Movement analysis of non-life reserves (in the Solvency II context)

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Hungarian Actuarial Society

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Goals of today's presentation

Keep the attention of everyone

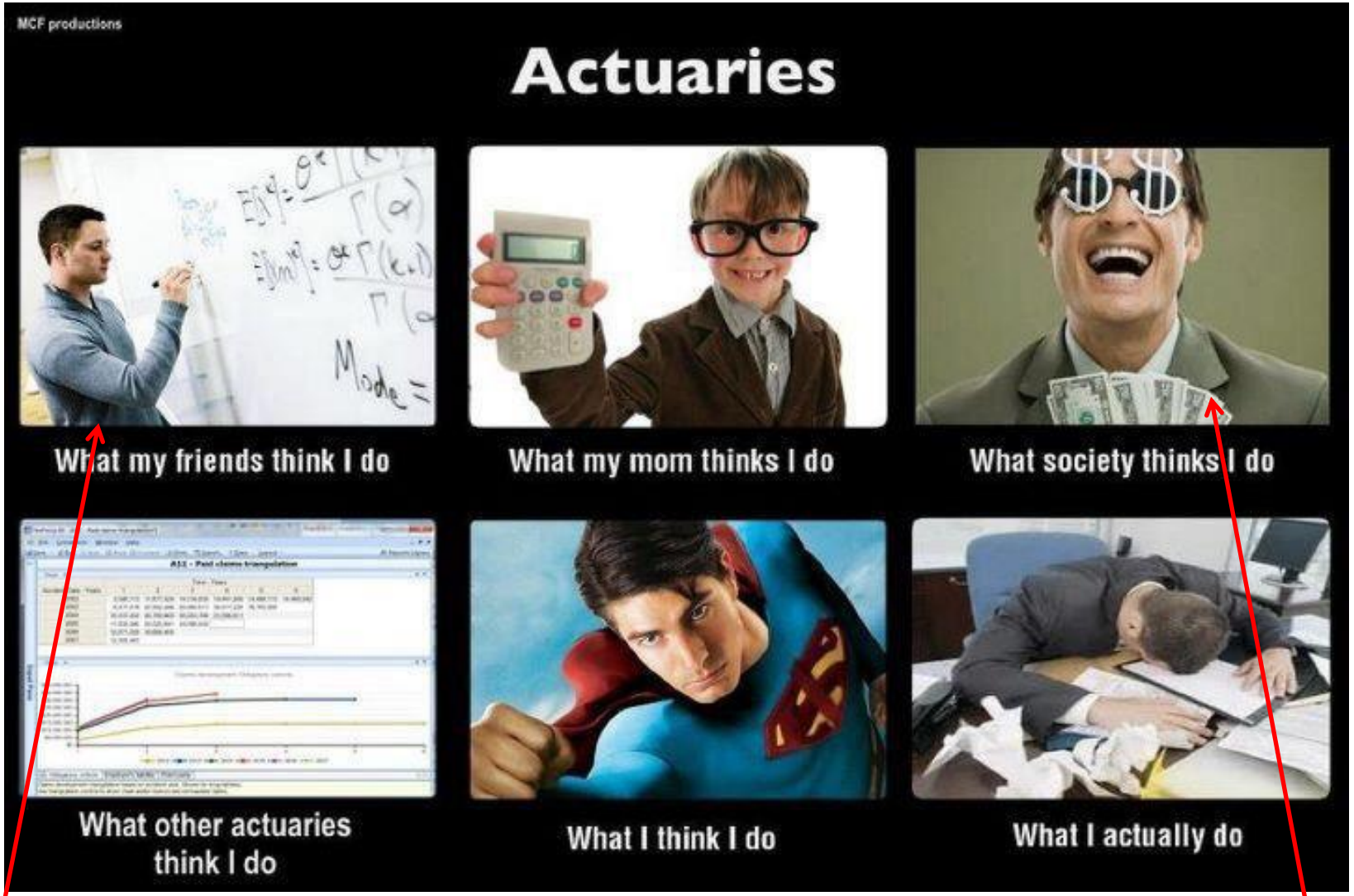
(life actuaries don't get lost, non-life actuaries don't get bored)

Provide valuable insights on the topic

Have fun

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

What others think actuaries do



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

Description vs. illustration

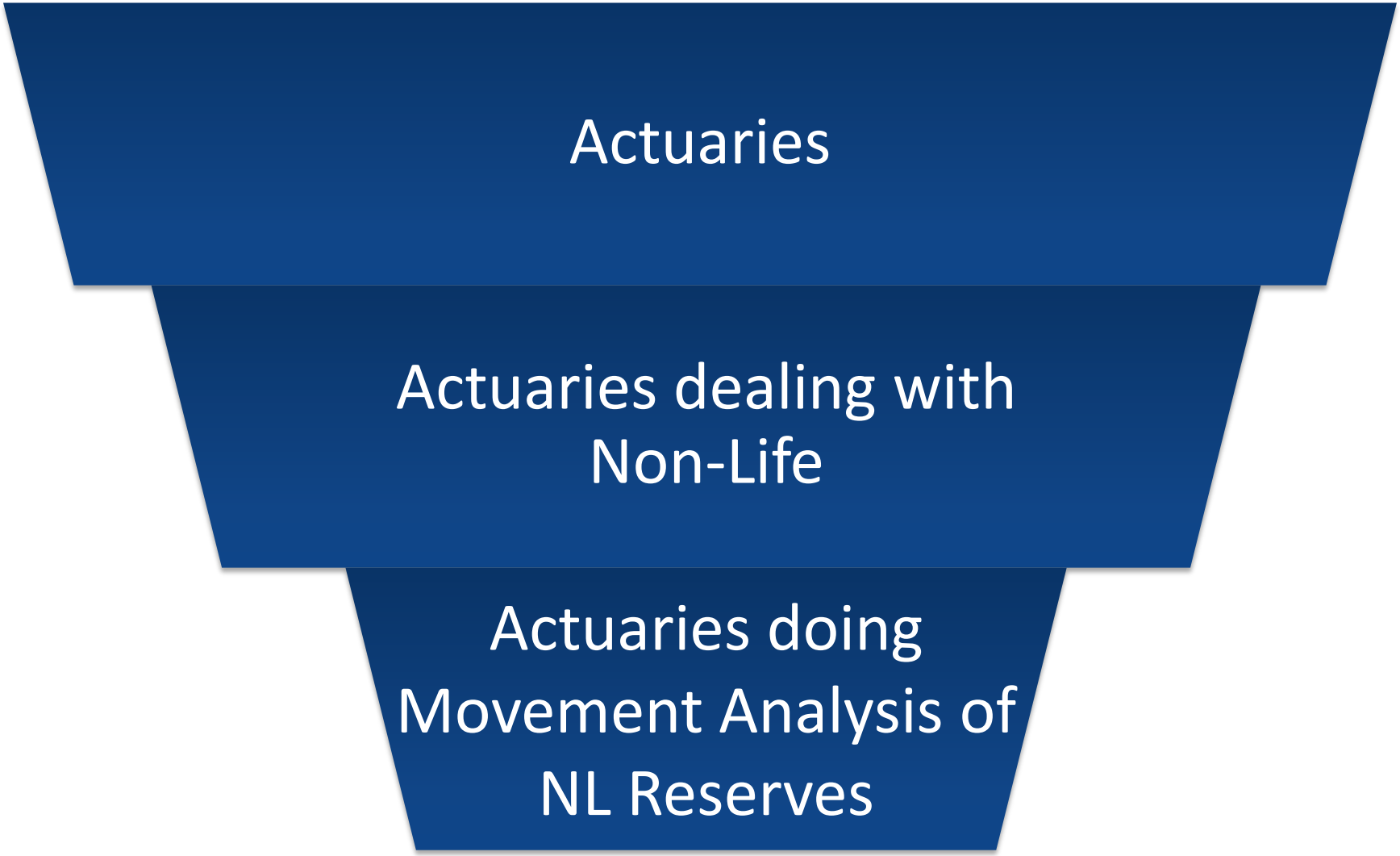
It is much easier to understand something illustrated than something described

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

vs.

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

Assessing the experience level of the 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

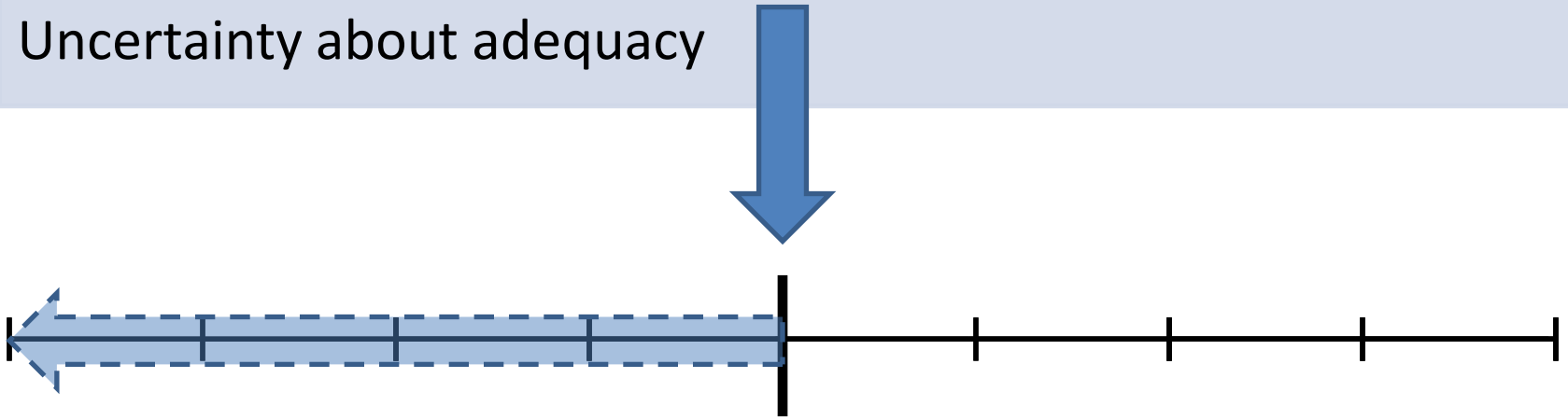
Uncertainty about reporting, payment, settlement

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

Everything happened later is not captured

Run-off reporting in Hungary

7/2001. (II. 22.) PM rendelet a biztosítóintézetek aktuáriusi jelentésének tartalmi követelményeiről

- …
- Bekövetkezett és bejelentett károk tartalékának felhasználása: azon kárrészekre a tárgyévi, illetve a tárgyévet megelőző évben történt kár- és járadékkifizetés, melyekre a tárgyévet két évvel megelőző év záró napján is képeztek bekövetkezett és bejelentett károk tartalékát, továbbá e kárrészekre a tárgyév záró napján képzett matematikai tartalék, annak költségtartalma nélkül.
- Bekövetkezett és bejelentett károk tartalékának záró tartaléka: a tárgyévet két évvel megelőző év záró napján történt tartalékképzésnél figyelembe vett kárrészekre a tárgyév záró napján képzett bekövetkezett és bejelentett károk tartaléka annak költségtartalma nélkül.
- Bekövetkezett, de még be nem jelentett károk tartalékának felhasználása: a tárgyévet két évvel megelőző év záró napjáig bekövetkezett, de addig még be nem jelentett károkra a tárgyévi, illetve a tárgyévet megelőző évben történt kár- és járadékkifizetés, a tárgyév záró napján képzett matematikai tartalék és bekövetkezett és bejelentett károk tartaléka.
- Bekövetkezett, de még be nem jelentett károk tartalékának záró tartaléka: a tárgyévet két évvel megelőző év záró napjáig bekövetkezett, de addig még be nem jelentett károkra a tárgyév záró napján képzett bekövetkezett, de még be nem jelentett károk tartaléka, annak költségtartalma nélkül.

Run-off reporting in Hungary

7/2001. (
a biztosí
követelm

- …
- Bekövetk
- Bekövetk
- Bekövetk
- Bekövetk

szekre a tárgyévi,
re a tárgyévet két
károk tartalékát,
tartalék, annak

ét évvel megelőző
rgyév záró napján
élkül

árgyévet két évvel
árokra a tárgyévi,
gyév záró napján

a: a tárgyévet két
elentett károkra a
k tartaléka, annak

The problem of water consumption during a seminar

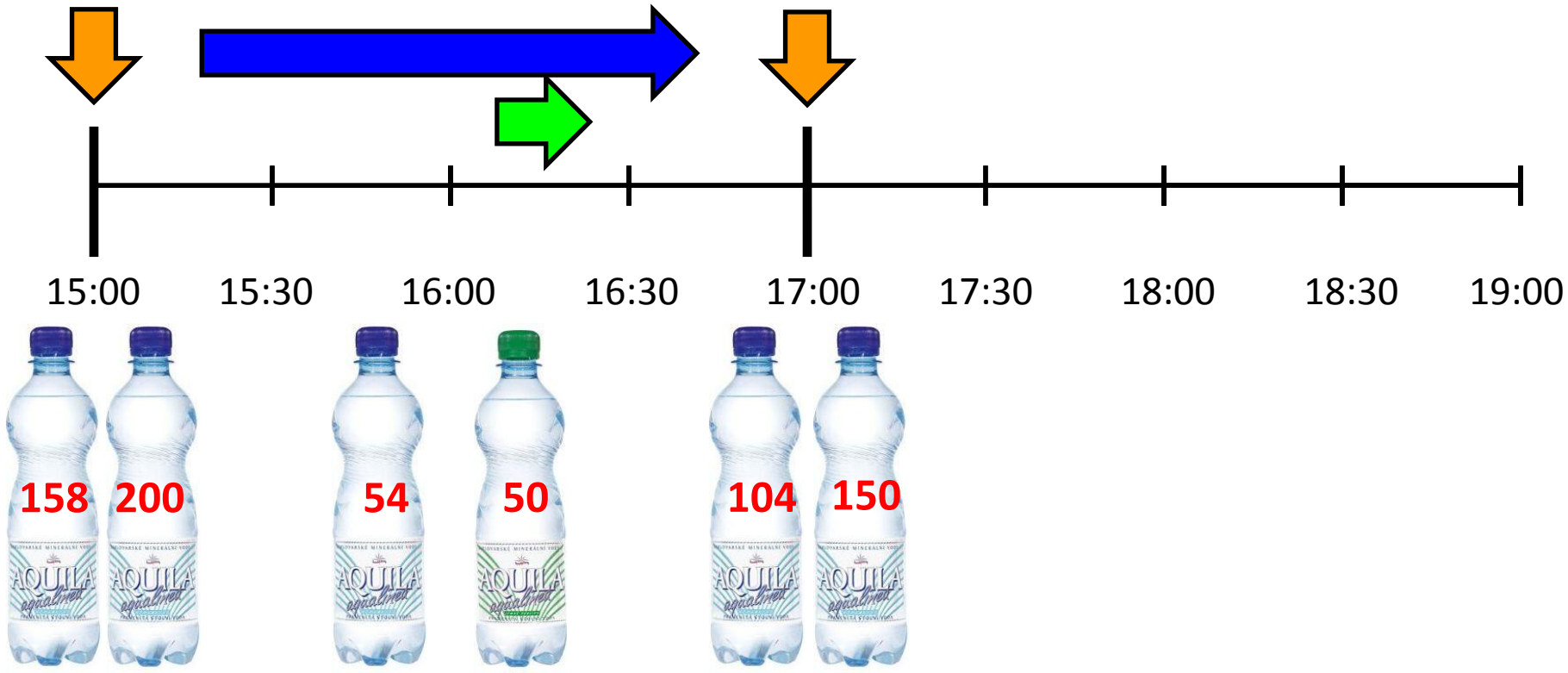
A lot of bottles have to be at disposal to cover the water consumption during the workshop.

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

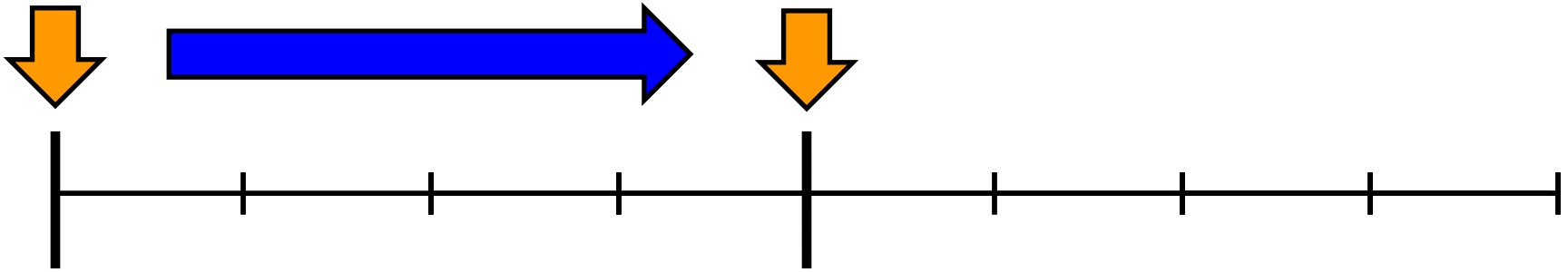
Only this seminar → only the adequacy level from the beginning
Other meetings not → everything estimated later is not captured



Run-off

Inputs

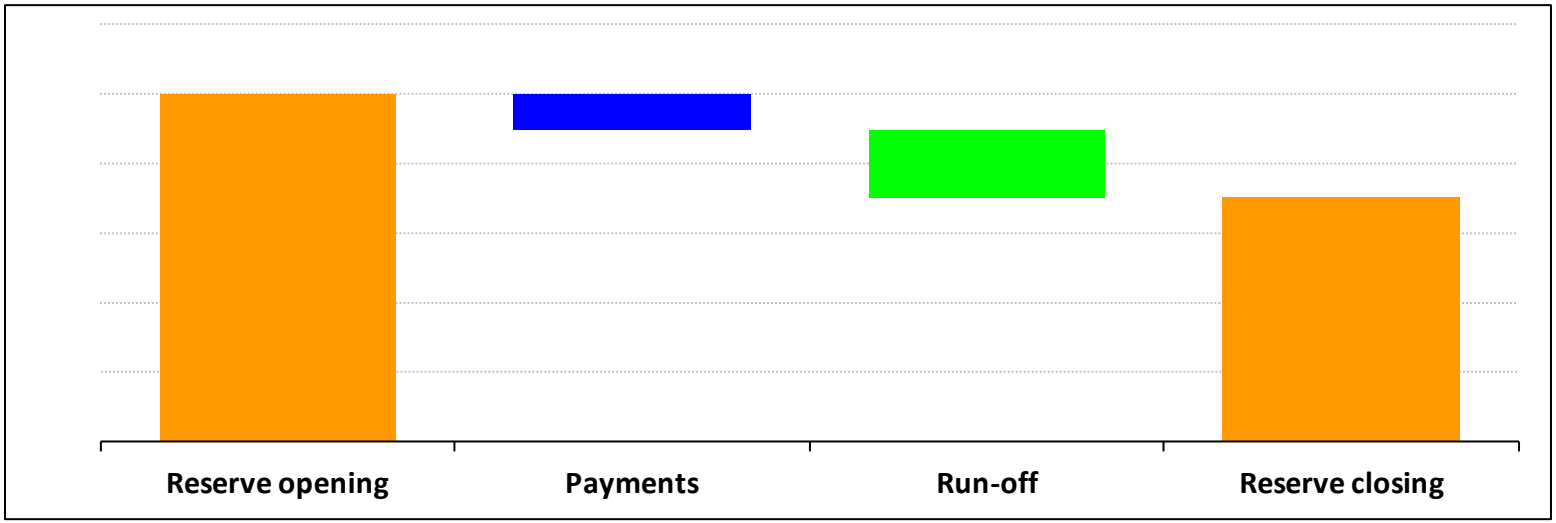
Estimation at the beginning and at the end of the period
Consumption in the period

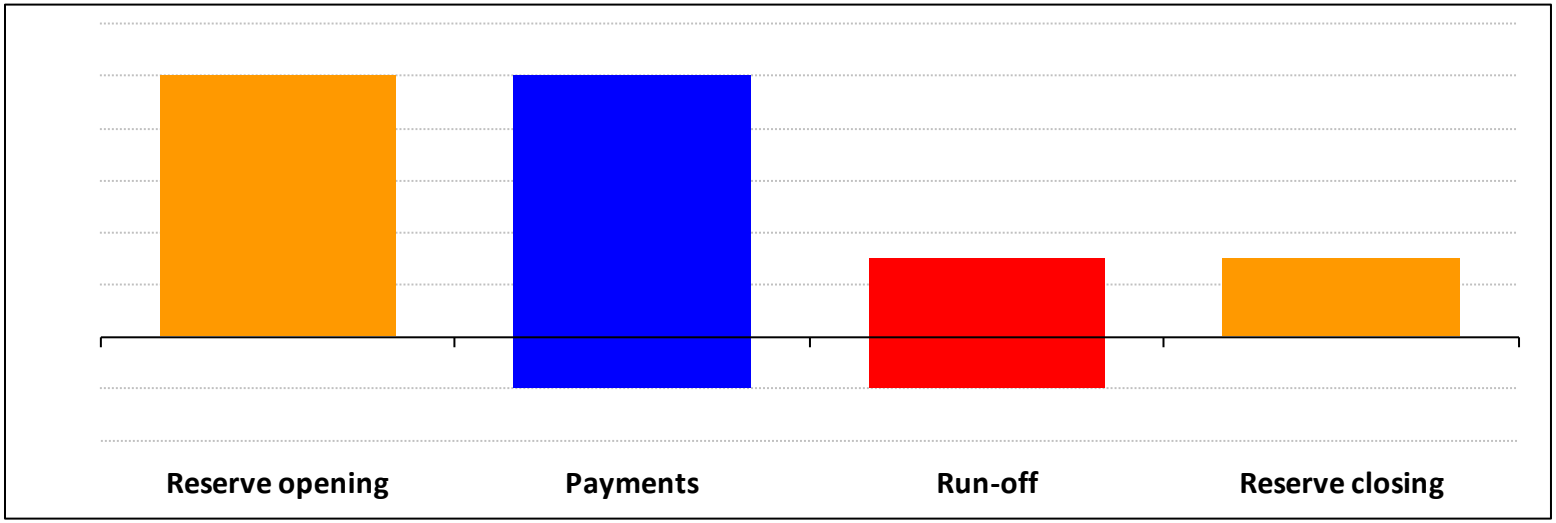


Approach

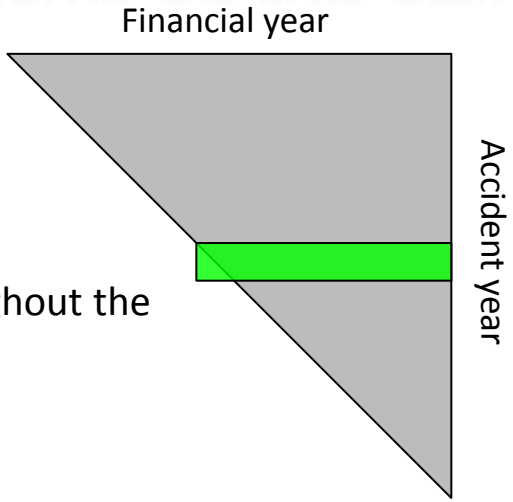
The (old) adequacy is measured by the performance of the period
New occurences during the period are not assessed

Run-off on a movement analysis chart



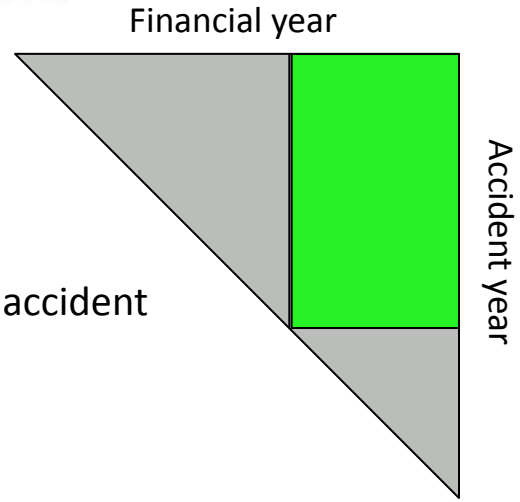


Different views on run-off/ultimate analysis



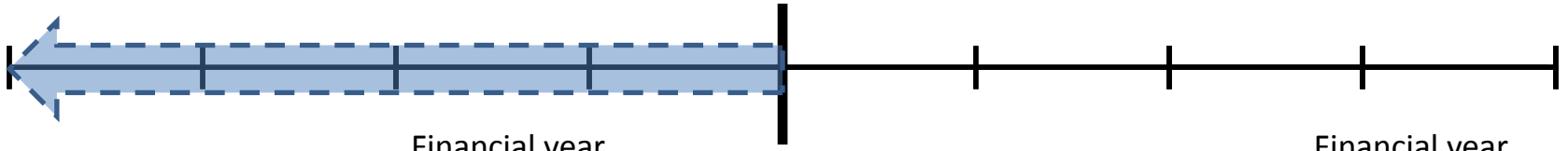
Fixed accident year

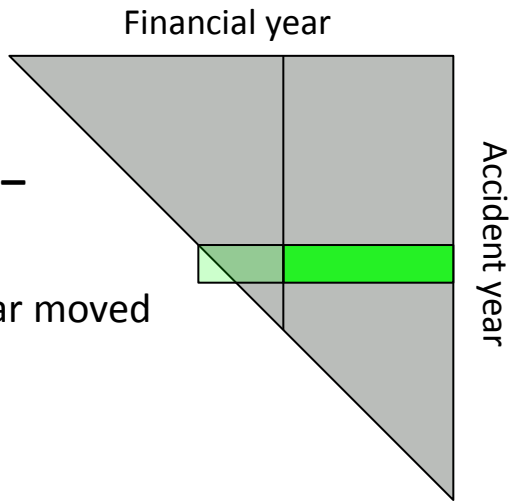
Ultimate/run-off development throughout the financial years



Fixed financial year

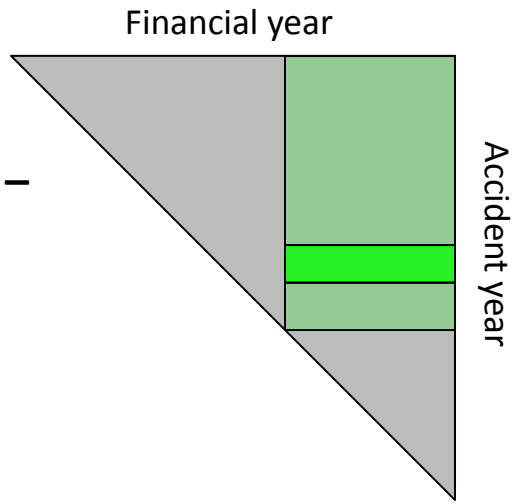
Ultimate/run-off development for all accident years





Fixed accident year – Extension

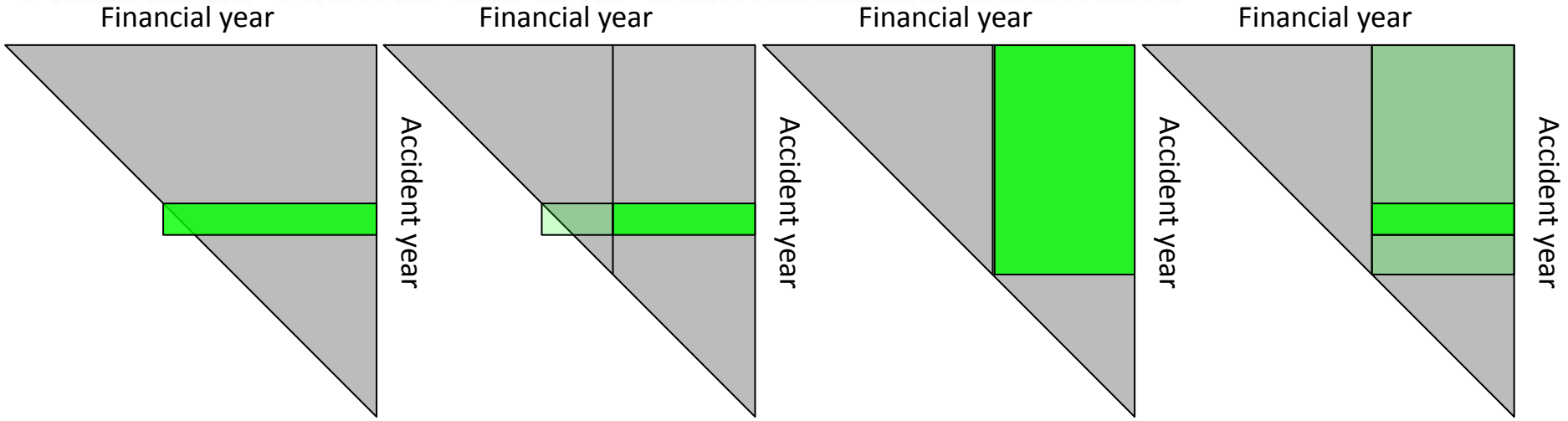
Starting financial year moved



Fixed financial year – Extension

Fixed accident year

Different views on run-off/ultimate analysis

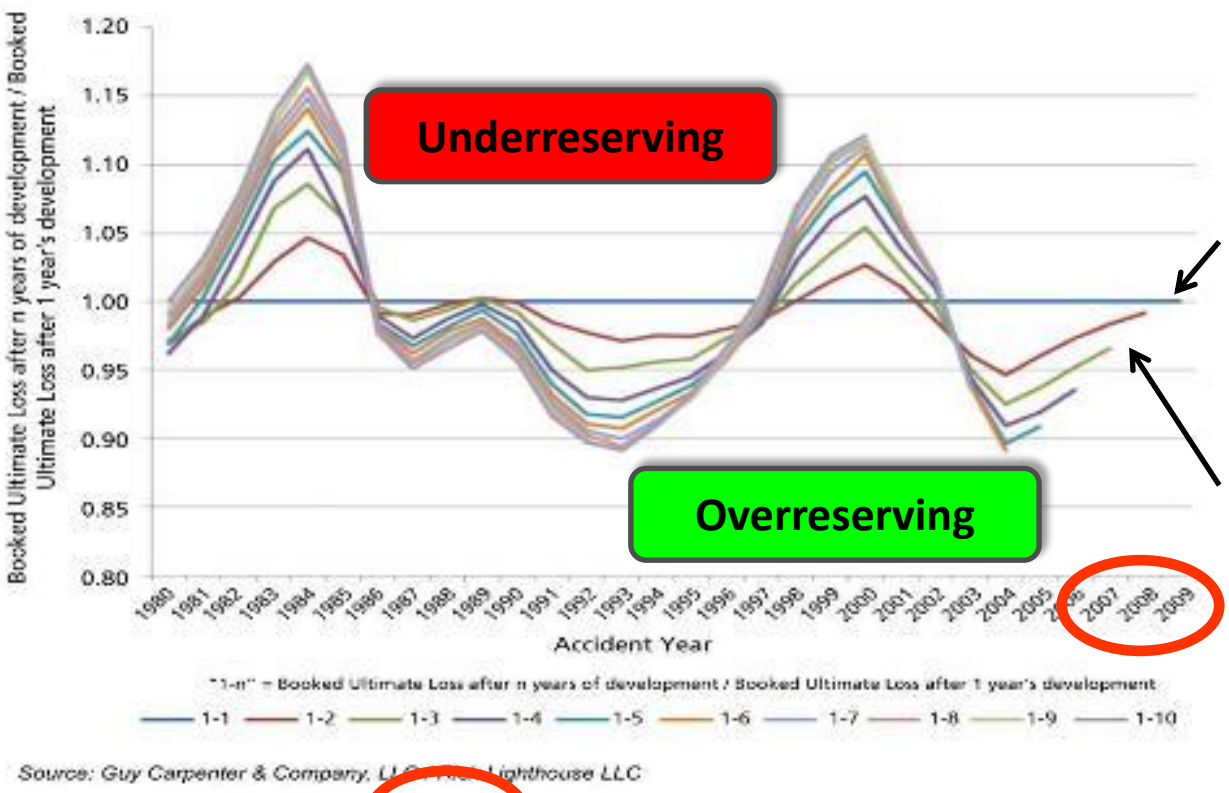


Questions

- Which view do you usually use in your actuarial analysis?
- And in the communication with your management?
- Which view(s) are required in the Actuarial Report towards the Hungarian Financial Supervisory Authority?

„Néhány tartalékfajta … egyéves, illetve kétéves lebonyolítási eredménye ágazatonként”

Why is it important to look back? – Reserving Cycle



Source: Guy Carpenter & Company, LLC; Lighthouse LLC

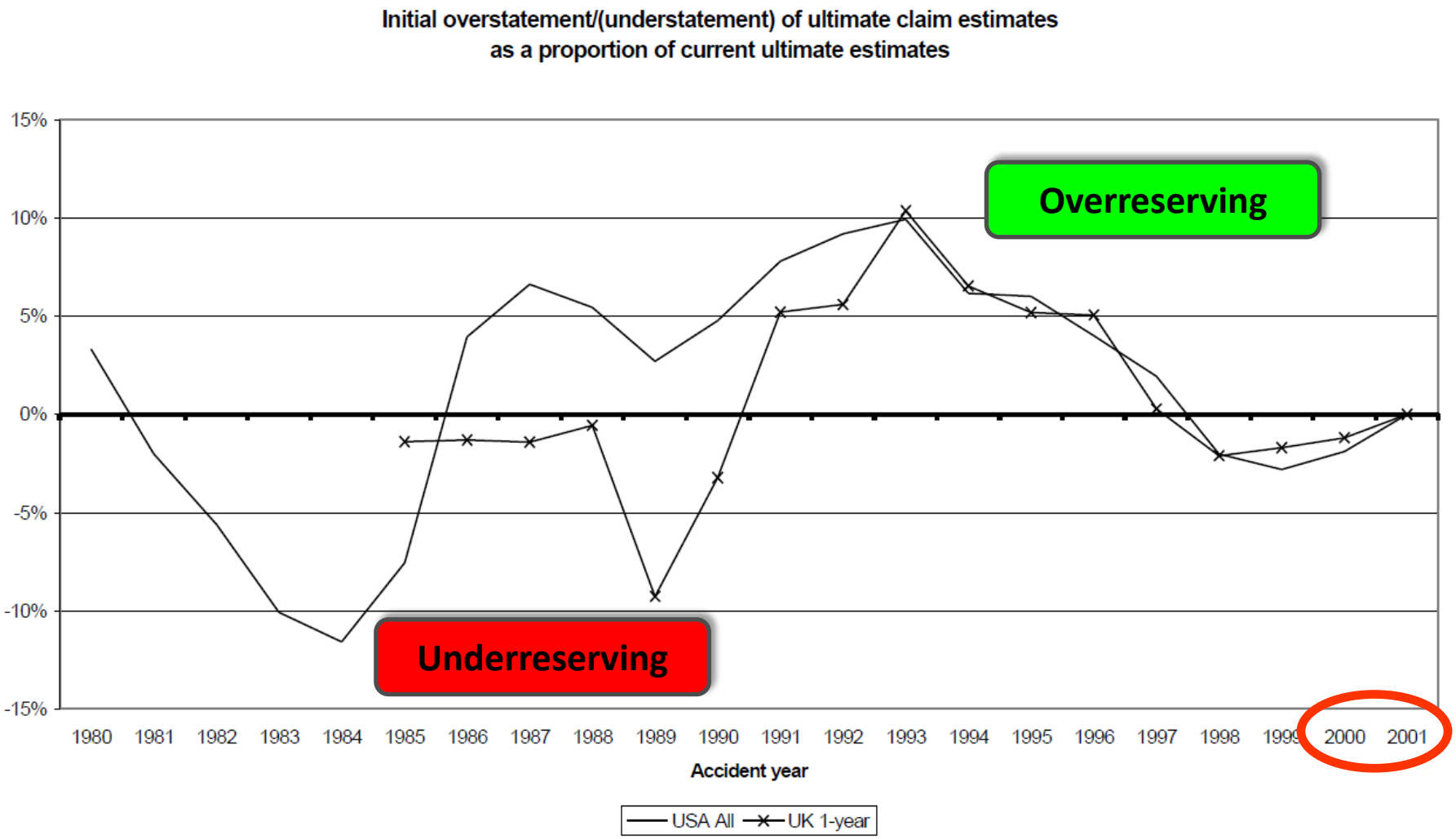
http://www.gccapitalideas.com/2011/09/14/reserving-cycle-analysis-suggests-tightening-ahead/

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.

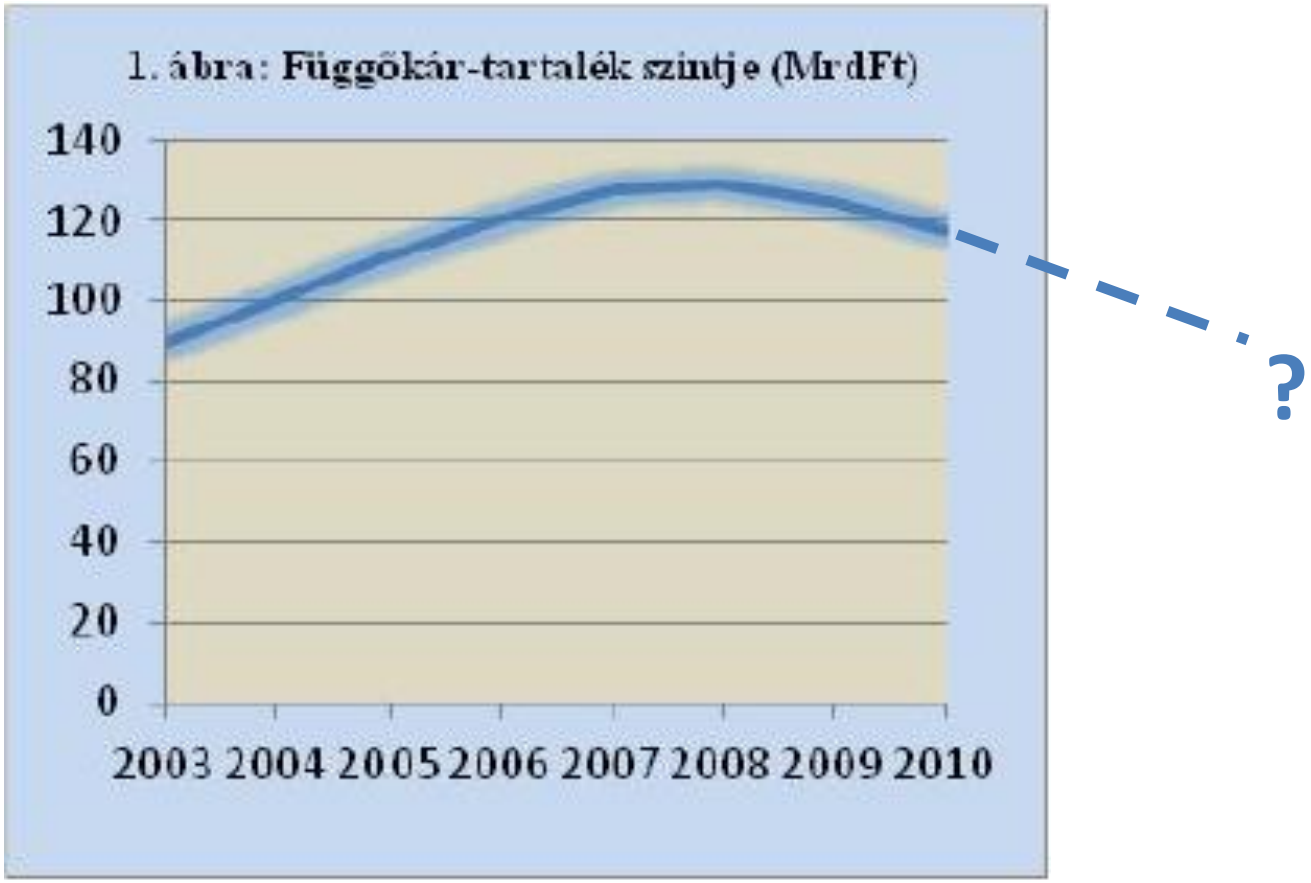
Why is it important to look back? – Reserving Cycle



http://www.actuaries.org.uk/research-and-resources/documents/cycle-survival-kit-investigation-reserving-cycle-and-other-issues
http://www.actuaries.org.uk/research-and-resources/documents/reserving-cycle-handouts

Reserve levels of MTPL market in Hungary

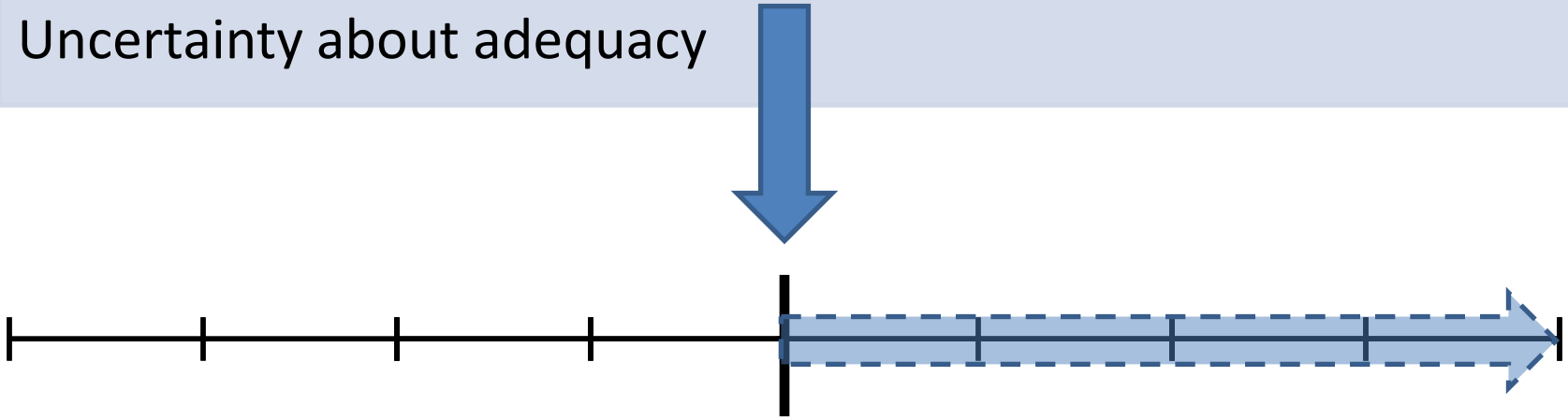
A PÉNZÜGYI SZERVEZETEK ÁLLAMI FELÜGYELETÉNEK MÓDSZERTANI TANULMÁNYA ÉS KONZULTÁCIÓS ANYAGA A KGFB ÖSSZPIACI TARTALÉKSZINT MÉRÉSÉRŐL 2012. február 8.



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: **adequacy test**
Assessing the total adequacy at the moment
Alternative estimation

Adequacy testing in IFRS and in Hungary

IFRS 4 Insurance Contracts

Liability adequacy test

- 15 An insurer shall assess at each reporting date whether its recognised insurance liabilities are adequate, using current estimates of future cash flows under its insurance contracts. If that assessment shows that the carrying amount of its insurance liabilities (less related deferred acquisition costs and related intangible assets, such as those discussed in paragraphs 31 and 32) is inadequate in the light of the estimated future cash flows, the entire deficiency shall be recognised in profit or loss.
- …

A Magyar Aktuárius Társaság szakmai ajánlása
A biztosító által végzendő kötelezettség megfelelőségi teszt
(KMT)
http://actuary.hu/weblap/DOKSIK/Ajanlas/KMT_Elfogadott_2007Apr26.pdf

Adequacy testing in IFRS and in Hungary

IFRS 4 In

Liability ade

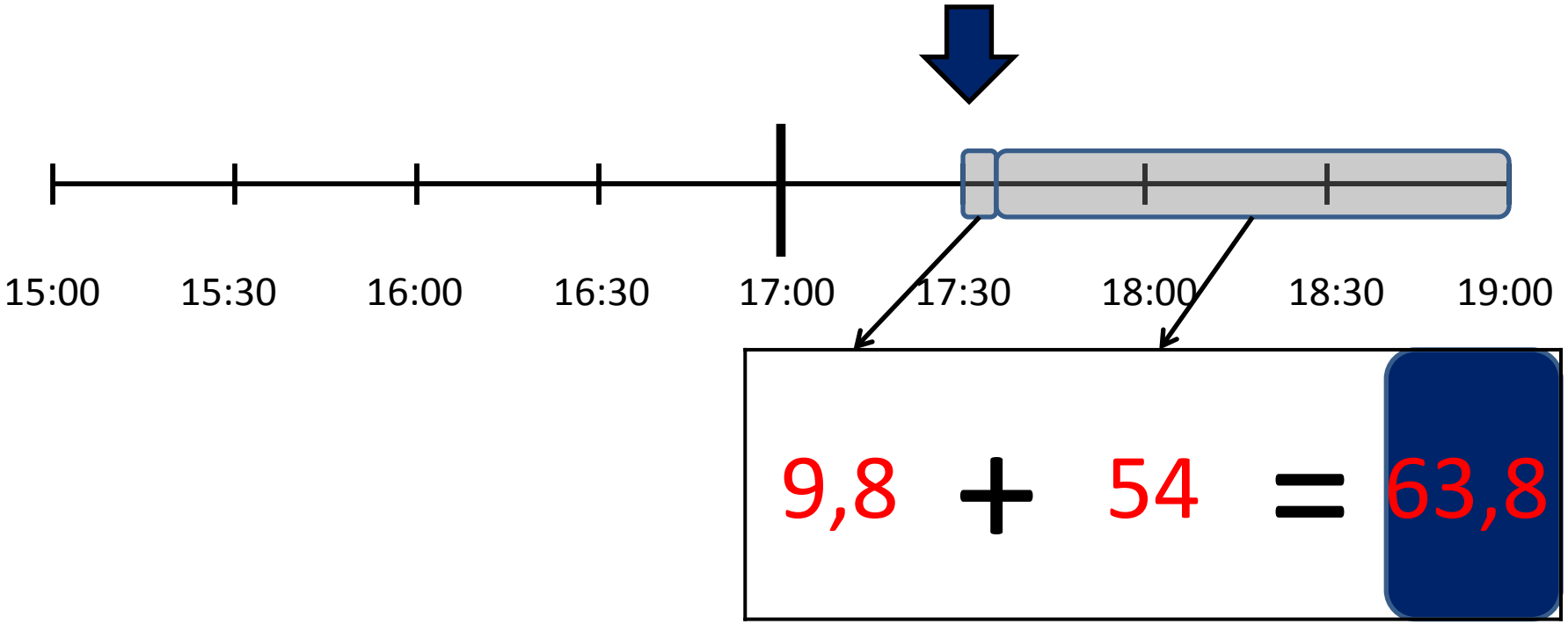
- 15 An in … surance liabilities are adeq … rance contracts. If that ass … ities (less related deferred … ssed in paragraphs 31 and 3 … e entire deficiency shall be r
- …

A Magyar Ak
A biztosító á
(KMT)
http://actua

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

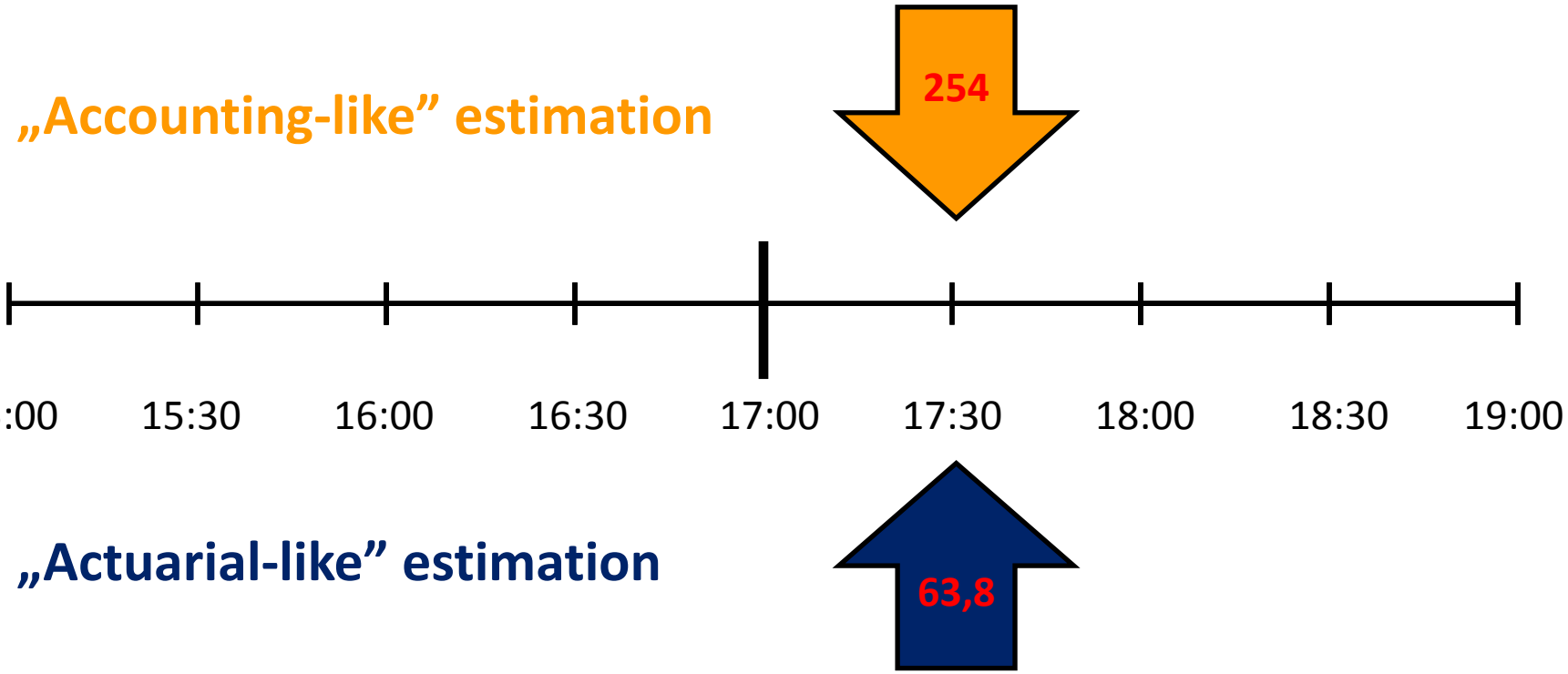


Adequacy test

Adequacy by an alternative estimation

The (current) adequacy is the difference between the two

„Accounting-like” estimation



„Actuarial-like” estimation

Note: you might compare two similar estimations

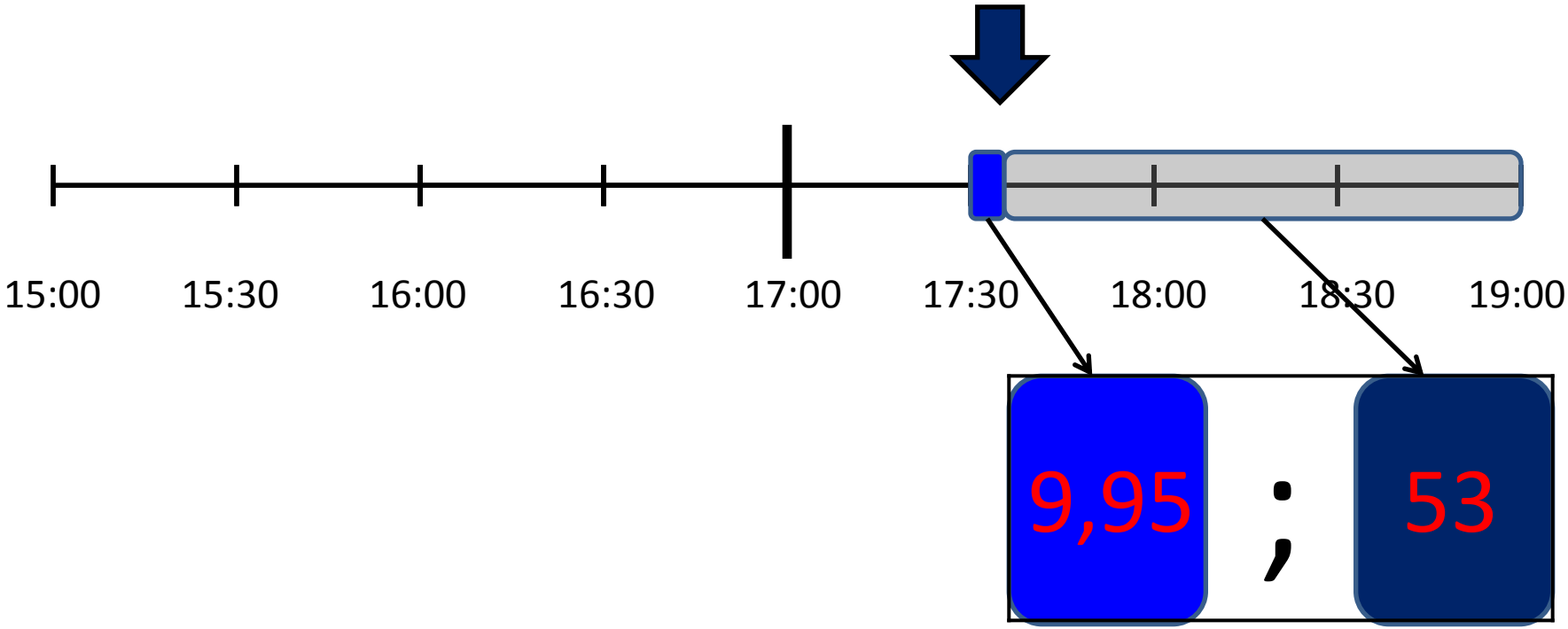
Comparison summary of the adequacy measures

Run-off	Adequacy test
• Looks back	• Looks forward
• Only the old reserves	• Reserves at the moment
• Adequacy: performance of a period	• Adequacy: difference of two estimations
• Part of the P&L	• Uses a BS item
• Measures this period	• Measures the whole term

Re-estimation

After 10 minutes passed

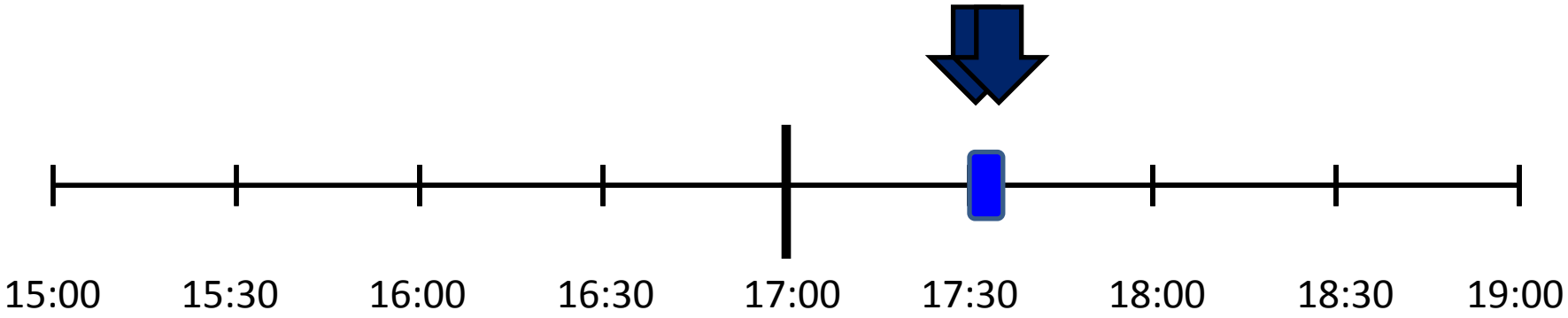
Your real consumption in the past 10 minutes
New estimation for the rest of the day

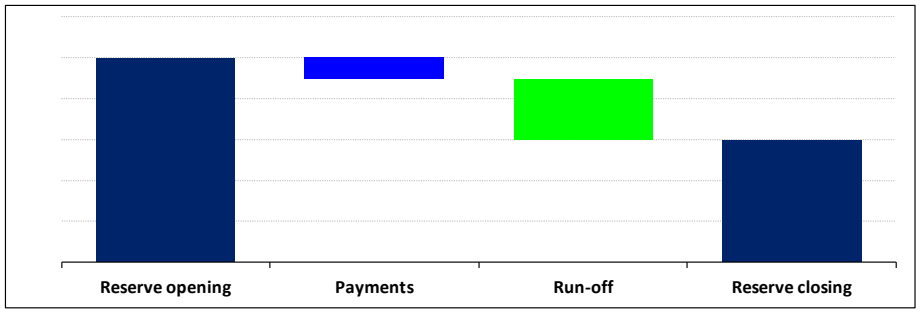


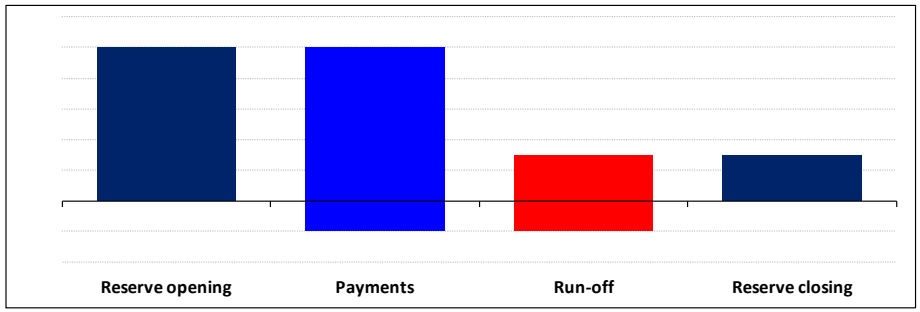
Adequacy of the actuarial-like estimation

Run-off can be produced for any reserve estimation

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





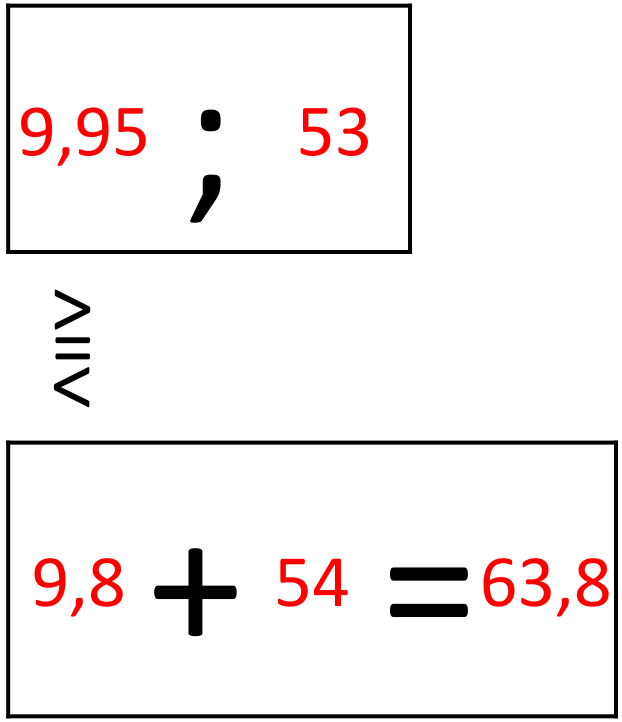


Actuarial-like estimation

What is the fundamental plus of such an estimation?

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

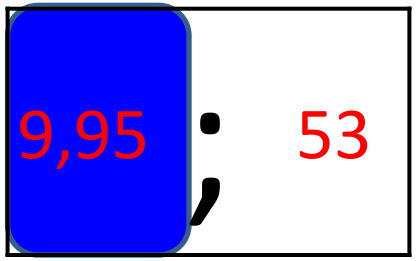
Possibility to compare (a part of) the estimation with experience

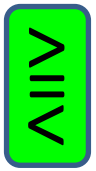


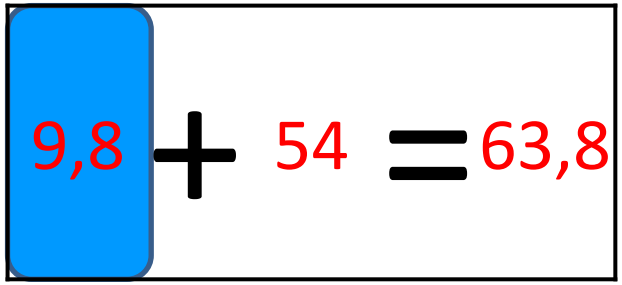
Actual vs. Expected

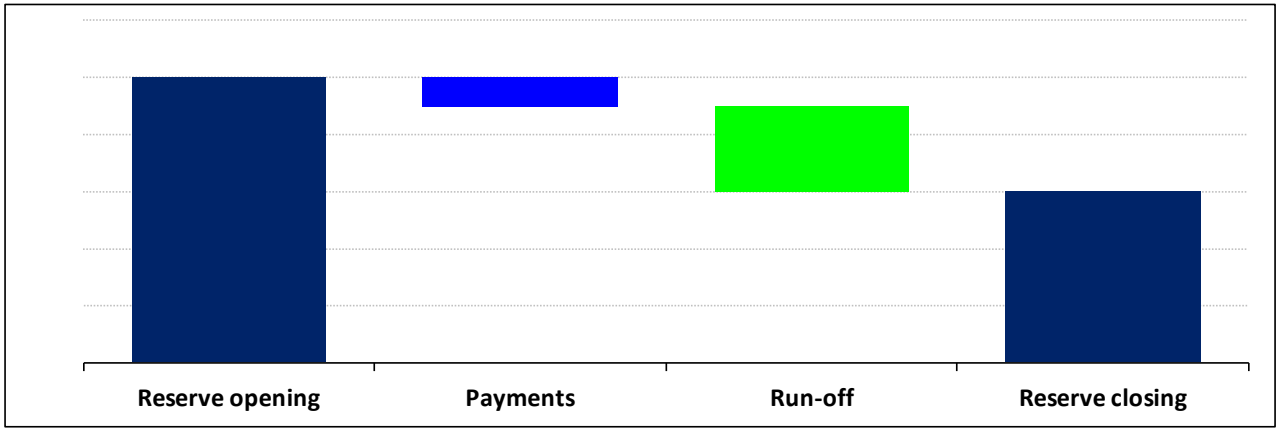
Further details in the movement analysis

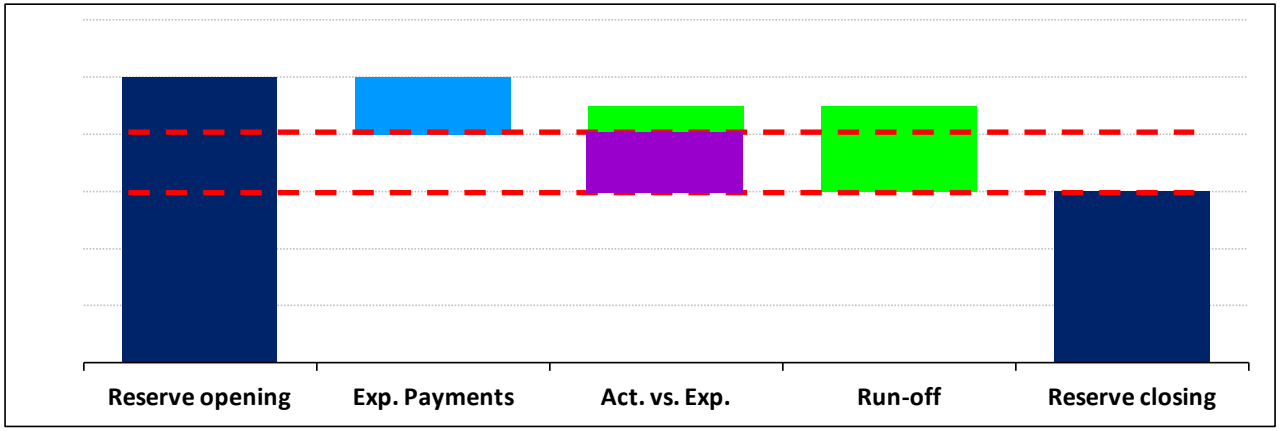
Decompose the actual payments to expected and difference







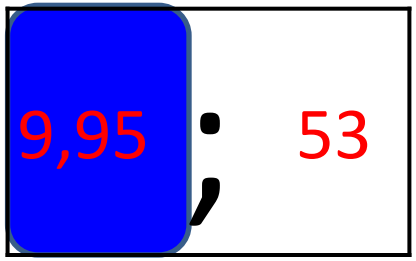


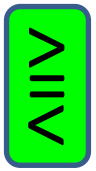


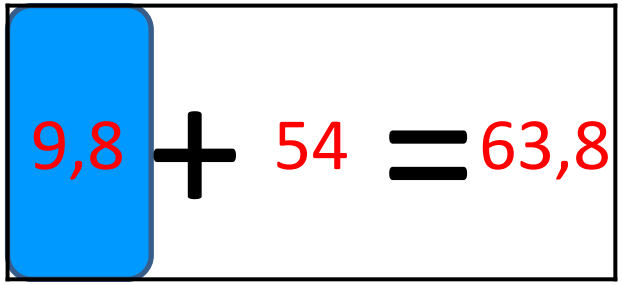
Actual vs. Expected

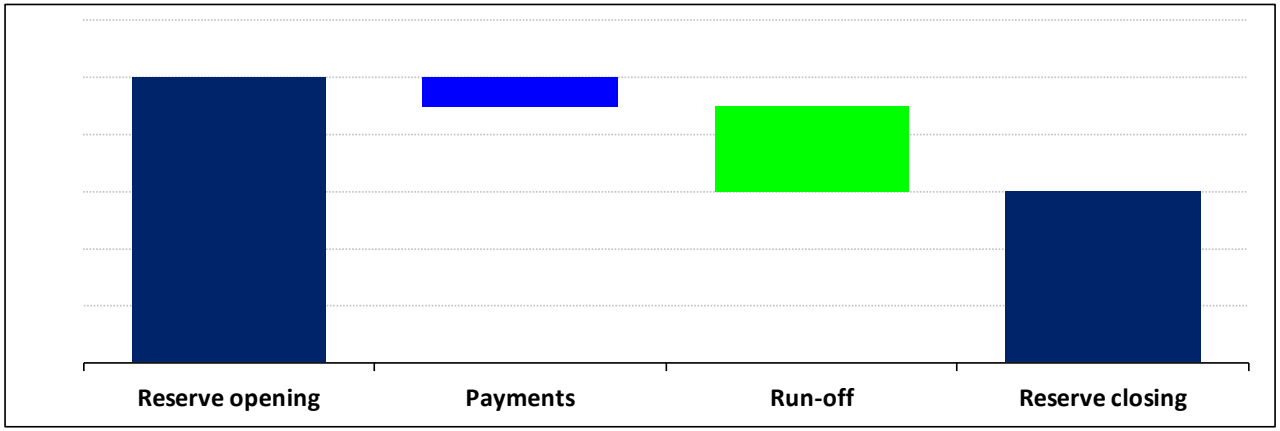
An alternative

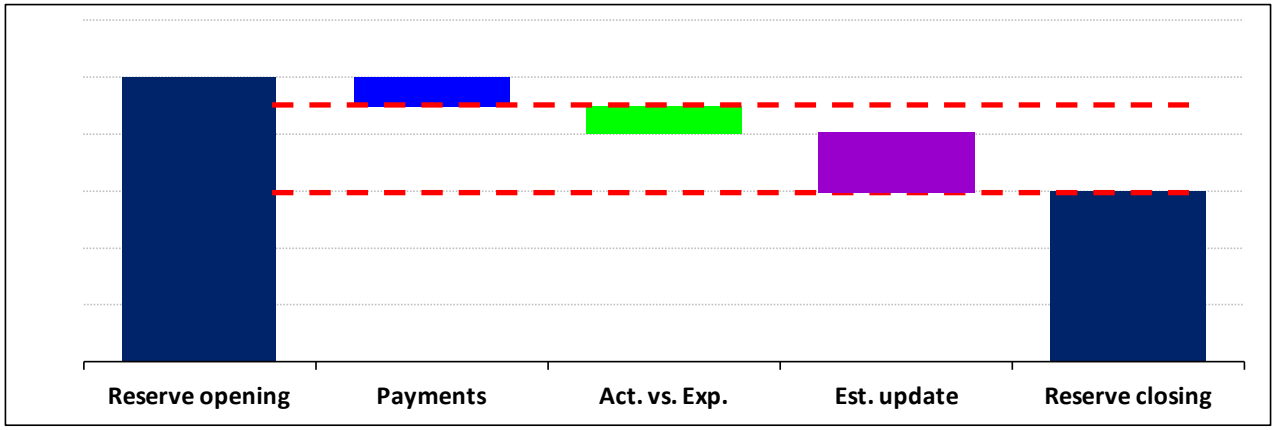
Keep the actual payments, decompose the run-off











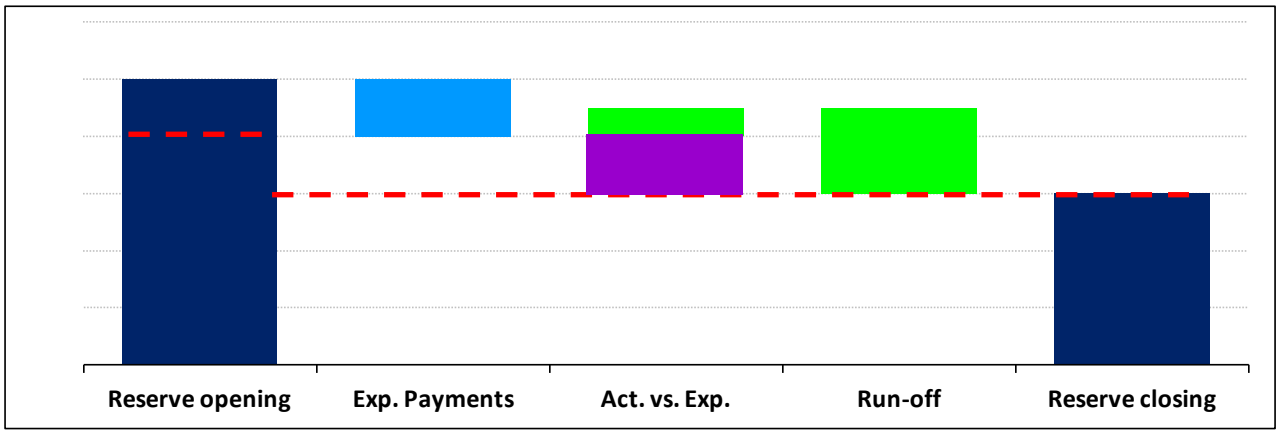
Actual vs. Expected

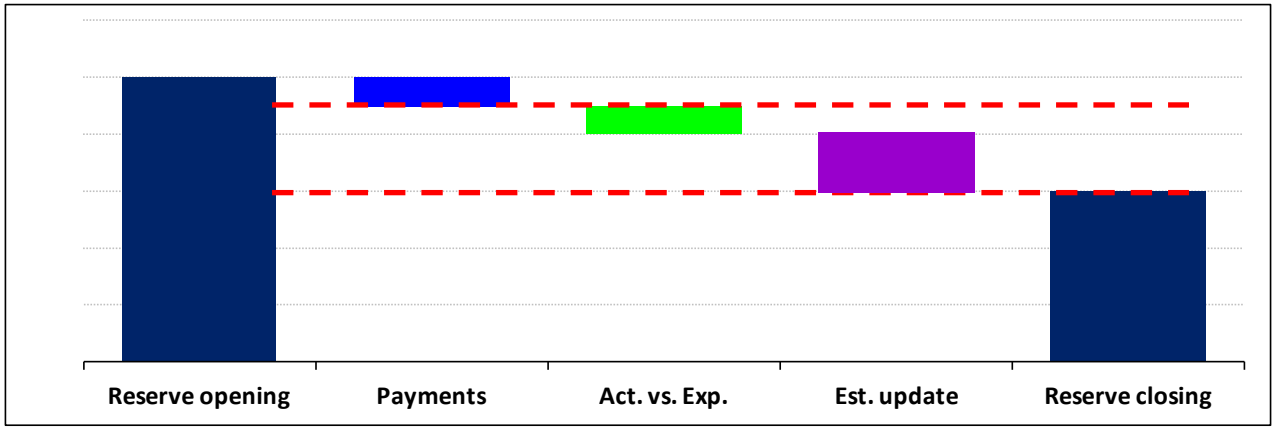
Which alternative do you prefer?

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

9,95 ; 53

9,8 + 54 = 63,8

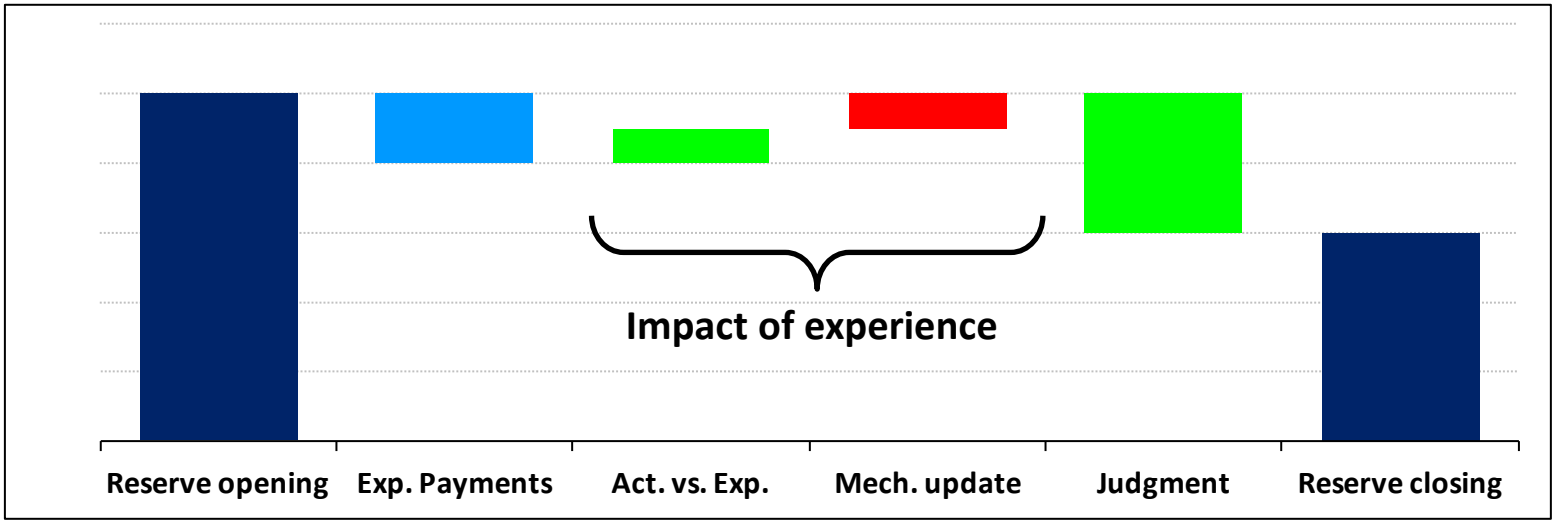




Mechanical update and Judgment

The run-off may be further detailed

Mechanical update: applying the same approach on new data
Judgment: modifying the approach

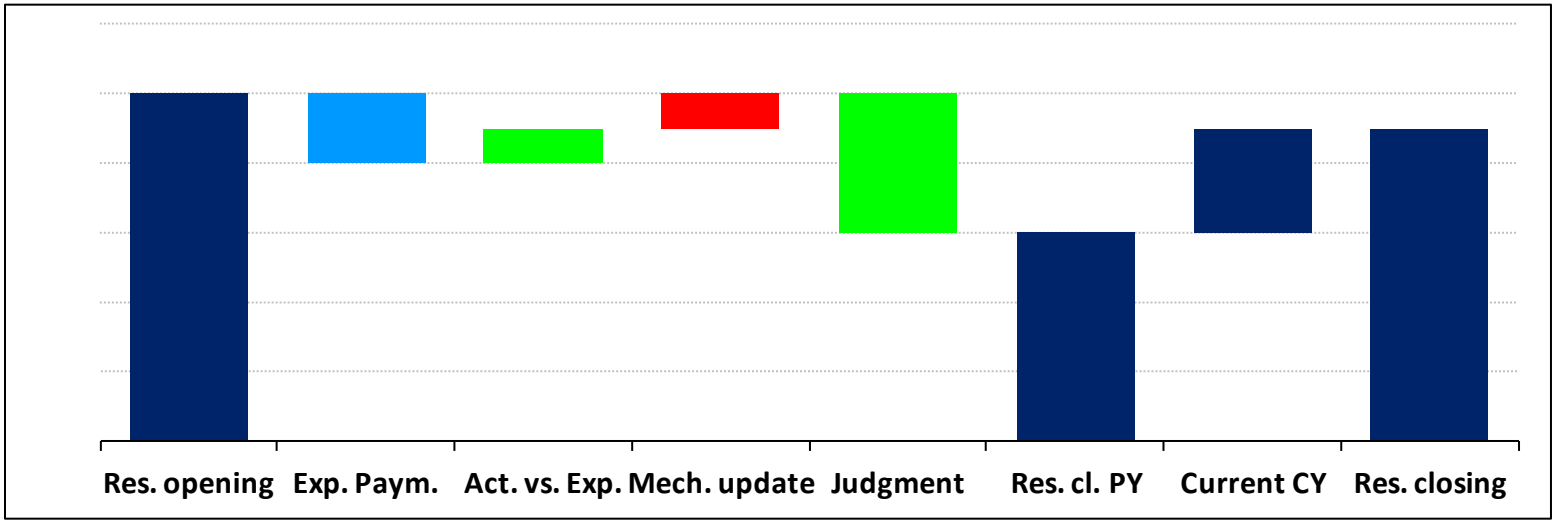


Typically: ***mechanical update*** is to apply e.g. the same loss development factor approach on the enlarged triangle, ***judgment*** is to change the approach settings based on this new data

Completing and extending

Full movement analysis

Inclusion of the estimates for the current period



Possible extensions

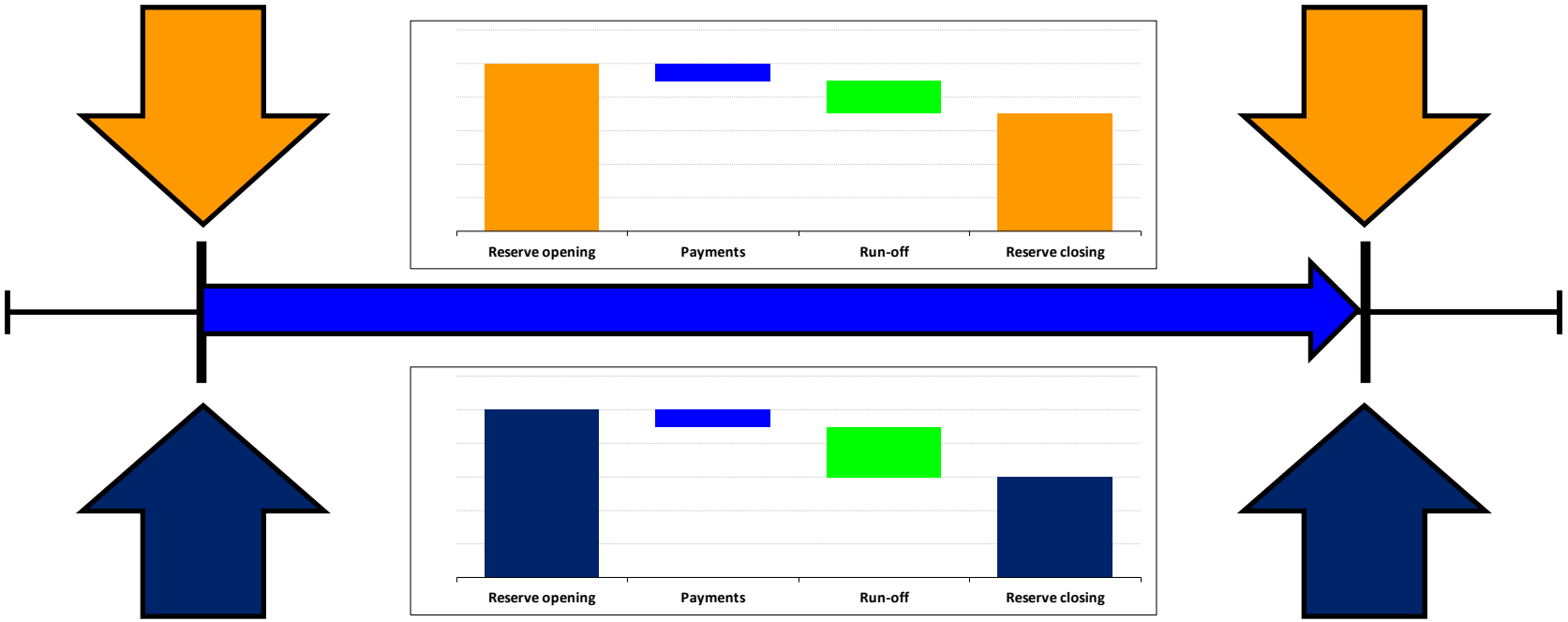
The ***mechanical update*** and the ***judgment*** part might be extended by reflecting different methods (e.g. Paid/Incurred) stepwise

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 actuarial run-off 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

(life actuaries don't get lost, non-life actuaries don't get bored)

Provide valuable insights on the topic

Have fun

Questions and comments

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