

An alternative way of presenting actuarial topics **(on the example of movement analysis of non-life reserves)**

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Goals of today's presentation

Keep the attention of everyone

Provide valuable insights on the topic

Have fun

(and give an idea about an alternative way of presenting)

What others think actuaries do

MCF productions

Actuaries

What my friends think I do

What my mom thinks I do

What society thinks I do

What other actuaries think I do

What I think I do

What I actually do

Ryan McAllister, FFIC in 2010 (<http://online.wsj.com/article/SB10001424052748703580904574638321841284190.html>)

Description vs. illustration

It is much easier to understand something illustrated than something described

Home > Collections > International Space Station

Weird fact of the day: You can't cry in space

May 25, 2011



Totally awesome fact we learned today:
You can't cry in space. Really.
Here's how we found that out.

Astronaut Andrew Feustel got watery eyes during a spacewalk, but no tears... (AGENCE FRANCE PRESSE/GETTY...)

Recommend 944 Tweet 71 More

http://articles.washingtonpost.com/2011-05-25/lifestyle/35263389_1_andrew-feustel-international-space-station-mike-fincke

VS.



0:49 / 1:25

Tears in Space (Don't Fall)

canadianspaceagency · 195 videó

Feliratkozás 189 099

2 511 818

14 511 105

<http://www.youtube.com/watch?v=P36xhtpw0Lg>

Assessing the experience level of the audience

Actuaries doing Movement
Analysis of NL Reserves

Actuaries dealing with Non-Life

Audience

Reserving basics

Life vs. Non-Life – What is the main difference between reserving?

Life: mainly for *claims not yet occurred*
(premium provisions)

Non-Life: mainly for *claims already occurred*
(claims provisions)

Non-Life Claims Provisions

Claims happened, reserves are set

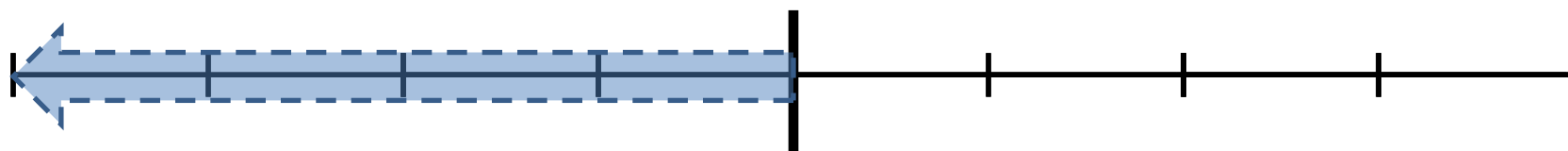
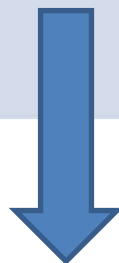
Uncertainty about reporting, payment, settlement

Reserving basics

Reserves as part of the balance sheet

Estimations at a specific point in time

Uncertainty about adequacy



Measuring the adequacy level

Looking back: **run-off analysis**

Assessing only the adequacy level from the beginning

Anything happened later is not captured

Základní obsah dalších informací předkládaných České národní bance podle § 9

Část 1: Další informace k výkazu POJ (ČNB) 10-04 „Rozvaha pojišťovny/zajišťovny pro účely dohledu“

Název: Run-off analýza rezervy na pojistná plnění pro neživotní pojištění

Obsah:

I. Další informace obsahuje run-off analýzu rezervy na pojistná plnění ve struktuře a rozsahu, který pojišťovna nebo zajišťovna vyhotovuje v rámci ověřování souladu hrubé výše rezervy na pojistná plnění s následnou skutečností. V úvahu se přitom bere následující

1. Předložená run-off analýza se zpracovává odděleně pro pojišťovnou nebo zajišťovnou zvolené členění do výpočetních skupin, podle kterých byla k danému období stanovena rezerva na pojistná plnění určená ke krytí závazků z pojistných událostí v období před rozvahovým dnem vzniklých, ale v tomto období nehlášených;
2. V předložené run-off analýze se testují stavy rezervy na pojistná plnění, a to i se zpožděním delším než jeden rok, pokud je to relevantní;

Run-off reporting in Czechia

Strana

Částka 138

č. 433/2009 Sb.

Část
účely

Náze

Obsa
I. Da
který
n. pč

]

]

zpoždění delším než jeden rok, pokud je to relevantní,

le § 9

ovny pro

i rozsahu,
e rezervy

ou nebo
c danému
pojistných
období

a to i se

**And now for
something
completely different**

The problem of water consumption during a seminar

A lot of bottles have to be at disposal to cover the water consumption during the workshop.

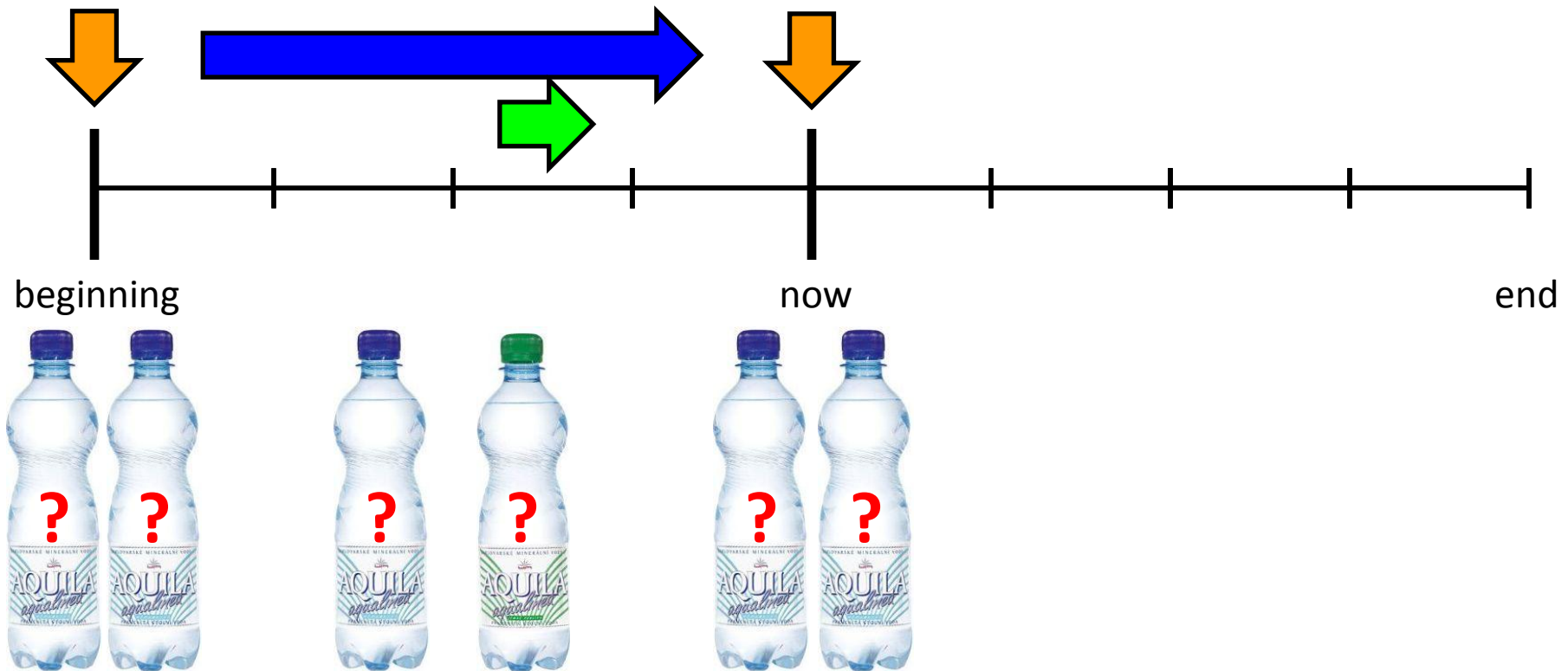
Some bottles are prepared in the meeting room
Some are kept in the storage room



The problem of water consumption during a seminar

Measuring the adequacy of the prepared amount of bottles

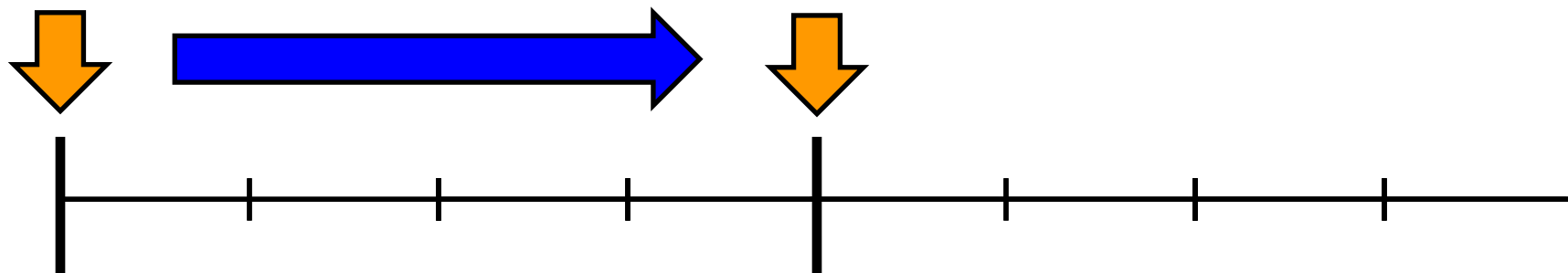
Only this seminar → only the adequacy level from the beginning
Other meetings not → everything estimated later is not captured



Run-off

Inputs

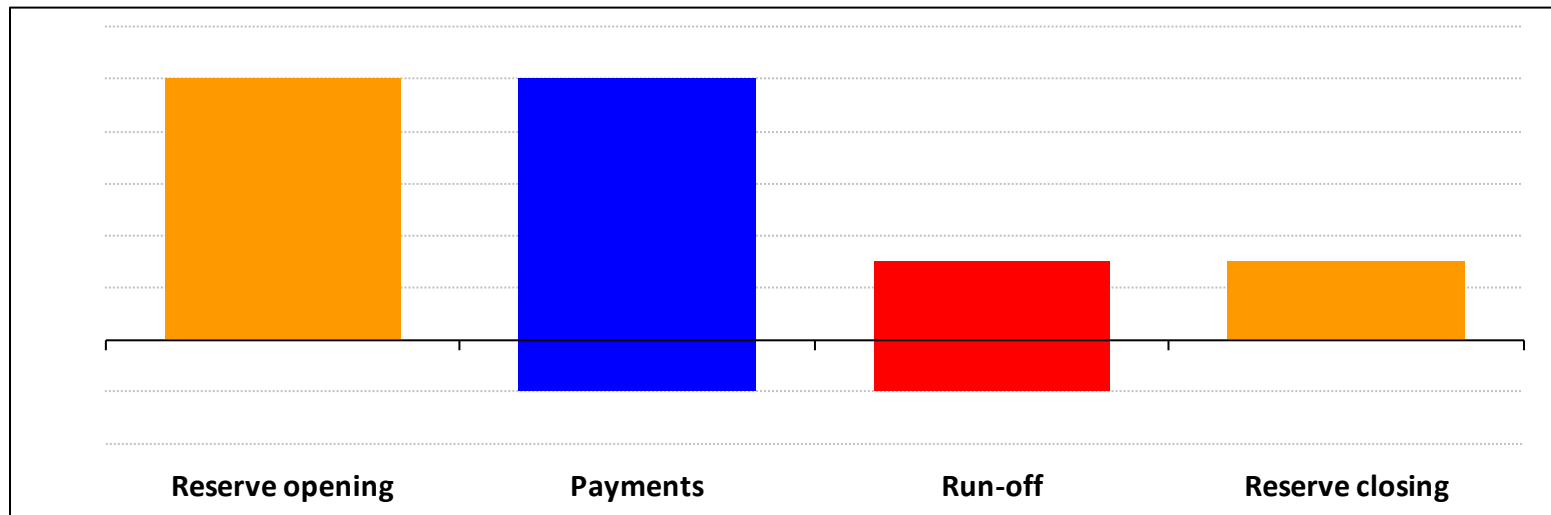
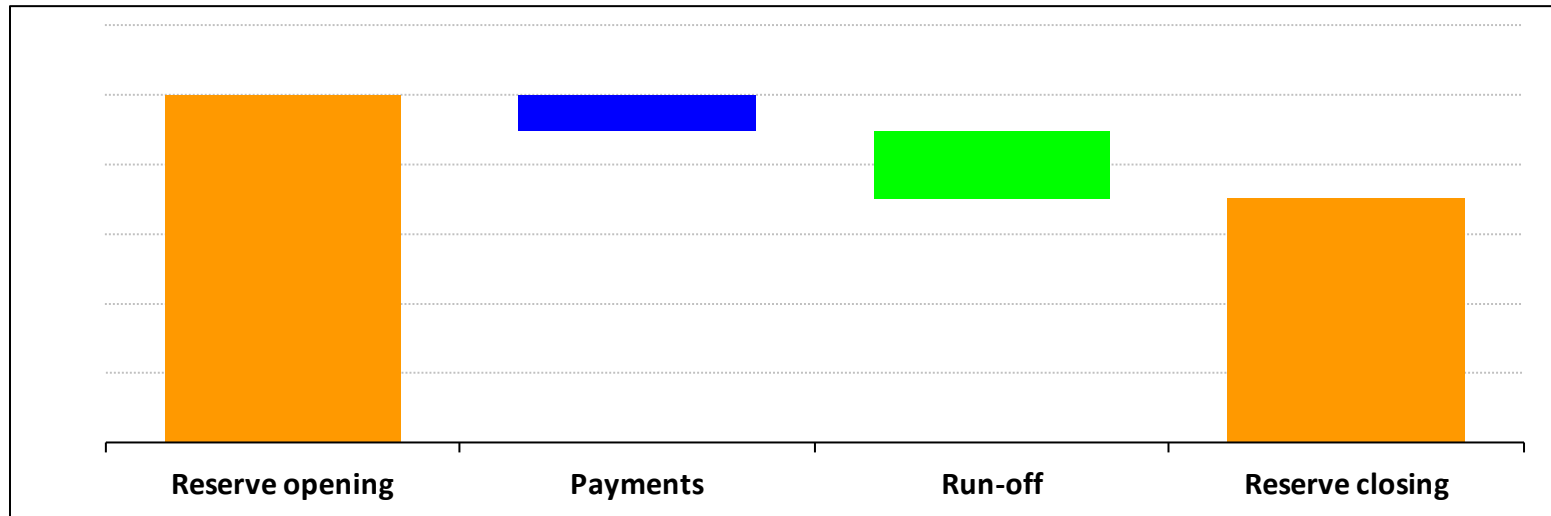
Estimation at the beginning and at the end of the period
Consumption in the period



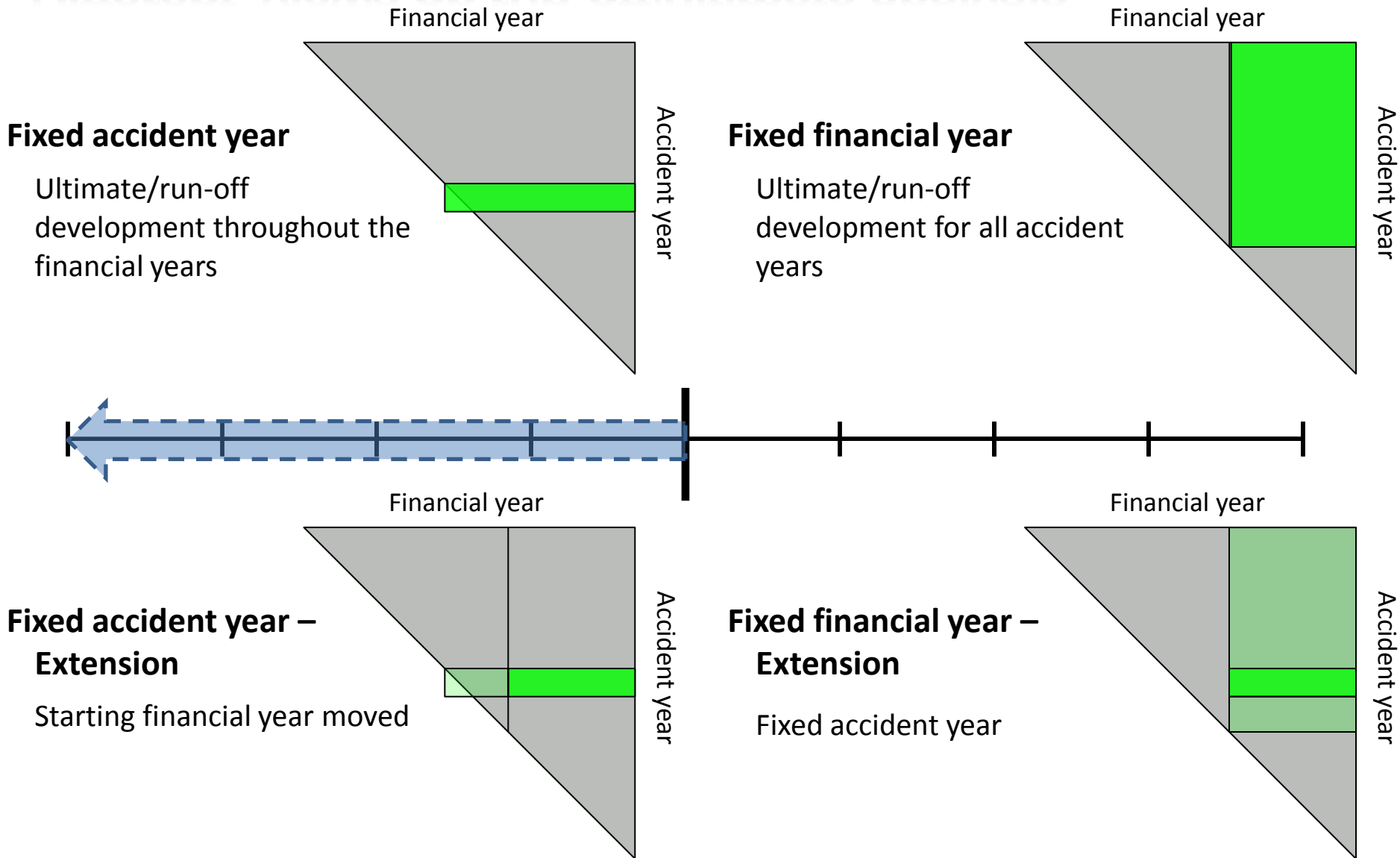
Approach

The (old) adequacy is measured by the performance of the period
New occurrences during the period are not assessed

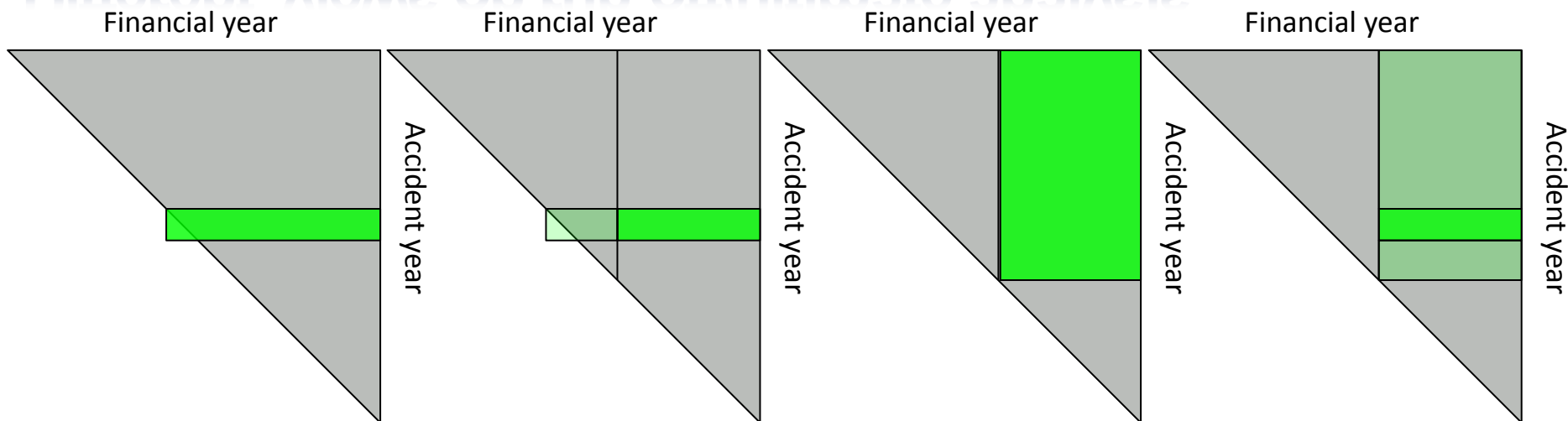
Run-off on a movement analysis chart



Different views on run-off/ultimate analysis



Different views on run-off/ultimate analysis



Questions

- Which view do you usually use in your actuarial analysis?
- And in the communication with your management?
- Which view(s) are required in the regulatory reporting?

Why is it important to look back? – Reserving Cycle

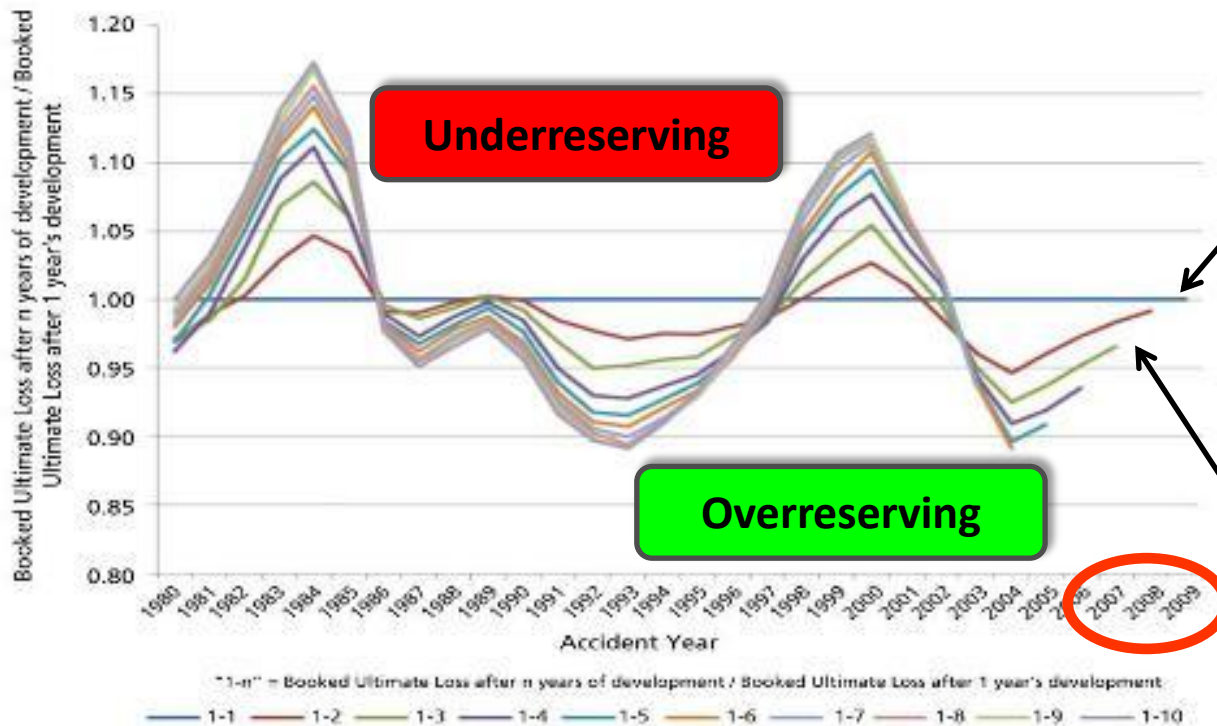


Figure 1 shows the U.S. reserving cycle over the past 30 years.

The blue line represents the first-year evaluation of industry ultimate loss indexed to one.

The other lines show the revisions to that figure at one-year increments: red represents the two-year evaluation, green represents the three-year evaluation, etc., up to the grey line, which shows the ultimate computed loss figure 10 years after the accident year.

Source: Guy Carpenter & Company, L.L.C. and Lighthouse LLC

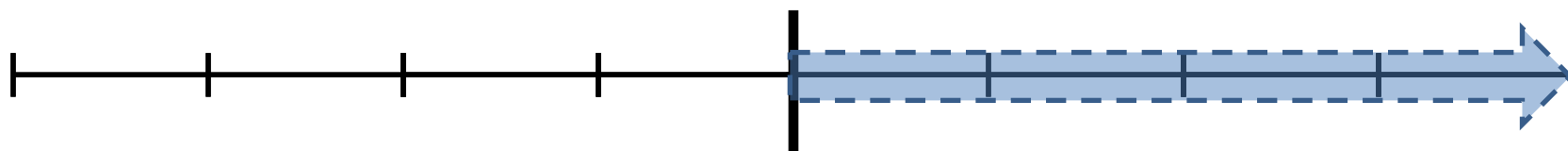
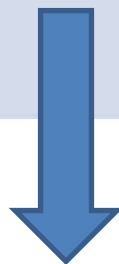
<http://www.gccapitalideas.com/2011/09/14/reserving-cycle-analysis-suggests-tightening-ahead/>

Reserving basics

Reserves as part of the balance sheet

Estimations at a specific point in time

Uncertainty about adequacy



Measuring the adequacy level

Looking forward: **comparison with an alternative estimation**

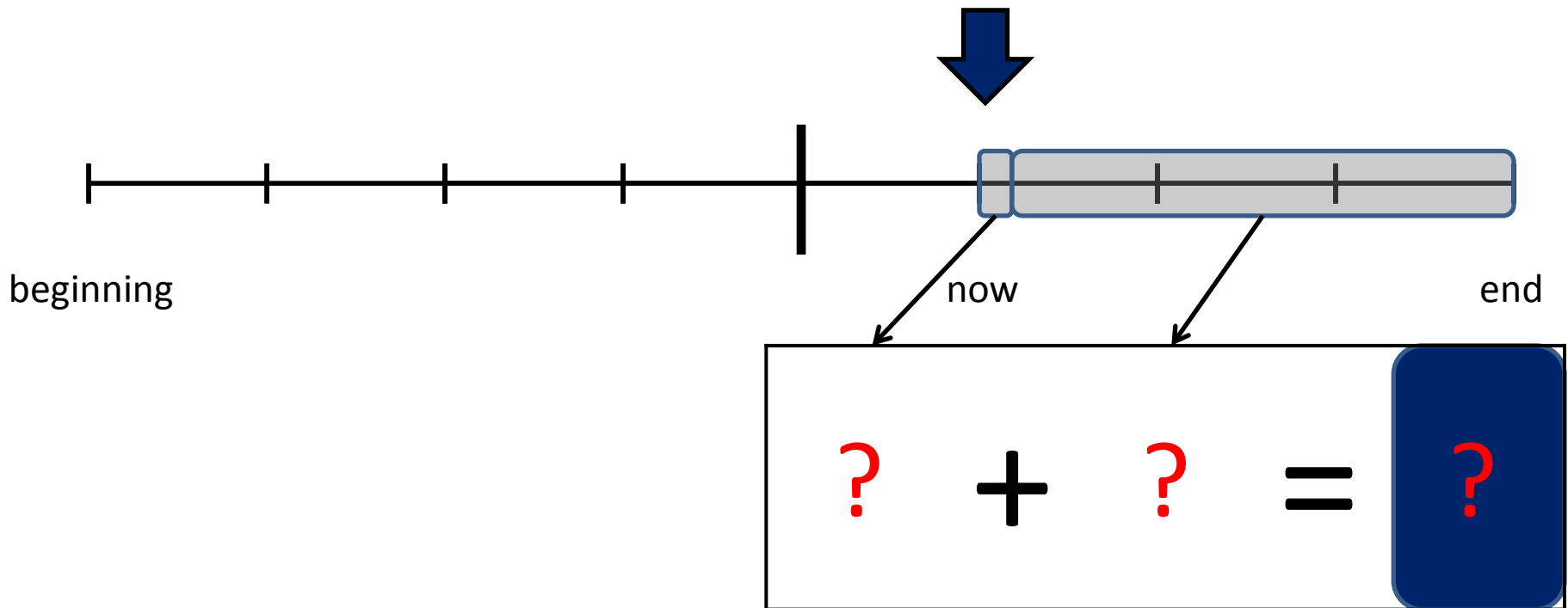
Assessing the total adequacy at the moment

The problem of water consumption during a seminar

Estimating the future consumption (everybody his/her own)

For the next 10 minutes

For the rest of the day

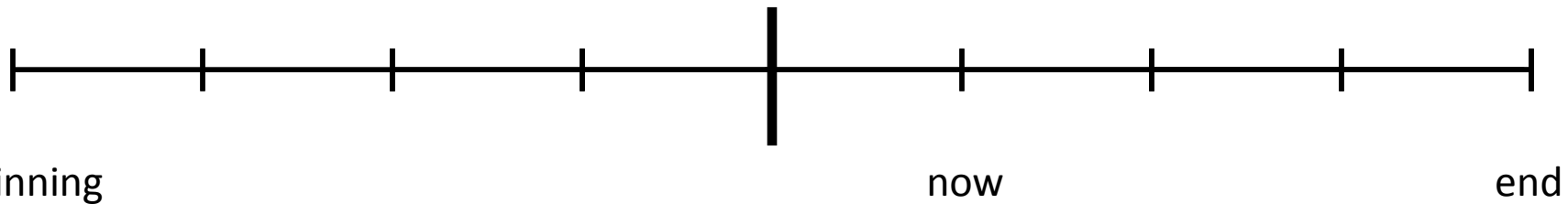
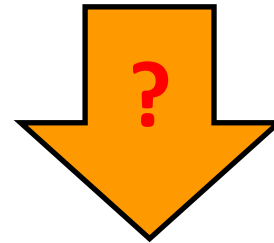


Comparison of two estimations

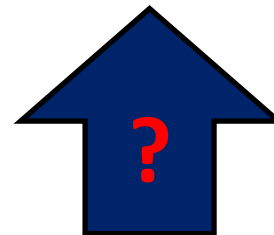
Adequacy by an alternative estimation

The (current) adequacy is the difference between the two

Booked reserves



Alternative estimation



Comparison summary of the adequacy assessments

Run-off

- Looks back
- Only the old reserves
- Adequacy:
performance of a period
- Part of the P&L
- Measures this period

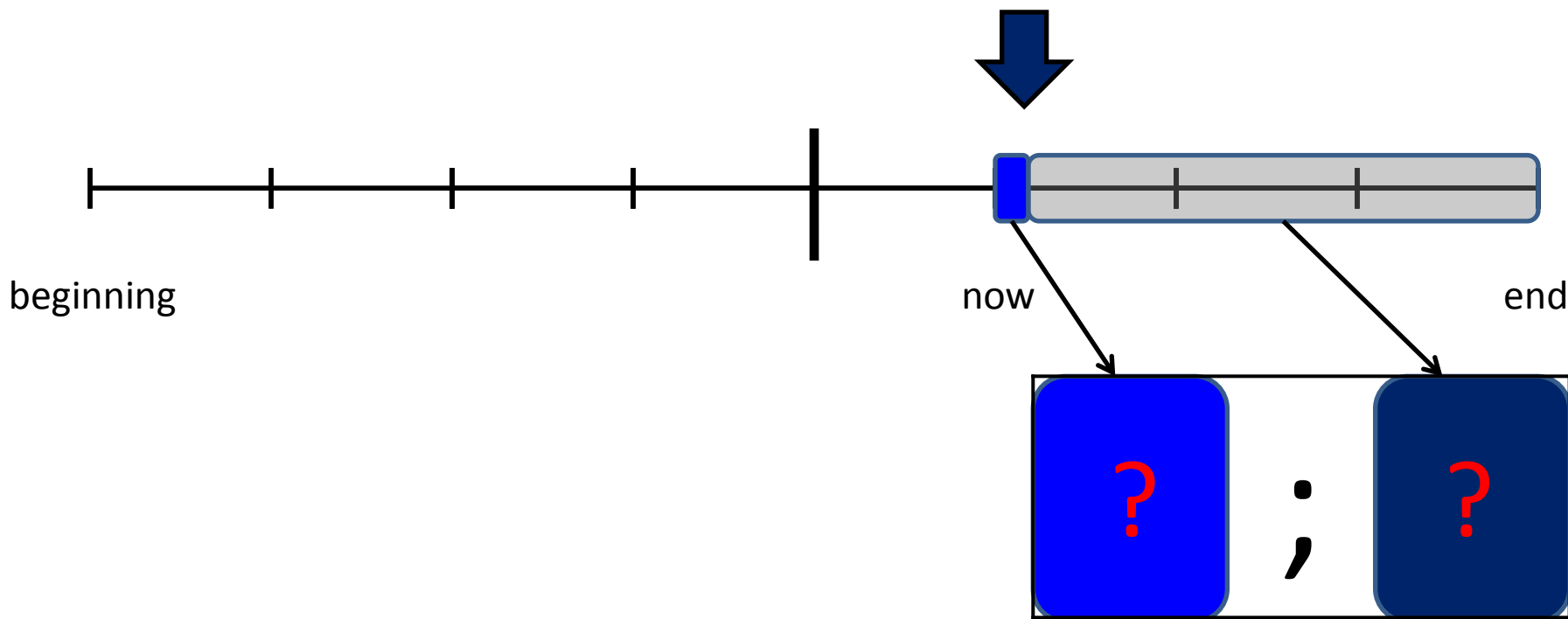
Alternative estimation

- Looks forward
- Reserves at the moment
- Adequacy:
difference of two estimations
- Uses a BS item
- Measures the whole term

Re-estimation

After 10 minutes passed

Your real consumption in the past 10 minutes
New estimation for the rest of the day

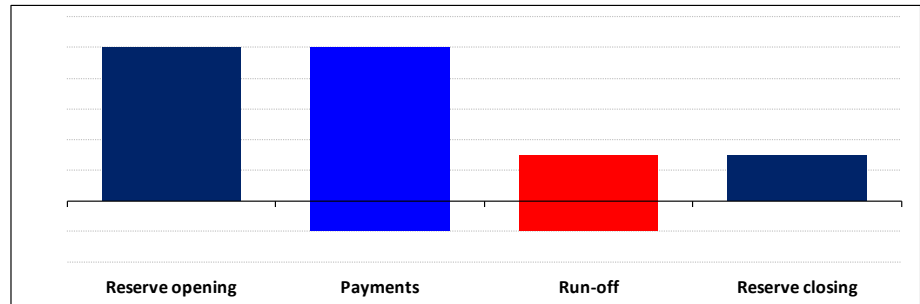
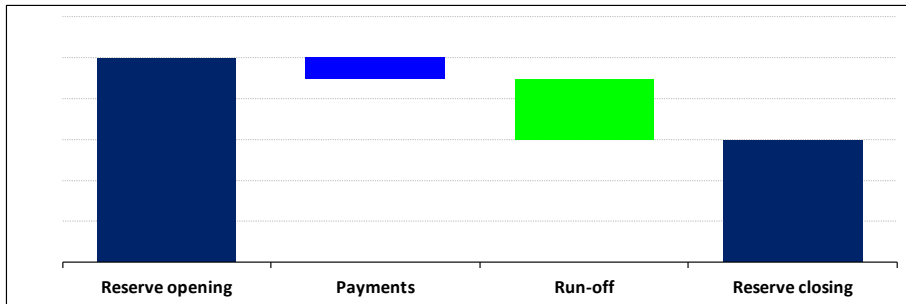
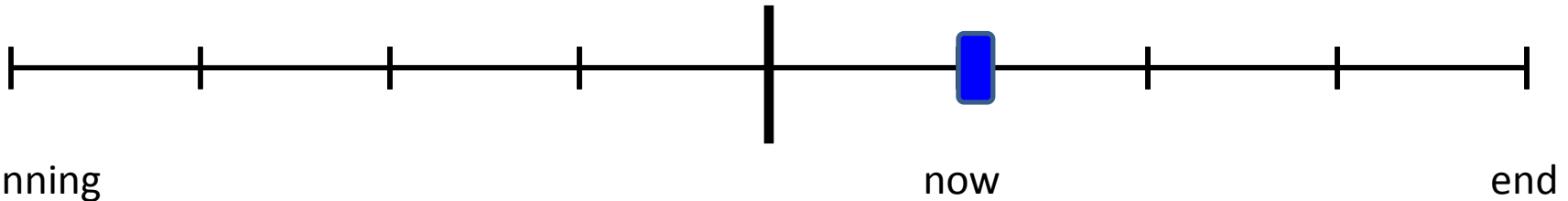


Adequacy of the alternative estimation

Run-off can be produced for any reserve estimation

Estimation at the beginning and at the end of the period

Consumption in the period

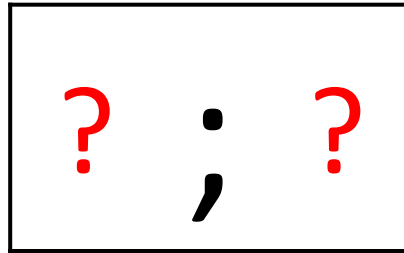


Alternative estimation

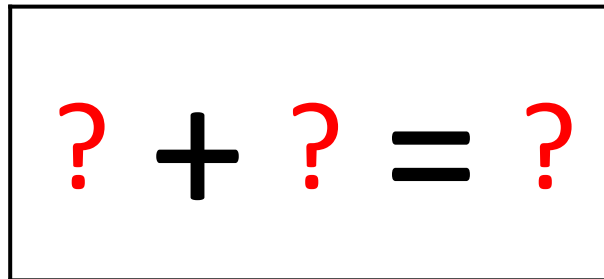
What is the fundamental plus of the alternative estimation?

It is (ideally) based on a cash-flow!

Possibility to compare (a part of) the estimation with experience



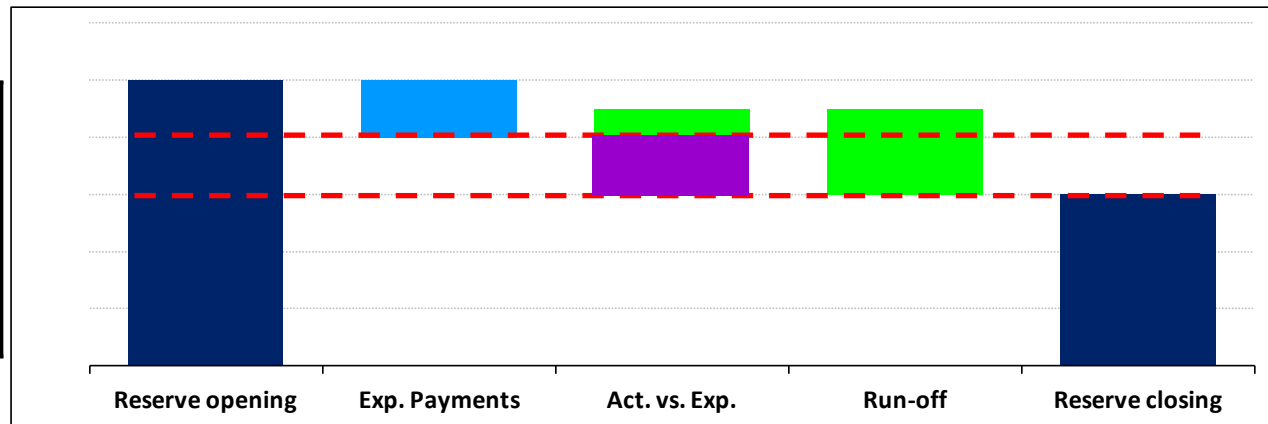
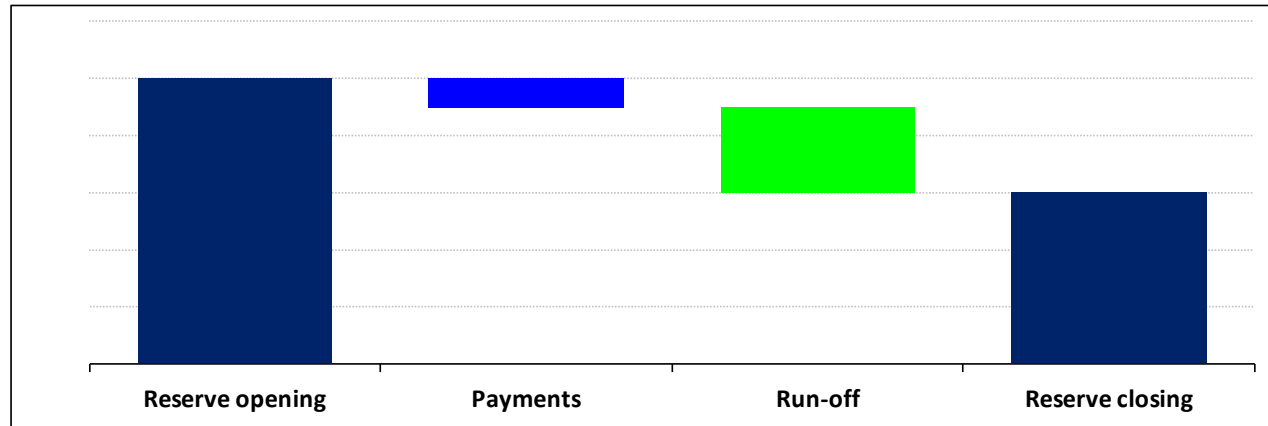
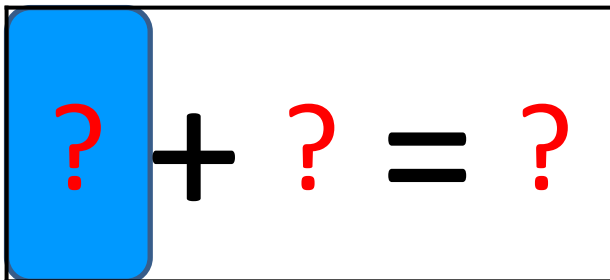
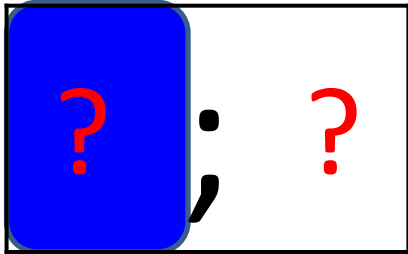
MIN



Actual vs. Expected

Further details in the movement analysis

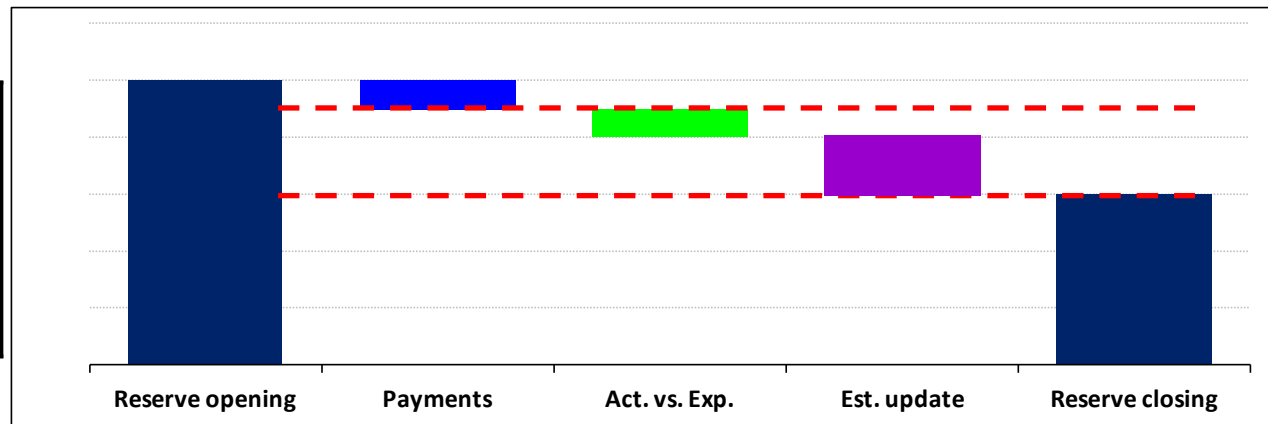
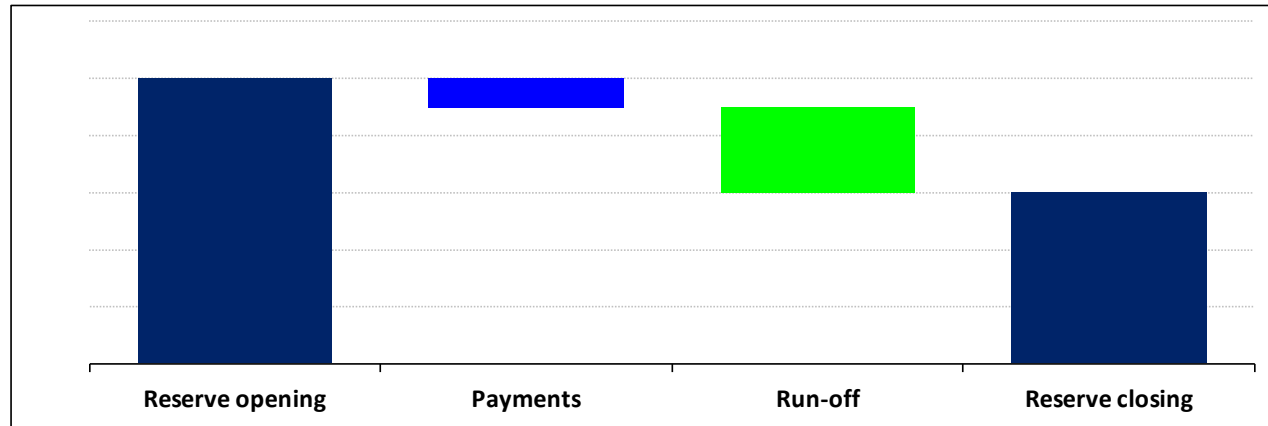
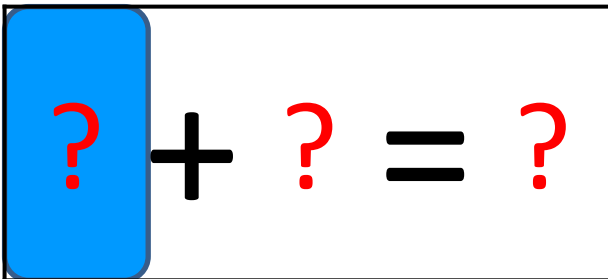
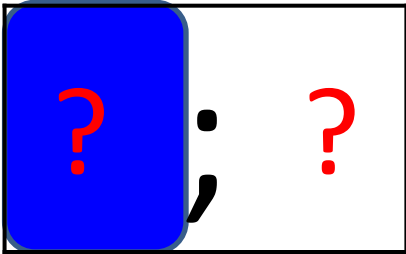
Decompose the actual payments to expected and difference



Actual vs. Expected

Another option

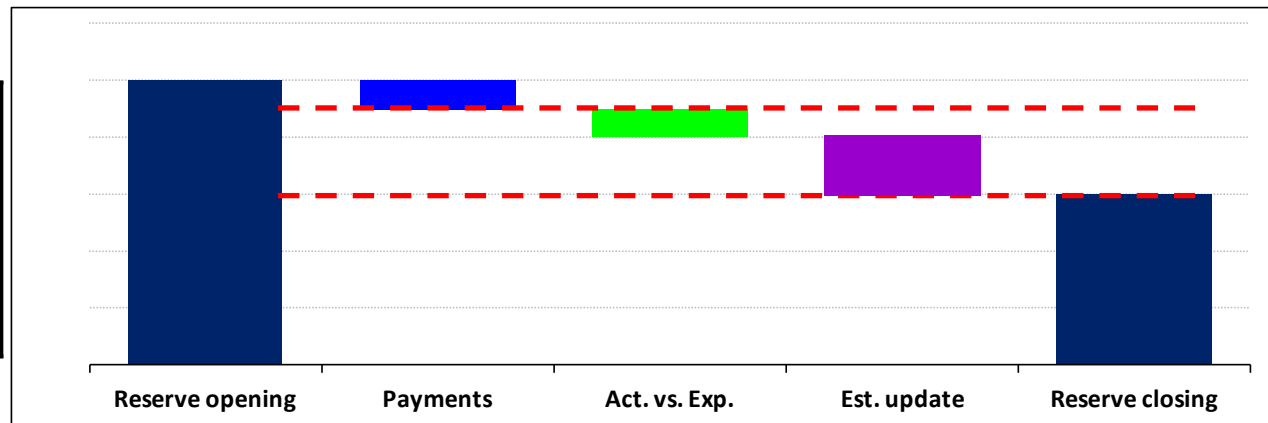
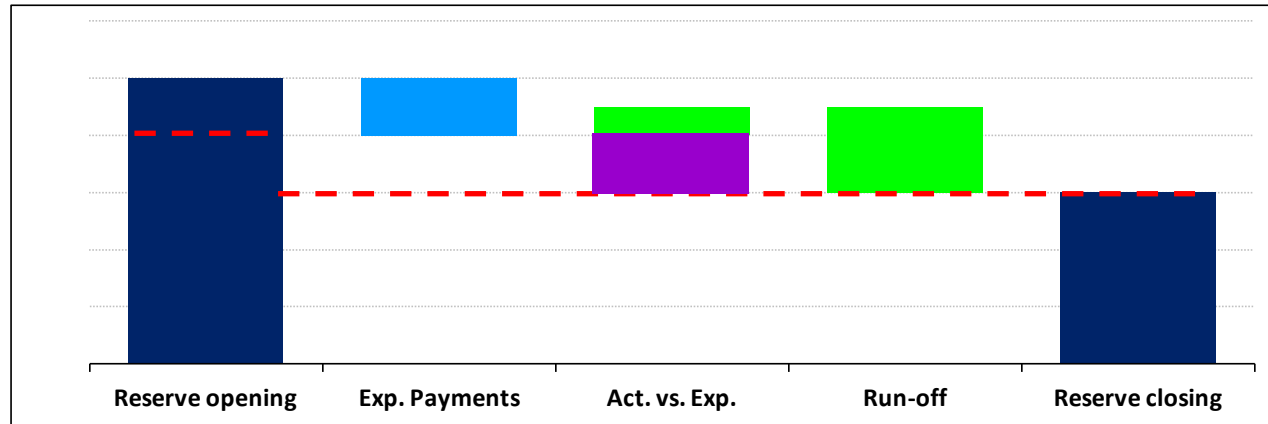
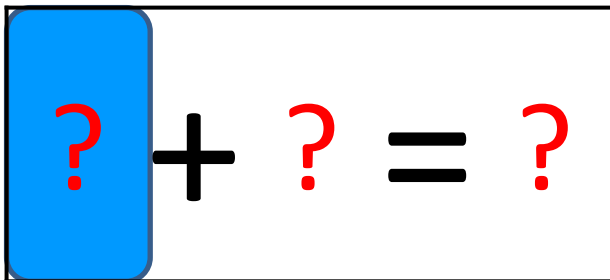
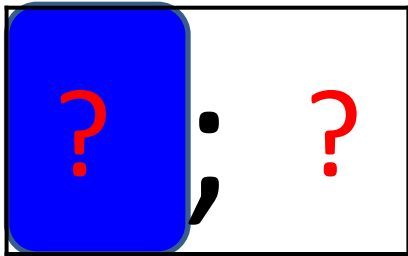
Keep the actual payments, decompose the run-off



Actual vs. Expected

Which option do you prefer?

We elaborate the first one, as it has an advantage – we will see

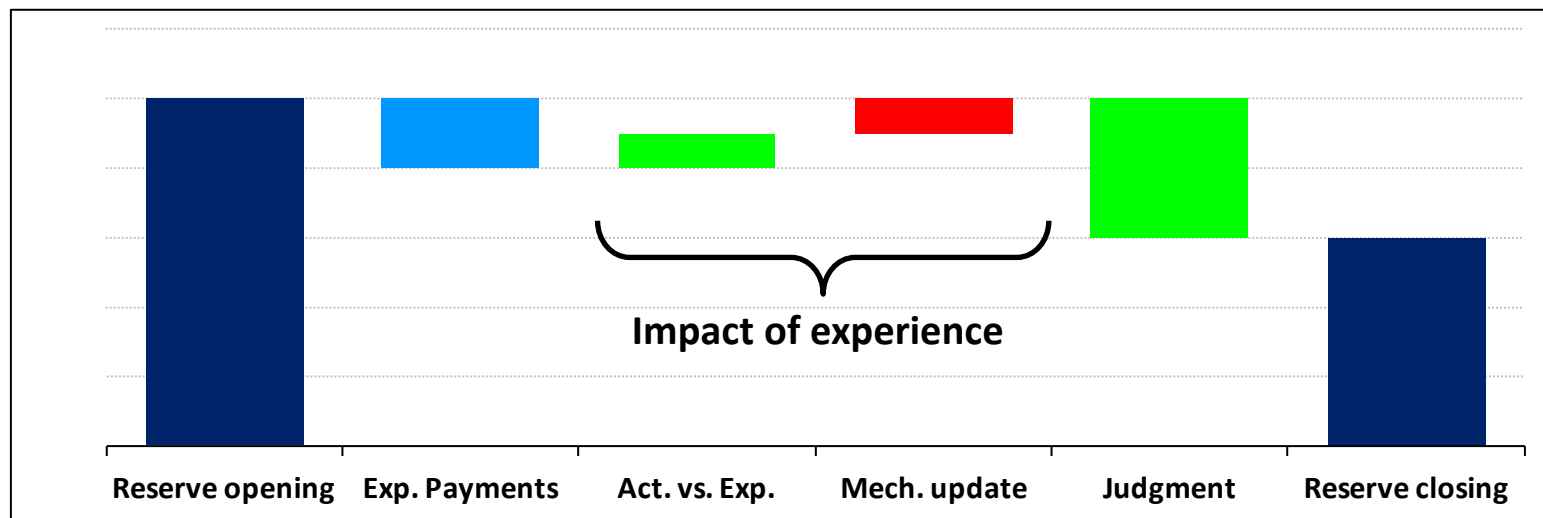


Mechanical update and Judgment

The run-off may be further detailed

Mechanical update: applying the same approach on new data

Judgment: modifying the approach

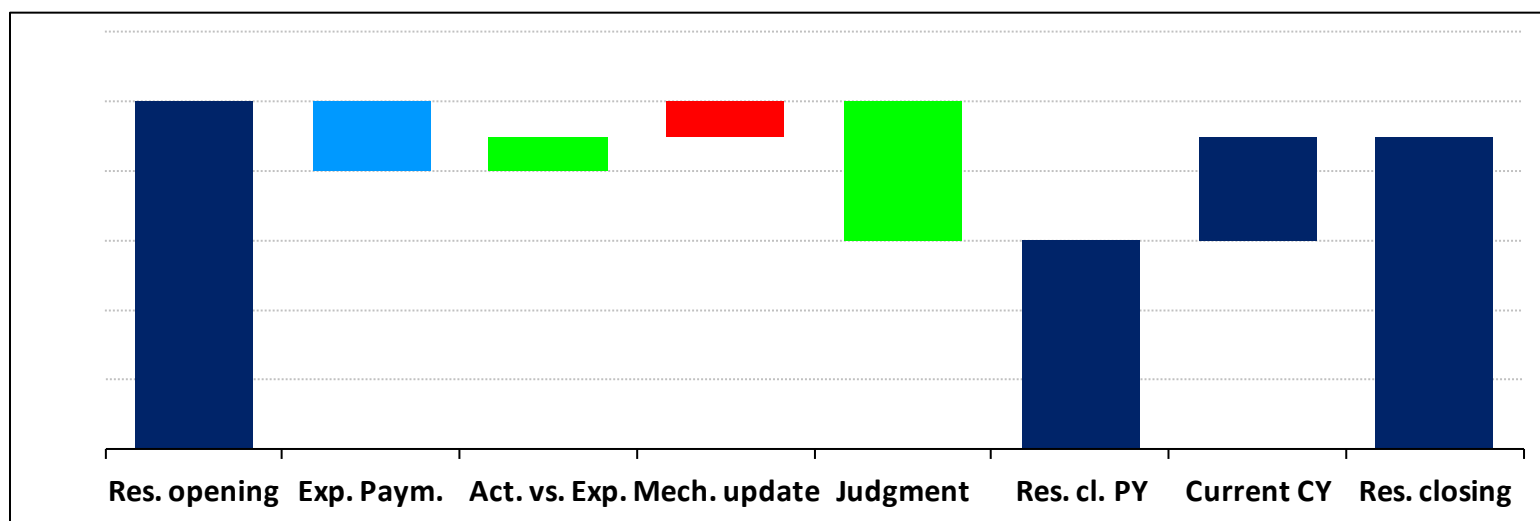


Typically: **mechanical update** is to apply e.g. the same loss development factor approach on the enlarged triangle, **judgment** is to change the approach settings based on this new data

Completing and extending

Full movement analysis

Inclusion of the estimates for the current period



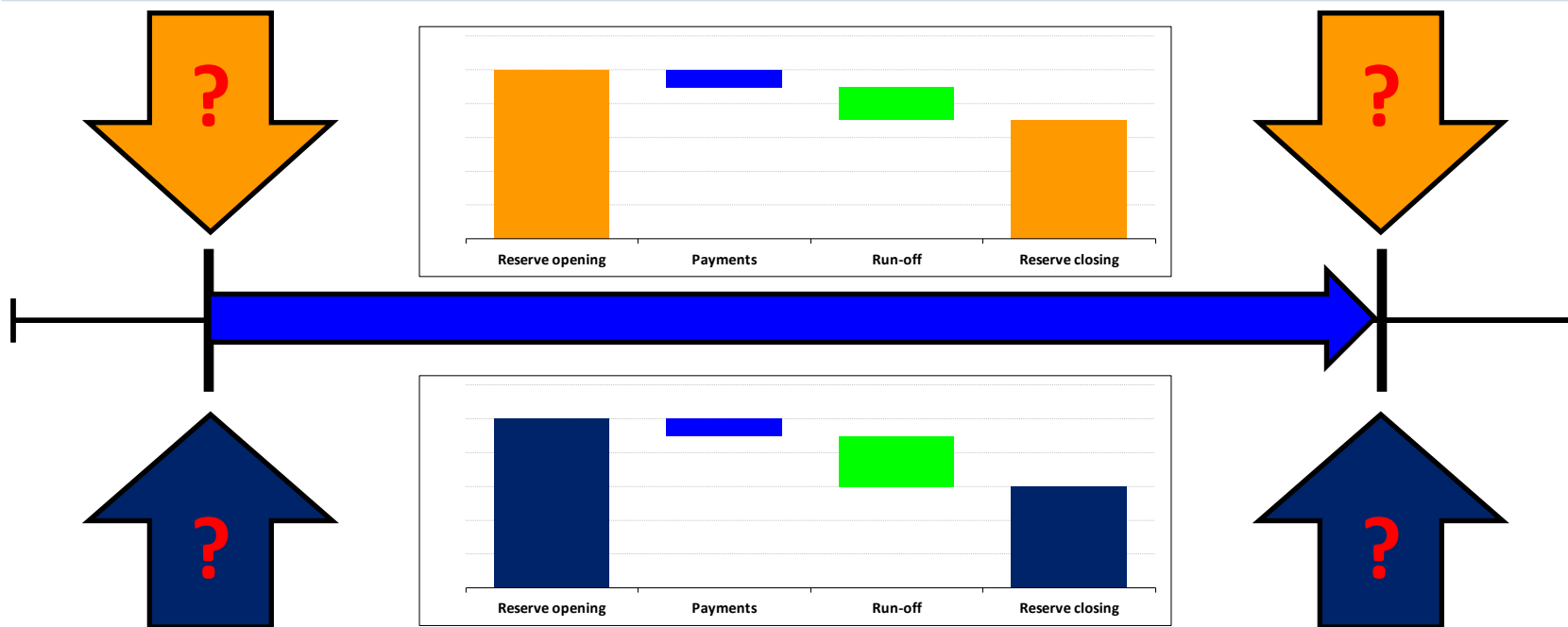
Possible extensions

The ***mechanical update*** and the ***judgment*** part might be extended by reflecting different methods (e.g. Paid/Incurred) stepwise
The ***judgment*** might be more detailed (ratios, averages, tail)

Movement of the adequacy

We can have both estimations for two valuation dates

The movement of the adequacy might be produced



Note: the payments are the same

→ the adequacy movement can be captured by the two run-offs

The run-off of the CF-based estimation might be detailed further

Solvency II context

Pillar 3 – QRT – Variaton Analysis (VA C2C)

Variation in Best Estimate shall be provided

The part related to undiscounted claims provisions:

- *Variation of BE due to year N projected in and out flows - risks covered prior to period (C7/CC8)*
- *Variation of BE due to experience and other sources - risks covered prior to period (C8/CC9)*
- *Variation of BE due to changes in non economic assumptions - risks covered prior to period (C9/CC10)*

These items shall be possible to fill with the amounts included in the movement analysis

Actuarial Function - DIRECTIVE 2009/138/EC, Article 48

1. Insurance and reinsurance undertakings shall provide for an effective actuarial function to:

- (d) compare best estimates against experience;
- (e) inform the administrative, management or supervisory body of the reliability and adequacy of the calculation of technical provisions;

Goals of today's presentation – your feedback

Keep the attention of everyone

Provide valuable insights on the topic

Have fun

Questions and comments



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