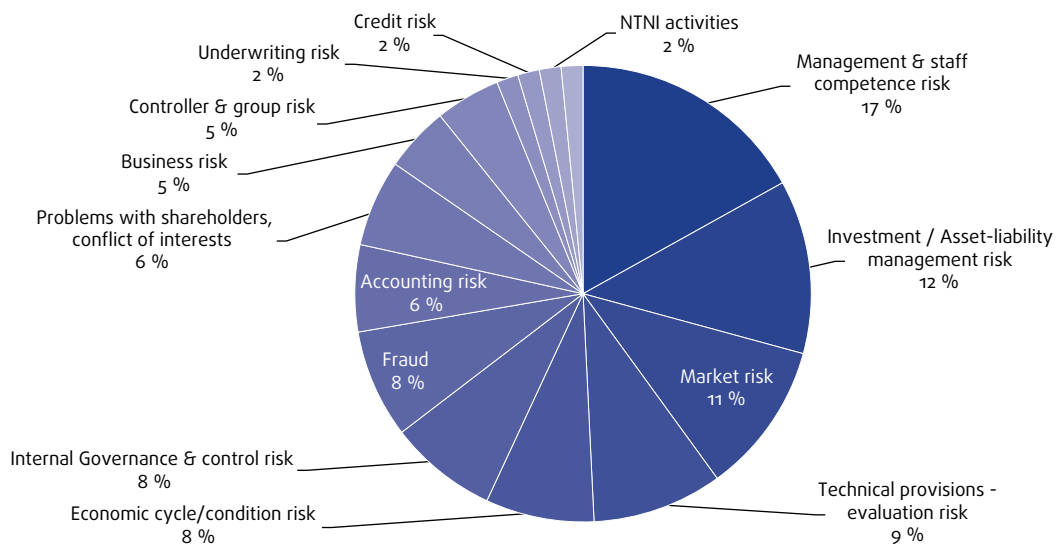
Furthermore, the recent emergence of non-traditional non-insurance (NTNI) activities as a primary cause of (near) failure in large insurers deserves to be mentioned (albeit occurring in a very limited number of cases, i.e. two large insurers). The latter is indeed consistent with the fact that large insurers are generally part of groups which can offer other a wider variety of financial services; some arising from the “non-insurance” business, and which are in principle unavailable to smaller insurers in the market.

5.3.2. Primary causes of failure and near miss in relation to business type

Perhaps more interestingly, the analysis of primary causes of failure and near miss yields indeed different results depending on the type of insurer studied.

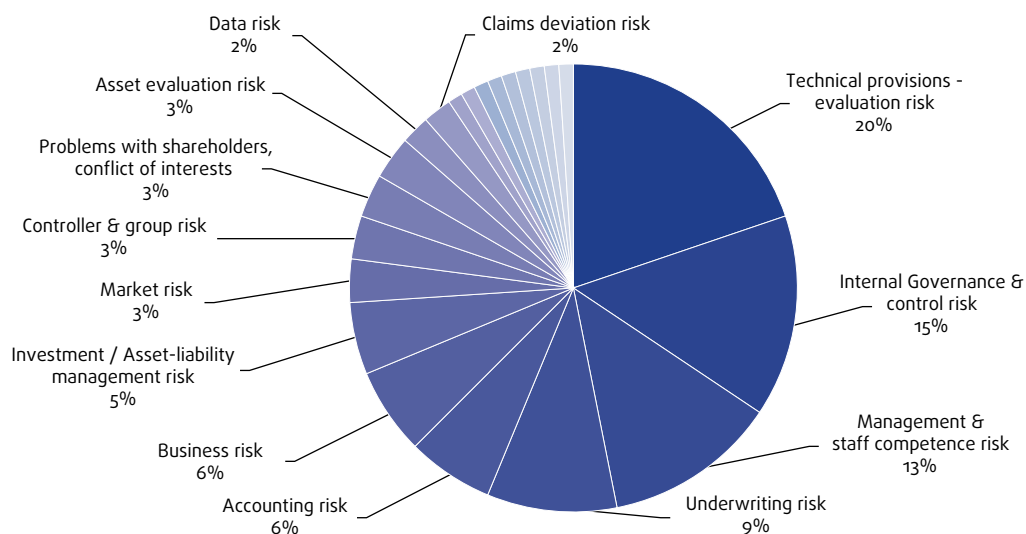
Figure 16: Primary causes of failure and near miss and Figure 17: Primary causes of failure and near miss provide a summary of the most commonly reported key causes of failure and near miss, allowing for distinction amongst the life and non-life undertakings in the sample. Composite insurers are again excluded from this analysis.

Figure 16: Primary causes of failure and near miss - Life



EU life undertakings, 2000 - 2016

Figure 17: Primary causes of failure and near miss - Non-life



EU non-life undertakings, 1999 - 2016

35

For EU life undertakings in the database, notwithstanding the so-called *underlying internal causes* due to poor management and internal controls³⁸, the primary causes of (near) failure in life companies are fundamentally the investment risk, market risk (including interest rate risk), the technical provisions evaluation risk, as well as risks linked to the economic cycle and fraud. The following considerations can be added:

- Since interest rate risk (enclosed in the database within market risk) is a traditional source of risk for life insurers, it may come as no surprise that market risk features prominently as one of the leading causes of (near) failure in EU life undertakings.
- In particular, life insurers do manage interest rate risk by investing part of their assets in long-term bonds (Kojien and Yogo, 2017³⁹). However, inappropriate investment decisions leading to investment losses or mismatch problems may explain the preponderance of the investment/ALM risk as the upper-

most primary cause of failure for EU life undertakings.

- Notably, the economic cycle risk was also frequently reported by NSAs, to the point that it reaches the Top-5 leading causes of (near) failure of EU life undertakings. As explained in Box 1, this may be indicative of a higher degree of correlation of life insurers with the business cycle. Indeed, while it is usually acknowledged that the business model of insurers allows for insurance companies to better withstand the effects of crises better than other financial institutions (Bank of England, 2014); insurers are not at all immune to failure, as documented in the EIOPA database.

For EU non-life undertakings in the database, notwithstanding the so-called underlying root causes of poor management and internal controls⁴⁰, the primary causes of (near) failure are:

- The technical provisions evaluation risk, which is the most significant primary cause of (near) failure in EU non-life undertakings in the database.⁴¹
- The underwriting risk, which is less commonly reported in the case of EU

38 Management & staff competence risk, and Internal governance & control risk.

39 Please refer to "The economics, regulation, and systemic risk of insurance markets", Hufeld, Kojien, Thimann (2017).

40 See note 38.

41 Please refer to Box 2 for a more in-depth analysis.

life undertakings, appears as a leading cause of (near) failure in EU non-life undertakings. Indeed, the risk that the insurer sets inadequate premium rates or an inappropriate underwriting strategy is a major challenge in non-life industries such as property, casualty, or motor insurance. Along these lines, Leadbetter and Stodolak (2009) acknowledged that for property and casualty insurance, inadequate pricing leading to underwriting losses is a recurring cause of insolvency due to the industry's inverted production cycle.

- Next, the accounting risk, the business risk, and the investment/ALM risk, feature as other leading causes of (near)

failure for EU non-life undertakings. However, the investment/ALM risk does not reach a top spot, contrary to the case of EU life undertakings. In any case, it is clear that non-life insurers are not immune to investment problems, such as investment losses, or mismatch issues.

As regards EU reinsurers, the database contains only 2 cases. No solid conclusions can be inferred from such a small sample size. One of the reinsurers failed due to catastrophe losses, and the other one over large losses originating in a material legal entity (an insurance subsidiary).

6. Assessing early identification



6.1. Framework for early identification

This chapter attempts to shed light on potential early identification signals, which may act as indicators to help identify potential situations of distress in insurers, at an early stage of the crisis.

Provided that it is rare for an adverse event to have a single cause, the observable effects of a particular risk (which may turn out to become a real financial threat for the insurer), also relates to a range of multiple, sometimes interrelated early identification signals. Therefore, the early identi-

cation signals discussed in this chapter should not be examined or used in isolation.

A summary of the possible early identification signals in troubled insurers used in the database is provided below. In order to create the list of early identification signals or indicators, EI-OPA built upon existing literature from the Financial Stability Board (FSB), the IAIS and the European Banking Authority (EBA), in addition to the mentioned Sharma Report. For the purposes of classification of the early identification signals, a distinction was made on whether such signals are of a quantitative vs. qualitative nature.

Table 4: Map of early identification signals

Quantitative indicators	Qualitative indicators
Deteriorating capital strength - low solvency margin relative to the firm's risks	Change in strategy (financial and/or investment)
Rapid growth and declining profitability	New classes of business/sources of business being written
High expenses and low profitability	Changes in business (e.g. delays in implementing original business plan, evidence of a non-viable business plan, poor quality of information or cessation of business)
Declining profitability for investment income	A crude underwriting strategy (pricing and risk selection), e.g. little or no segmentation compared to peer group
Declining profitability for underwriting income	Failure to implement regulatory or supervisory requirements or advices
Concentrated investments, particularly in related entities	Non-cooperation with the supervisor or delays in producing information
Constant reserve revisions (e.g. sudden increase in technical reserves or marketed decrease in technical reserves)	Vulnerability to legal or fiscal changes
Significant divergence from budgets and business plans	Evidence of poor management. Apparently peripheral problems, particularly those suggestive of lax management attitude, e.g. minor breaches of investment rules, and particular where there is a pattern of this.
Revenue reports or P&L reports	Frequent changes to the administrative or management body, or key persons
Claim evolution	Complex group structure
Number of consumer or intermediary complaints (direct to supervisor, consumer protection authorities, appeals to courts or addressed to the undertaking)	Mergers, acquisitions or other significant transactions that may put pressure on management
Inappropriate bonus and remuneration structure that could provide inadequate incentives from a supervisory perspective	Adverse report from auditors/actuaries or poor response to or inaction about audit management letter
Increasing distribution of surplus funds, dividends or any other loss absorbing buffers	Identification of types of reinsurance arrangements which appear inconsistent with normal commercial practice or for which the commercial rationale for either party is unclear
Rating downgrades	Engagement in non-traditional or non-insurance activities (e.g. derivatives trading or CDS transactions for non-hedging purposes)
Breach of risk appetite limits	Negative market press and significant reputational damage
Divergence between risk appetite and risk bearing capacity	Adverse court rulings
Results of stress-testing	

6.2. Overview of reported early identification signals

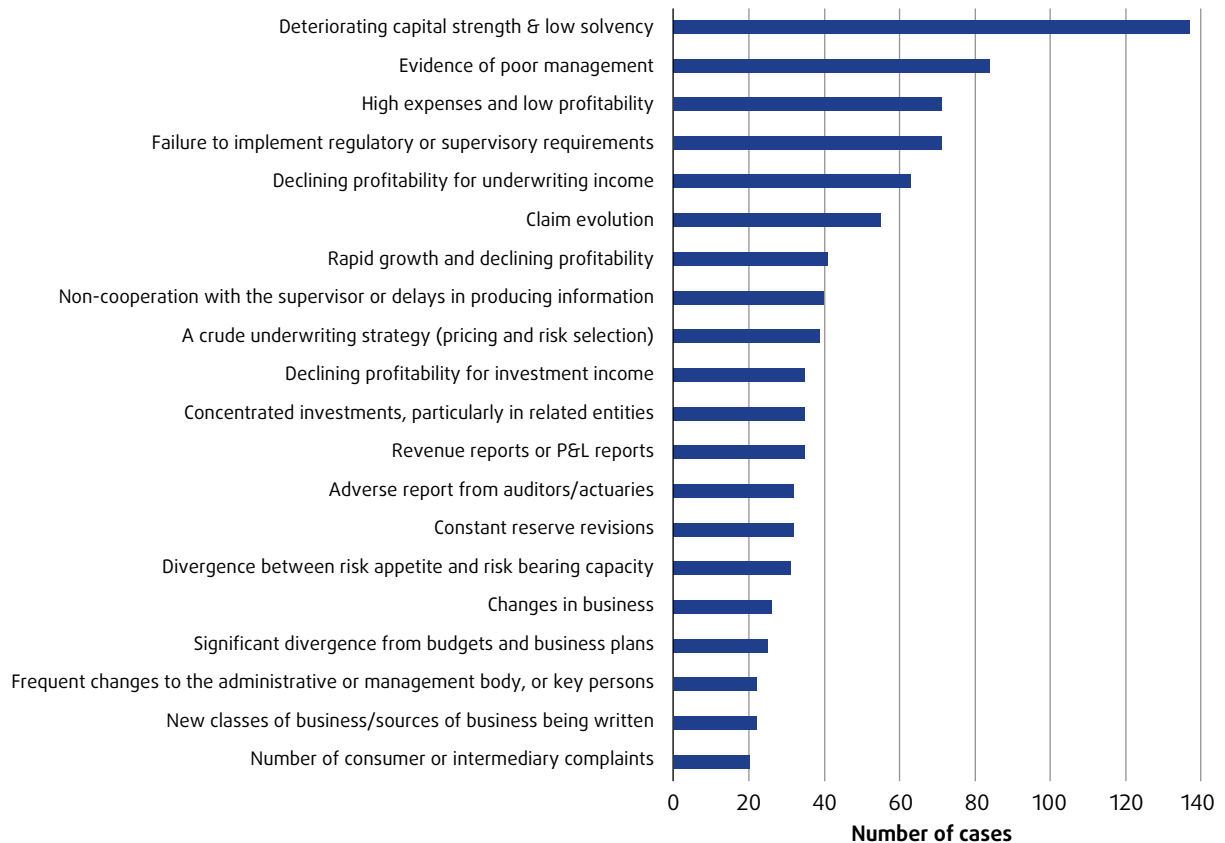
A general analysis of the early identification signals in insurance, as reported by national supervisors on their cases of failures and near misses, reveals a compendium of indicators that helped, or could have helped (with the benefit of hindsight), identify situations

of distress in insurers before the crisis occurs.

The most commonly reported early identification signals in the database are portrayed below. For the purposes of data gathering, it is important to note that EIOPA set no limits on the number of early identification signals to be reported by the NSAs, for each case of failure or near miss.⁴²

40

Figure 18: Top 20 early identification signals reported on failures and near misses



EU insurance undertakings, 1999 - 2016

⁴² This differs from the previous section, whereby EIOPA requested NSAs to identify a maximum of 5 causes of impairment.

Furthermore, the early identification signals are portrayed in Table 5, segmented with respect to cases of failures vs. near misses:

Table 5: Top 5 early identification signals reported

	Failures	Near misses
<i>Top 5 most common early identification signals in insurance</i>		
1	Deteriorating capital strength - low solvency margin relative to the firm's risks	Deteriorating capital strength - low solvency margin relative to the firm's risks
2	Evidence of poor management	High expenses and low profitability
3	Failure to implement regulatory or supervisory requirements or advices	Evidence of poor management
4	High expenses and low profitability	Claim evolution
5	Declining profitability for underwriting income	Failure to implement regulatory or supervisory requirements or advices

The differences in ranking do not appear to be very significant. Nonetheless, the most common early identification signals are discussed in the next section.

6.3. Top 5 reported early identification signals

Deteriorating capital position / low solvency

Based on the information contained in the database, as portrayed in Figure 18, the key signal in early identification of failures and near misses in insurance is the **deteriorating capital strength and/or low solvency margin** of the undertaking. Plantin and Rochet (2007) explain that lack of adequate capital or insufficient reserving would lead to insurance defaults in adverse scenarios.

In US markets, however, Cummins *et al.* (1995) and (1998), and Cheng and Weiss (2011) had tested econometrically the ability and performance of the risk-based capital formula (RBC), as a reliable ratio to detect vulnerabilities in insurers or predict insolvency, but only obtained mixed results.⁴³

EIOPA database, in turn, appears to handle more concluding evidence on the suitability of solvency ratios as a key early warning signal, as is portrayed in Figure 18. This underpins the importance of capital requirements and a minimum required solvency capital requirement (SCR) level, which is calibrated in a way that the probability of failure of an insurer is no more than 1 in every 200 years. Nonetheless, it should be noted that most of the failures and near misses recorded in the database occurred before the entrance into force of Solvency II, and thus at this juncture the early identification signal is not specifically tied to the Solvency II SCR ratio, but also to previous related regulatory or accounting metrics.

The importance of adequate capitalisation in insurance cannot be overstated. Besides acting as a cushion to absorb losses in case the value of assets falls below the value of liabilities, it can contribute to mitigate informational problems such as adverse selection or moral hazard, as posited by Plantin and Rochet (2007).

Evidence of poor management

Evidence of poor management comes second on the list of most commonly reported early identification signals, albeit at a considerable distance from

⁴³ Cheng and Weiss (2011) specifically stated that "the accuracy of the RBC ratio in predicting insolvencies is inconsistent over time and that some previously tested financial ratios that are part of the FAST system do not always reliably predict insurer insolvency".

the abovementioned signal on deteriorating capital position.

The present findings seem to confirm the conclusions of the Sharma Report, which noted that by a “significant margin” one of the two largest causes of intervention by the supervisor before the solvency margin was breached “are inappropriate risk decisions by management”. Likewise, other studies showed that primary causes of failures in insurance were generally linked to poor management and inappropriate risk decisions.⁴⁴

Concerning early identification, however, the key question is how to accurately identify poor management as such, given that this is essentially a qualitative indicator. The introduction of qualitative requirements in Solvency II, in particular with respect to governance and risk management, should contribute to mitigate this problem going forward.

High expenses and low profitability

Coming third on the list of most commonly reported early identification signals are the **high expenses and low profitability**.

This issue is common in troubled insurers. In the context of non-life insurance, one way to measure the extent of this is by using the combined ratio, which is calculated by dividing the sum of incurred losses and expenses, over the earned premiums. The evolution of the combined ratio over time can be of particular interest and function as a useful early identification signal, similar to **claims evolution** (which appears to be more predominant in the case of near misses, as portrayed in Table 5: Top 5 early identification signals reported, and refers to a significant change in the pattern of claims paid; mainly, a sharp increase).

Remarkably, an increase of claims paid versus gross written premiums earned was recognizable in the years prior to

⁴⁴ See, for instance, HIH Royal Commission (2003), Plantin and Rochet (2007) or Standard and Poor’s (2013).

the failure of notorious insurers such as Independent Insurance, coupled with changes in the level of reserves (14th on the list as per Figure 18, and labelled here as constant reserve revisions).

Failure to implement regulatory or supervisory requirements

Fourthly, the **failure to implement regulatory or supervisory requirements or advices**, as requested by the national authority, appears to be an evident marker of distress.

Cases of failure included in the present database report, for instance, several demands by NSAs (e.g. requesting revaluations of the level of technical provisions, strengthening the capital, corrections on the annual reports, organisational changes, etc). These deficiencies, however, were not always eventually complied with, either partly or totally, by the affected insurer.

Similarly, in the context of recovery and resolution, the failure to implement the recovery plan’s measures (due to the measures turning out to be insufficient or because they are not implemented in a timely manner) is generally considered a resolution trigger.⁴⁵ Implicit is the notion that the company that eventually complied with the supervisory/regulatory requirements is more prone to recover/return to the market.

Declining profitability of the undertakings

As a final point, the **declining profitability of the undertakings** is reported on the list of commonly reported early identification signals, in various modalities (such as declining profitability of the underwriting income, declining profitability of the investment income or declining profitability in the context of rapid growth).

Lower profitability can be linked to underpricing. For instance, there are a number of pricing errors, including

⁴⁵ See IAIS (2017a).

lack of reliable statistics, improper use of available statistics, claims’ under provisioning, insufficient loading for acquisition and administrative costs, changes in insured risks and other errors, with aggressive pricing being one of them (EIOPA, 2018).

Aggressive underwriting could come from the competitors. Intense competition among insurance undertakings could drive premiums down, leading to a potential under provisioning and therefore imposing the risk of failure. However, Bellando (2001) notes in his paper that the “risk of under-pricing cannot be totally separated from

the risk of poor management”, which brings us back to the matters discussed in the previous section on management & staff competence risk.

6.4. Early identification signals in relation to insurer size

Several early identification elements appear to be more generally linked to medium to large companies in the database (i.e. those whose balance sheet amounts to at least 100 millions of total assets).

Figure 19: Early identification signals reported for large insurers



Figure 19: Early identification signals reported for large insurers shows graphically the reported early identification signals by occurrence. While it has to be noted that the most commonly reported signals are the same as the ones reported for all insurers (e.g. deteriorating capital position, evidence of poor management), it is in the lower part of the figure that new indicators come into sight.

These early identification signals which appear to be distinctive of large insurers (albeit not very frequently occurring in the database), are listed below:

- Negative results of stress testing.
- Inappropriate bonus and remuneration structure.

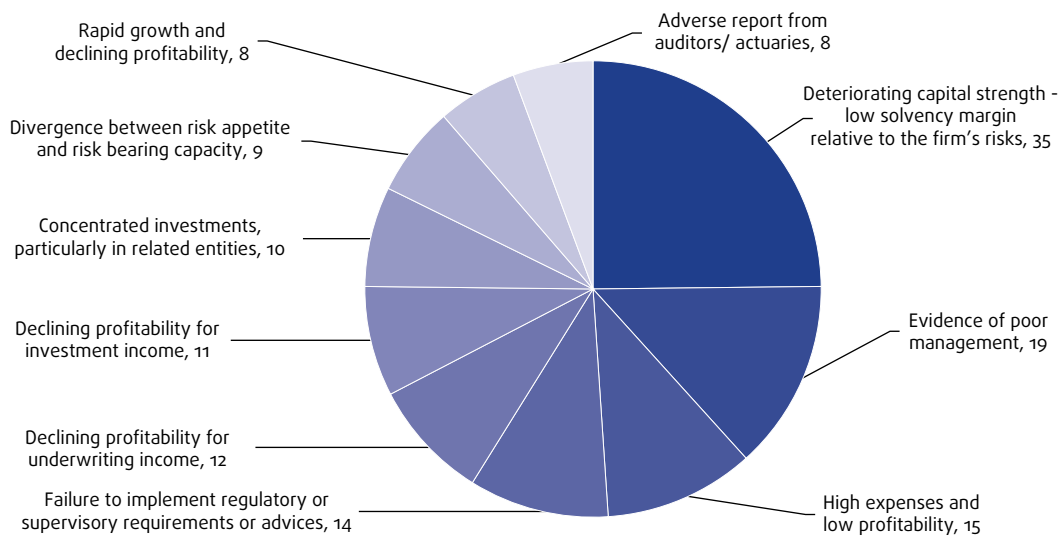
- Rating downgrades.
- Complex group structure.
- Engaging in NTNI activities.
- Increasing distribution of dividends.
- Breach of risk appetite limits.

6.5. Early identification signals in relation to business type

Concerning potential dissimilarities in the early identification signals across types of business, there appear to be no substantial differences.

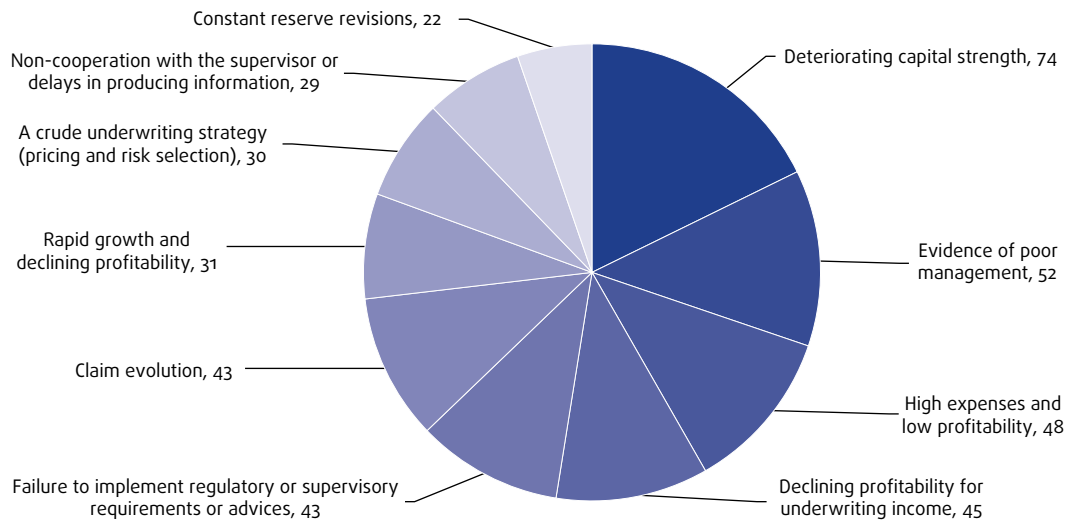
Below is a summary of the most common early identification signals reported in cases of troubled or failing life and non-life insurers.

Figure 20: Top 10 Early identification – Life



EU life undertakings, 2000 - 2016

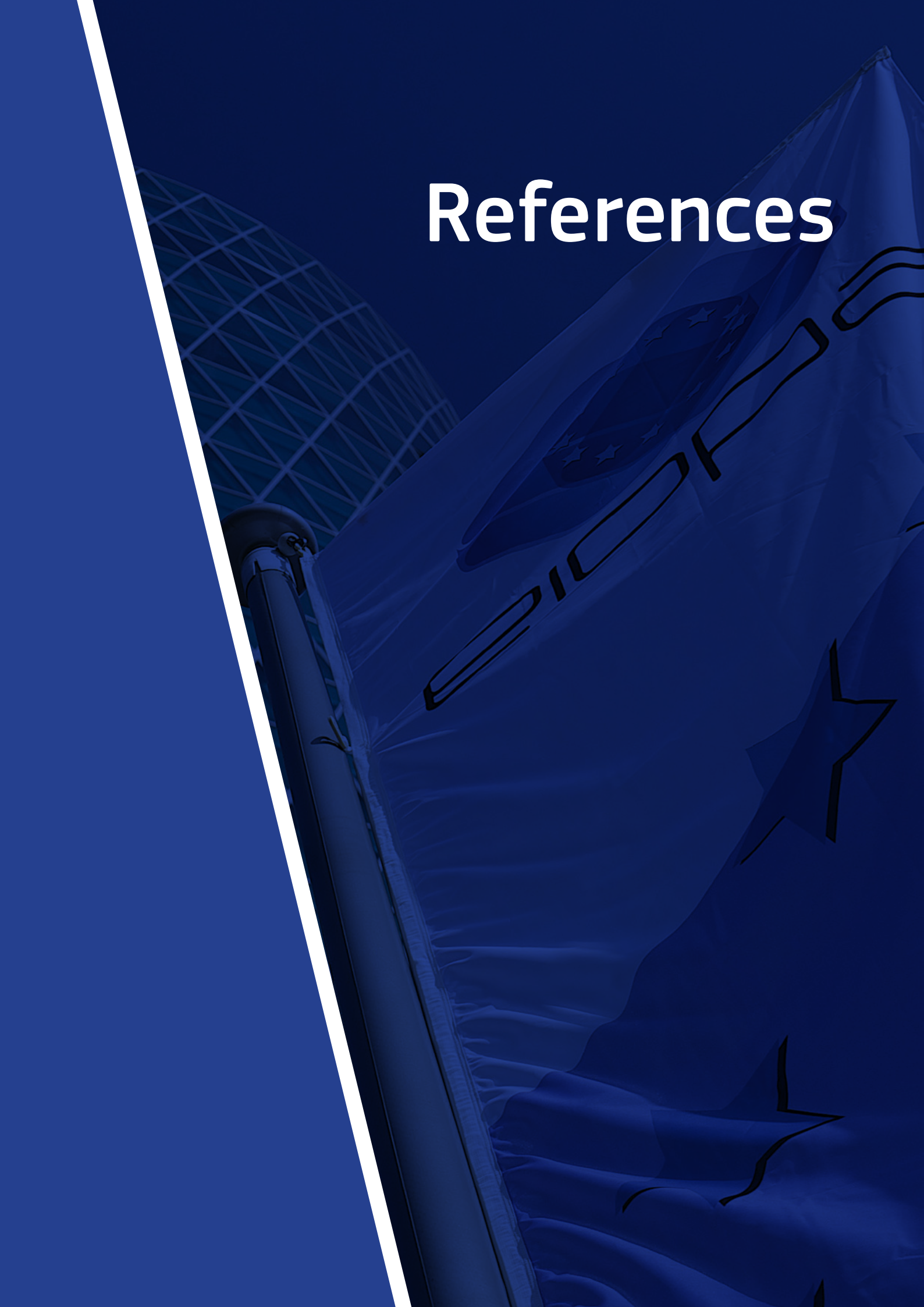
Figure 21: Top 10 Early identification – Non-life



EU non-life undertakings, 1999 - 2016

As expected, the key early identification signal for (near) failures in both life and non-life insurers is the deteriorating capital strength and/or low solvency margin of the insurer. This *a priori* reinforces the conclusion that solvency ratios are a key early identification signal in insurance, regardless of the type of business (life, non-life, composite) or the insurer's size.

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