

Portfolio Management: the What, Why and How

Managing an insurance portfolio for optimal performance

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Table of Contents

Introduction	3
PART 1: The What	4
Chapter 1: Defining portfolio management.....	4
Chapter 2: What actions?	7
Chapter 3: What is a portfolio?.....	8
PART 2: The Why	9
Chapter 4: What do you want?.....	9
Chapter 5: Why do portfolio management?.....	10
Chapter 6: Why it is hard	12
PART 3: The How	14
Chapter 7: Emerging Profitability.....	14
Chapter 8: Temporal continuity.....	15
Chapter 9: Portfolio group theory	16
Chapter 10: The portfolio management equations	19
Chapter 11: Data	27
Chapter 12: Platforming.....	28
Chapter 13: Governance and transparency	29
Summary of learning points by chapter	30
Lexicon and mantras	34

Introduction

Portfolio management isn't yet "a thing". But it should be.

I think I blame silos. I also blame Solvency 2 which sucked the talent out of the actuarial industry for fifteen years, and the rise of "actuary as servant to the regulatory industry". For every talented actuary I see in a regulated role, I cry silently over the grave of insightful analytics.

But back to silos. I don't mean grain-stores, what I mean is the tendency in any large company (including insurers) to have functional barriers between different teams. Portfolio management requires quite a few, quite different, people pulling together towards a common goal. And it needs this regularly and repeatedly. It's therefore nobody's job, it's always someone's side project, and it rarely gets the proper planning and attention it deserves.

Perhaps also there's a conceptual gap that needs to be filled. What, exactly, is it? There is no single received definition, so my secret hope is that the one I espouse here may perhaps be adopted more widely than just me and my circle of friends. I define portfolio management as a process where human decision-making is informed by analytical insight. This is surely pithy enough to catch on? And it should be compelling: analytical insight is a big thing nowadays (when it puts on its glad rags it calls itself predictive analytics or data science). Experienced insurance practitioners will nod approvingly that humans are firmly involved in the process. And the process itself delivers repeatability and efficiency.

The benefits of effective portfolio management are huge. I have two decades' experience of doing what I outline here across dozens of portfolios (albeit refined over time). And I've never seen a portfolio whose performance can't be improved by adopting the disciplines herein.

About me

I am an actuary, having qualified in the 1990s, and I have worked in reinsurance, specialty insurance (both Lloyd's and companies), commercial lines and personal lines. I've been at companies, consultancies and brokers. And I've covered all the main actuarial functions and most lines of business. In 2021 I led a team that established Calibrant, an authorised intermediary specialising in the management of insurance portfolios in the MGA arena of delegated underwriting authority.

A crucial part of Calibrant's work is the consistently effective application of portfolio management discipline. We built a commercial-grade software solution, Sybil®, for this purpose, and established a sister company Sybil Tech Ltd to develop and license Sybil in its own right. This led me to codify my experience and approach to portfolio management, and this short book has thereby resulted.

Given the topic at hand has mathematical roots, is firmly grounded in commercial objectives, and challenges us to question constantly what we know, the reader should find it apposite that I hold Masters degrees in, respectively, Mathematics, Business and Philosophy. I am also a Fellow of the Institute and Faculty of Actuaries.

PART 1: The What

Chapter 1: Defining portfolio management

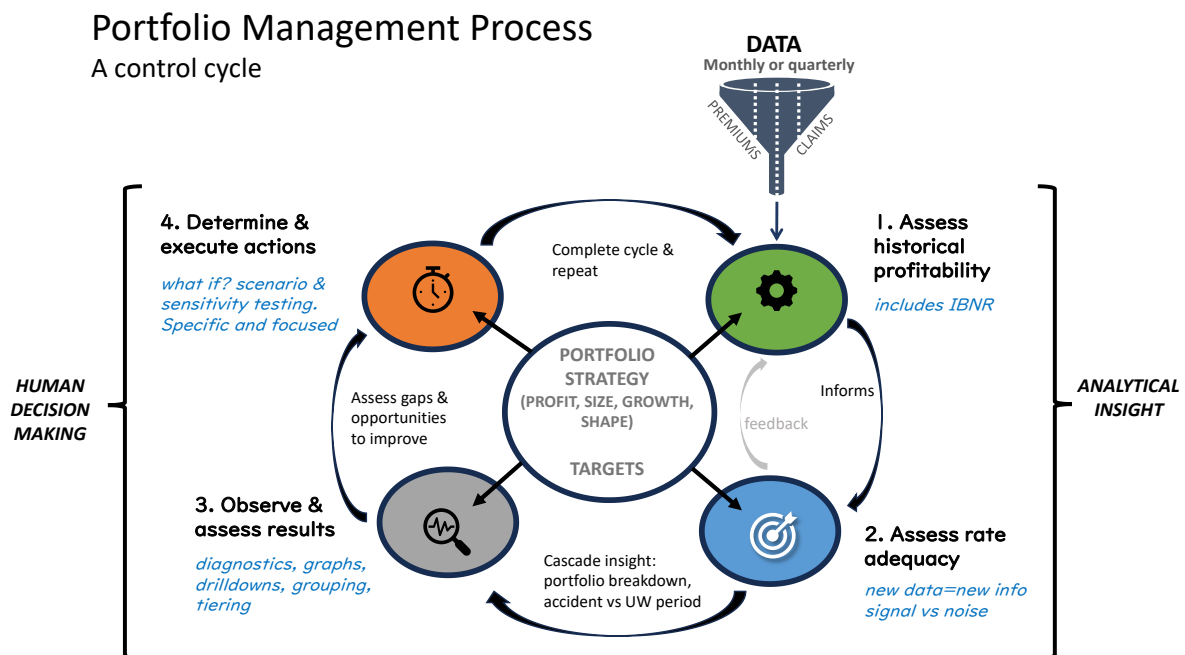
Portfolio Management (PM) is extracting greater value from an existing portfolio of insurance policies by identifying opportunities for growth or margin improvement.

The need for PM, in brief, is driven by the twin observations (a) that every portfolio has untapped potential if it can only be found; and (b) that alternative means to achieve profit or growth involve risky and expensive activities like acquisitions. More detail on motivations is covered in the next section (“the Why”).

More specifically, we define PM as follows:

Portfolio Management: PM is a process where human decision-making is informed by analytical insight to derive greater value from an existing portfolio.

The process is a control cycle: it repeats regularly with reassessments and refinements. Emerging data is ingested each iteration, and previous assessments and actions are tested and updated:



Let’s parse the definition, in reverse order (noting more detail is found later in “the How”):

A. Analytical insight

There is a lot of analytical heavy-lifting for the richness of insight to be able to identify and justify profit-enhancing portfolio decisions.

Backwards

We need credible historical results – with justified assessment of IBNR – for a view of the future is always informed by the past.

Forwards

But that view of the future is the most important aspect of the analysis. This is portfolio gold dust, and is summarised in what I call Emerging Profitability. This is the expected profit margin in the business being written now (and in the near future). It's informed by the past but also takes account of portfolio-specific changes and market context. This might be rate actions we've taken, past re-shaping exercises like partial exits, or wider issues like inflation, intensity of competition and the like.

No silos

In traditional actuarial terms, what PM needs is neither reserving alone nor pricing alone. It needs the best of both. The typical reserving process looks backwards and does not take full account of current underwriting conditions (and, besides, is usually geared around accounting and solvency principles of prudence). The pricing assessment tends to magnify any biases of model builders (or model users, or their data), and can lose sight of the portfolio wood in seeking the perfect policy-price trees.

The two combined can hold each other to account and deliver credible Emerging Profitability assessments where either in a silo would fail.

Allocation, allocation, allocation

We're assessing IBNR and Emerging Profitability, the former usually by accident year (AY) and the latter by underwriting year (UY)¹. But the two inter-depend, so each must be allocated to the other's cohort. We must be able to glide seamlessly between AY and UY, a fiddly exercise if performed from scratch each time so best embedded in our process without the need for revisiting.

Similarly, all results must be broken down into meaningful chunks. "Improve portfolio loss ratio by 1%", while laudable as an overall objective, isn't really an action of any use. But "20% increase in price for properties with high flood risk scores" or "reduce the 27% commission for broker X to 23%" are specific and targeted, and make sense as actions. This requires another type of allocation, from the aggregated level at which actuarial assessments are made to more detailed, granular levels where decisions will be made. As with AY / UY, this allocation exercise must be integrally embedded in the PM process.

B. Human decision-making

Insurance isn't easy for many reasons. Products are complex and manifold; there is a long delay between making decisions and observing their results; the number of distribution and operating models cannot be counted on a millipede's toes; data is always incomplete for the purposes of identifying "the truth" and often patchy, volatile or wrong.

As a field of finance whose key currency is data, insurance is obviously a numbers game. But because these numbers are contextually nuanced, they demand significant judgment and experience to interpret. And human relationships (especially in distribution models) are the glue that holds the industry together. So insurance is also a people game.

For me, failure to insert a human check into the chain of "data → analysis → outcome → repeat" would be a huge mistake. There exist areas of limited scope where pure algorithms may operate to optimise results. Such work considers the effects of individual rating factors to try to get the most

¹ When I refer to AY or UY, it is a generic reference to how we are grouping policies and claims. It is the A or U that is important, not the Y, so it refers to accident or underwriting months or quarters, too.

value from a single pricing structure. But this is limited and can't catch problems with the pricing structure itself, or compare one pricing model to another, or consider the effects of anything other than pricing.

PM is there in part to hold the pricing models to account. We cannot rely on machines alone to do this. The heavy-duty analysis in (A) above is important, but it must feed a process governed and managed by people in charge of making decisions.

The decisions will be portfolio actions like identifying areas for growth, shrinkage or exit; pricing changes; product or risk-selection criteria changes; or commission renegotiation or expense management.

These actions will lead to margin improvement. And they will facilitate growth either directly or by liberating expenses, resources and management time to deploy elsewhere in the business.

C. Process

Portfolio management is a process, not an event.

A one-off piece of work to assess the various profitability signals within a portfolio has some value but it is limited. As noted above, the workload is considerable and failing to make it repeatable would be a dereliction of scale-economy duty. The need to incorporate emerging data, and identify emerging signals and trends, is an effort that pays dividends over time, not at once. Tracking the effects of actions previously identified requires repeatability and self-monitoring. The judgments we make in our analysis need to be monitored and compared with experience which materialises subsequently. And if this effort has value – and I passionately believe it does! – then who wouldn't want to turn it into a repeatable process?

By building a process for PM we achieve analytical efficiency, the means for complex models to self-correct, and maximal profitable insight.

Key messages and learning points

Portfolio management is a process where human decision-making is informed by analytical insight to derive greater value from an existing portfolio.

The analytical insight should evaluate the historical results, and use this together with knowledge of actions and market context to derive Emerging Profitability. It needs to cut across functional boundaries (no silos). And the insight should be allocated comprehensively throughout the portfolio.

Humans must oversee and drive portfolio management, not a computer. Insurance is contextually nuanced and experienced judgment must be deployed to interpret the analytical findings. The objective is for those overseeing the process to synthesise the analytics into actions.

Portfolio management is a process not an event. The process is a control cycle, regularly refreshed with emerging data and self-correcting as previous assumptions are tested and refined, old actions re-evaluated, and new actions allowed for.

Chapter 2: What actions?

Portfolios don't manage themselves. You have to agitate. It is very common indeed for inertia to set in, but insurance is a highly competitive industry and if you don't agitate someone else is going to eat your lunch. It usually comes through gradual anti-selection, where competitors pick off the best-priced risks and if you don't defend against this your margins, and possibly volume, will fall over time. In fact, if you do nothing and your volume increases, be worried, for this means your pricing structure is actively attracting those that your competitors don't want (i.e. the under-priced ones).

Our PM process is the best way to counter the pernicious effects of inertia. It will deliver the insight needed to take the actions to find and nurture good margins, and of course to facilitate growth.

The actions come in several flavours, and I list a few here; but this is not exhaustive because each portfolio will have its unique features and we can't know them all!

Flavour	Type of action
Rate	Price is an obvious profit lever. You may ratchet prices up or down overall; you may target the pricing action by decision-making unit; you may go deeper and call for a re-pricing exercise; you may address the strategic value of pricing (such as: use price to manage systemic exposures); your decision-making units may sometimes be related to rating factors (eg socioeconomic scoring band) which will directly lead to pricing insight
Shape	Exits and partial exits; increasing certain exposures to customer types or risk types through actively engaging with brokers and customer messaging; understanding that you have cross-subsidies between sections of the portfolio and knowing why you have them
Refine	Product wordings and risk-selection criteria: what pricing can't achieve often technical underwriting approaches can; tighten up claims procedures including fraud identification; monitor systemic exposures and address through exclusions or declinatures
Negotiate	Are your brokers dictating commission terms? Understand the negotiating power you have relative to your distributors and try to maximise your share of the value chain
Organise	Is your own cost base optimal? Can you identify areas to make your operation leaner or more efficient?

Key messages and learning points

Portfolios don't manage themselves. The competitive environment requires constant vigilance and decisive activity.

The actions come in several flavours:

- Rate
- Shape
- Refine
- Negotiate
- Organise

Chapter 3: What is a portfolio?

Having got this far, it seems odd to ask now what a portfolio is. But rehearsing what we would like to do with a portfolio helps us identify how to draw the boundaries between portfolio X and portfolio Y.

Operationally a portfolio is understood to be a combination of the renewal rights for a book of business along with the new business possibilities of the same book. These come about through a product (wording), a distribution mechanism (including relationships with brokers), the operational infrastructure (including claims) to service the product, and sometimes (but not always) a brand name or recognition to support this.

In practice, every situation and insurance company is different. But also in practice the towers of portfolios (A within B within C) will tend to be obvious. It is a function of the rest of the organisation set-up: chains of responsibility will reflect who has accountability for what. These are usually organised by product, line of business, customer type, geography, or some combination of these.

Given that we will be repeatedly analysing the actuarial patterns of the portfolio, it makes sense that it be defined partly with respect to these features. And given we will be looking to a single person with accountability for the performance, it makes sense we respect organisational reporting lines and structure. If one product is long-tailed and the another short-tailed, they're in different portfolios. If one product is exposed to natural catastrophes and another not, they're in different portfolios. If one product is managed by Jane and another by John (who aren't in a reporting line), they're probably in different portfolios.

Finally, each portfolio needs to be understood as the combination of its "decision-making units", which we cover in the chapter "Portfolio group theory". This is a breakdown of the portfolio into its component parts which are discrete (non-overlapping) and complete (no gaps). This might be by broker, region, customer type, industry, or any other way (or combination) of understanding how the portfolio is composed. There may be several parallel (i.e. not hierarchical) ways of breaking down the portfolio like this. The granularity of these units should be sufficiently small to reflect meaningful actions, but not so small as to be lost in the minutiae. The definition of these units will be determined up-front and is reflected in the analytics (e.g. loss ratios will be allocated to this level) and in the decision-making aspects of PM.

The act of deciding on these decision-making units, and then examining the results through the various lenses they represent, is something we refer to as "portfolio slicing".

Key messages and learning points

A portfolio is the renewal rights and new business opportunities of a book of business defined by a product, a distribution mechanism, the operational infrastructure supporting the product, and a brand.

Drawing the line between one portfolio and another is a combination of the risk characteristics of the portfolios and the authority/accountability cascaded through the insurer for managing its business.

Each portfolio so defined will be the sum of its break-down into one or several collections of decision-making units.

PART 2: The Why

Chapter 4: What do you want?

You run an insurance company... Scratch that, let's say you run any business at all. What you want is to grow (for that is the lifeblood of humans both in business and in general) and make or improve your profits.

No matter the strategies, operational setups, branding options, or sales approaches. Whatever the product or service, the ultimate goal will be a combination of growth and profitability. Sometimes we achieve growth before profitability (think: Amazon). More often it's the other way round – a small business makes profit and grows by reinvesting the profits, or by raising external capital on the back of that track record.

Back to insurance. Profits aren't always easy to find. Profitable growth is notoriously difficult, for you can fool yourself that you're doing the right thing before the claims come home to roost. In other businesses, growth at a loss cannot be hidden; but at the point of sale of an insurance policy the "cost of goods sold" isn't known. I would go so far as to suggest that, unless there is a known "hard market" in play, high growth insurance models are almost always loss-making for someone. If they're making losses knowingly, with an expected future payoff, fine. But growth is terribly easy in a competitive market (under-price your product), while *profitable* growth is hard.

And this, in a nutshell, is why PM is needed. Look after the profits and the growth will look after itself.



I would like to cover two topics in the following chapters. Why, in the context I've framed above, we would want to engage in portfolio management (PM) to find the profits that facilitate growth. And why it is hard: it is only through understanding the challenges that we can overcome them to achieve a successful PM process.

Key messages and learning points

You want growth, and you want profit. But the only sustainable growth is *profitable* growth. Therefore focus on margin, which is the essence of portfolio management. Look after the profits and the growth will look after itself.

Chapter 5: Why do portfolio management?

In the “What” of PM we defined it as a process where human decision-making is informed by analytical insight to derive greater value from an existing portfolio.

But key for us here is that it is deriving value from an existing portfolio.

Building a portfolio of business from scratch is difficult. Almost always it involves loss-leading decisions. It takes significant investment: hiring, the costs of new or changed operating models, investing in distribution relationships, etc. A portfolio usually represents the result of trial and error, heavy investment, and the risks that these pose. But once you have it, they're in the past. It has been through those perils and you now have a hard-earned “right” to sell and renew insurance policies of that type to those customers through these channels.

What if we want to bypass the grind of organic growth and go inorganically to the end-point? Getting a ready-made portfolio can happen in two ways. Either you hire an existing team of underwriters and support staff (maybe claims too, for example), hoping that their distribution relationships and customers will come with them. Or you buy a company, or part of a company.

These acquisition plays are risky on a different scale from the organic approach. In the case of hiring a team, what if the customers or brokers don't want to renew to a new company, and use this as an opportunity to shop around? What if the previous employer is disgruntled and sues you? What if you have to wait for a year of gardening leave, which gives the previous owner of the portfolio the opportunity to shore up their position? - this is, after all, the rationale for long notice periods. As for actual company acquisition, a great deal has been written and researched on corporate M&A and suffice it to say that the majority don't work, and of those that do almost all underperform relative to initial frothy expectations.

In brief, achieving a new portfolio of business is EITHER slow, expensive and risky, OR fast, expensive, and very risky. This approach to growth can involve a lot of heartache and losses before that growth becomes profitable. There are risks it may not arrive, and it may be smaller or later than you would wish.

But given they're so hard-won, it makes sense to look at the embedded value within existing portfolios. There is always untapped potential: if you ask any senior underwriter about their book you get a response like “I know 80% of my portfolio is great, but I don't know how to identify the 20%”. If we can laser-in on these parts, fix or exit the 20% of underperformers, and nurture and grow the 80%, we would generate more value. In practice, you do it bit by bit and some of that 80% later deteriorates or reveals itself to be poorer than thought, and so the process itself of constantly spotlighting the portfolio drives better profits enduringly over time.

Profits or growth? These aren't actually separate. Profitability is the key. Sometimes PM will deliver growth directly – overpriced segments could see price reductions and hence natural growth, for example. But any kind of margin improvement leads to the kind of relief that facilitates growth elsewhere in the business: either through re-investable profits, or through reallocating resources from firefighting to constructive projects like that difficult and risky business of growing a new portfolio.

We find well-run portfolios typically see 1%-5% of enduring combined ratio improvement by being subject to PM discipline. The lower end of the range is typical for large-scale fast-flow business, and the higher end for lumpier, specialist business. Distressed or underperforming portfolios could easily see this improvement be 10% or more.

So this is why we should build portfolio management processes. The value is there, and it's a mindset and organisational commitment, not an expensive and risky investment, to release that value.

Key messages and learning points

If you grow through building or acquiring portfolios, it is expensive and risky. All portfolios have untapped potential, if it can only be found. Ensuring each existing portfolio performs to the best of its capability can lead to growth in its own right; but it also liberates resources and focus to pursue these riskier growth plays that, when they work, have game-changing payoffs.

The value from existing portfolios is typically in the range 1-5% sustainable combined ratio benefit. Releasing this benefit is not costly or risky, but it does take a mindset and organisational commitment.

Chapter 6: Why it is hard

If it is so valuable, why do so few insurers do it systematically? Why are there not “portfolio management” functions alongside pricing, finance, claims, etc.

The blockers to successful PM, which are mostly around organisational behaviour, can be summarised by the **Four Cs**:

1. Complexity: data challenges, spreadsheet proliferation, achieving what we call "temporal continuity" (the link from the past to the future via fitting underwriting year assessments to accident year ultimate loss ratios), allocating IBNR, doing this in real time and exploring scenarios with version control, etc. We touched on this in the What of PM: there is an analytical underpin which is heavy-duty and requires talent, insight, and very well organised processes. Which brings us to...

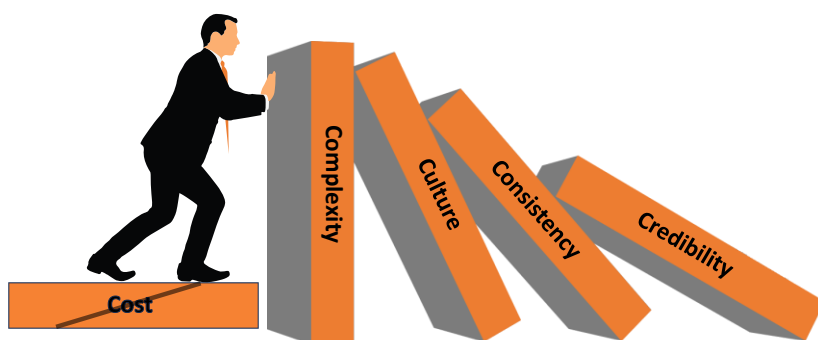
2. Culture: silos and the need for cross-functional engagement may defeat the adoption of a new process, as competing priorities and scarce (actuarial) resources means we lose that vital point at the nexus of pricing and reserving. Which brings us to....

3. Consistency: portfolio management is a process, not an event. It needs to cover the whole portfolio, regularly over time, for the dynamics of the real world and of emerging information leads to trends we need to identify as "signal" from the regular "noise" of insurance claims. For true consistent value, we need more than piecemeal insight or occasional deep-dives. Which brings us to....

4. Credibility: for important decisions to be taken, decision-makers need to have confidence in the data and information they're presented with. This depends on transparency and accuracy. Transparency comes partly from openness of the process and partly from familiarity with the tools, graphs and tables that the decision-makers see. Accuracy is demonstrated over time through a consistent process delivering frequent “actual vs expected” findings.

A fifth “C”, Cost, doesn't feature. It's not free – someone has to organise this, and they must be able to marshal the resources (typically underwriters and actuaries) to deliver what's needed. But it is not a big investment, and this shouldn't trouble the CFO.

And so this is why it is hard – organising and committing yourself. But the benefits are so material that it should be worth the effort to find this solution.



Key messages and learning points

Building a portfolio management process is low-cost financially, but a serious organisational commitment. The typical blockers are summarised by the 4 Cs:

- Complexity: the data and analytics represents significant repeated heavy-lifting
- Culture: we must be able to land on an agreed “single version of the truth”
- Consistency: portfolio management is a process, not an event
- Credibility: for brave decisions, especially the more material kind, decision-makers need to have confidence in the process and information they’re presented with

PART 3: The How

Chapter 7: Emerging Profitability

We start to pull on our boots and strap on our armour.

We will take our control cycle process and synthesise it into three stylised equations that define the steps of the PM process. And we will drill down from there, interweaving examples as we go.

If we want to get to the point where the analytics is sufficiently insightful and rich to inform proper decision-making we need to gather both raw data (policies, premiums, claims) and softer information (the history of underwriting activities and market changes over time, mainly).

We will feed this into the historical analysis of performance and derive forward-looking projections of profitability. This latter we refer to as “Emerging Profitability”:

Emerging Profitability: the profits we expect from business being written now and in the near future, based on our assessment of the overall rate strength of the portfolio.

Why do we want Emerging Profitability? It’s the only thing matters! The past is the past, and nothing can change it. Premiums have been written, and the claims that emerge will be settled delivering a loss ratio you can’t change. The analysis of the past is a crucial input into Emerging Profitability, but unless you’re tasked with preparing P&Ls that’s all it is useful for. Trends, external factors impacting the portfolio and its market, macroeconomic variables (like inflation) and the history of actions all play a role to adapt the history to a view of the current rate adequacy.

It is the assessment of Emerging Profitability – and not the historical assessment per se – that will tell us how the portfolio is performing. And it will guide our decisions to drive performance and hit or exceed targets.

We will express Emerging Profitability as expected loss ratio, or expected combined ratio, or any other standard profit measure. It will be available for the whole portfolio and for component parts of it; and it will be expressible on either an accident period basis or an underwriting period basis.

Key messages and learning points

Emerging Profitability is the profit we expect from the business being written now and in the near future, based on our assessment of the overall rate strength of the portfolio.

This is the crucial forward-looking metric that is portfolio gold-dust. It is derived as the crux of the analytical process, before its insight is cascaded throughout the portfolio.

It is informed by the historical results, but also takes full account of market context and historical portfolio actions.

Chapter 8: Temporal continuity

Results must be expressible on both underwriting-period and accident-period cohorts. The former gives us our assessment of Emerging Profitability that will drive all decisions. The latter is the glide path to get there. But they are the same measure, just spread over different time periods.

It's deeper than that, even. Our analysis of Emerging Profitability takes historical results into account, and filters them through changes and actions taken. We wish to bind the past to the present in a rational way, so that we may have a credible view of the future. The levers we pull (rate actions, growth and shrinkage, etc) are typically actions affecting an underwriting period, while the measurement of these actions is best managed by accident period for greatest certainty. Levers and measures exist in different temporal cohorts and to compare the one with the other we have to be able to glide smoothly between accident and underwriting periods.

The Principle of Temporal Continuity: our quantitative framework should be consistent whether we consider it by underwriting or by accident period. The same core analysis and understanding should be expressible on either basis; but it remains the same.

What this means in analytical practice is that certain figures (e.g. the expected loss ratios from our judgment of Emerging Profitability) need to be earned from underwriting-period cohorts into accident periods, just like written premiums to earned. And that other figures, like IBNR, which are estimated on an accident-period basis, must be allocated back to underwriting period.

To bring this to life, it speaks to some of the cultural challenges referred to earlier when I mentioned corporate silos. Where one team assesses performance (say, reserving actuaries estimating IBNR) it is very common indeed for that view to be different from another team's view (say underwriting and pricing actuaries). This is not an acceptable starting point for PM. The "truth" about performance exists: there is an Emerging Profitability that is correct. Our analysis is an *estimate* of it: I am not saying we can know it with certainty; but it is necessary to have a single version of this truth.

We will look at the application of this Principle later when we derive a measure known as "a-priori" which captures the history and future value of Emerging Profitability and ensures it matches a combination of historical performance and known and estimated changes.

Key messages and learning points

Levers (our actions) and measures (how we evaluate the effect of our actions) usually exist in different temporal cohorts: the former Underwriting Year and the latter Accident Year.

We must be able to match the two. The Principle of Temporal Continuity states that a single model of performance (historical and future, aggregate and granular) must be expressible in both temporal cohorts.

Chapter 9: Portfolio group theory

Our objective is to identify the units within a portfolio that we will use to execute decisions. Sometimes they may be quite sweeping (“exit price comparison websites”) and others more surgical (“3.5% price increase for motor policies sold by Smith Brokers Ltd”).

Park for now that portfolios themselves sit in a hierarchy and that we need to descend to an indivisible portfolio before deciding on decisions. We will come to this shortly.

Here we talk about how to group our (indivisible) portfolio. The use of these groups and subgroups to inform decision making, including the diagnostics shown and considered at the grouped levels, we refer to as “**portfolio slicing**”.

We will talk about:

Concept, definition, label, language	Example(s)
Decision-Making Units (DMUs) , which may be more or less granular, and represent a valid level at which (some or all) portfolio decisions may be made. DMUs should have: • A rationale for why they proffer potential actions – a group of policies where the second letter of the company name is K can’t rationally be a DMU. • Data (premiums and claims) available at this level. • Human accountability: who takes the action. • Operational capability: how they do it.	Policies with a high flood score; customers with sales between £1m and £5m; policies with a claim in last 3 years; 1 st excess layers; construction type A; coverage section B; industry C; property type D; broker E; product F; wording G. Etc
Breaking down a portfolio in a “separation” . A separation is a collection of DMUs within the portfolio that is both discrete (no overlaps) and complete (no gaps) ² . • A portfolio may have several separations S_1, S_2 etc. These can be entirely independent of each other (a DMU within S_1 may overlap several DMUs in S_2) or may form a hierarchy. Where there is no hierarchy we call the collection of separations “horizontal”. • If the separations are progressively more granular, then we are developing a hierarchy. This is a cascading series of separations, each within the previous.	Distribution channel (Direct vs Regional broker vs National broker vs Partnerships). Customer size (SME, mid, national, global). Region (Germany vs France, then by State and Département). Customer category (A, B, C). Socioeconomic score band. Commercial credit score category. Etc
Minimum Decision-Making Units (MinDMUs) , which are the atoms of portfolio management. These are DMUs that are not separable. Usually they are not separable because the administration of managing to greater granularity is too burdensome.	Within an occurrence-form liability portfolio, combined EL/PL policies sold to customers in the storage and warehousing industry in the UK, with turnover between £2m-£5m and a 3-year a claims-free history, and who have renewed their policy with us at least once.

² The conditions are almost always met easily in any portfolio “lens” like product, broker, region etc. They’re usually discrete by their very definition (broker X is different from broker Y) and the completeness is achieved either naturally or through an “all other” category that then becomes a sweep-up DMU in the separation.

For those whose minds work with images to embed a concept, it can be helpful to think of a jigsaw metaphor. The portfolio is an image – a nice picture of a bucolic farmyard, say. A jigsaw puzzle-maker cuts this picture up into 500 pieces (that are, note, discrete and complete). He may take a copy of the same image and make a completely different 500-piece jigsaw puzzle; and again and again. Each puzzle is a separation, and the pieces of each puzzle are the DMUs of that separation. The puzzles together make a (horizontal) collection of separations. Note that one puzzle may have a goose in one piece and a collie in another, while another puzzle could easily cut the goose in two and the collie in three.

What do we want to do when facing the portfolio and deciding about decisions? This is a two step process³:

1. Decide on the separations you wish – the “lenses” through which you may wish to look at the portfolio to decide how to improve performance and meet targets. Suppose you derive three separations S_1 , S_2 and S_3 (e.g. Region, Broker, and Customer type).
2. The break down of the portfolio into the smallest possible combinations of these separations, which is written $S_1 \times S_2 \times S_3$, is the maximal possible list of MinDMUs. There’s a unit for small customers buying through Smith Brokers in the Southeast, say.
 - In effect we have created the most granular possible separation from your chosen lenses.
 - It amounts to a strict hierarchy
 - $S_1 \times S_2$ is a (sub-)separation both of S_1 and of S_2 (similarly for 1,3 and 2,3)
 - $S_1 \times S_2 \times S_3$ is a (sub-)separation of each of S_1 , S_2 and S_3 (and of $S_1 \times S_2$, $S_1 \times S_3$ and $S_2 \times S_3$).

In jigsaw-terms, this maximal list of MinDMUs is the puzzle maker making S_1 , then making S_2 not from a fresh (identical) image but from S_1 itself; and then S_3 similarly. Let’s get a sense for exactly how granular we are going: if each puzzle has 500 pieces, we now have up to 125 million pieces (being 500^3).

It’s clear that if we need multiple horizontal separations, the only sensible thing to do is to give each a rather limited number of DMUs!

We don’t need to seek hierarchies. That’s only appropriate when a hierarchy is obvious and intuitive, such as ever-smaller regional splits. What we do even with several horizontal separations is create our own hierarchy to cascade decisions and the effects of decisions.

And this cascading is also a justification of this approach to breaking down the portfolio. The final list of MinDMUs that we work with provides the level to which all aggregated modelling results – rate adequacy assessments and IBNR – will be allocated.

We now have the right portfolio grouping (a) to support the analytical exercises in delivering insight to decision-makers, and (b) to enable decisions to be pertinent and executable.

Descending to the coal-face

Portfolios are nearly fractal, but not quite. Cascading through hierarchies of nested portfolios, if we start high enough we begin to get a sense of self-similarity.

³ For the literal-minded, yes (2) follows automatically from (1), so it’s actually a single step. But it is handy to understand this process to appreciate the usefulness of it.

We could imagine a multibillion dollar global insurance group. Its entire nonlife insurance portfolio may first be split into regions (say country). Then within each country, commercial lines and personal lines. Then property, motor and liability. We could easily go further (eg general vs professional liability, then medical malpractice vs lawyers' E&O).

Through this descent we are seeking a collection of individual portfolios, each with the accountability and product-similarity to enable PM decisions to be sought, made and measured. This is the coal-face, and these portfolios are indivisible in the sense that we will not call anything smaller "a portfolio" but rather the subsections of a portfolio. Each of the portfolios should now go through the exercise above (separations and MinDMUs).

But isn't the breaking down of a large portfolio into smaller portfolios just like separations and DMUs? Yes it is. The process of descending to the coal-face as I've described it is very analogous to what we do with the indivisible portfolios once we identify them.

The difference is what we do with them as we identify them. With an indivisible portfolio we are going to build a process that leads to portfolio decisions taken in a control cycle that helps measure their effects and refines their objectives.

But with a higher-level portfolio the PM output, rather than actions, is targets. For this is where the PM rubber hits the Business Planning road. A global CUO (or CEO, or CFO) isn't going to ask for a product wording to be tightened or mandate that a rate action be taken. What he or she is going to do is to translate what shareholders expect into underwriting targets (volume and margin). Say \$5bn premium with combined ratio of 94%. And then country A may have \$500m premium and 95% ratio as its target (and similarly split within the country by commercial vs personal lines, then Line of Business, etc). And country B may have \$100m premium with 92% ratio as its target.

This higher-level, strategic portfolio management discipline is typically hosted within the Financial Planning and Analysis function. It's not necessarily a control cycle, it's not to deliver actions, and it's less frequent. But it is, however, very important. It's the main input into setting portfolio objectives that will, like a framed photo of the monarch in the ambassador's office, inspire and awe those with operational responsibility.

Key messages and learning points

Break the portfolio down via separations – discrete and complete sets of Decision Making Units (DMUs) of the portfolio. These constitute the lenses through which you will view the portfolio when you come to assess fine-grained performance ("portfolio slicing").

You may have several separations, but if it is more than a few ensure you don't have many dozen DMUs in each one because the analysis will stultify in the allocations to the most granular level.

Don't worry about hierarchies unless they form naturally, like industry → trade or country → county.

Separations of macro portfolios, before we reach the ones where we will determine actions, determine not actions but targets for these front-line portfolios.

Chapter 10: The portfolio management equations

Having prepared the ground we are now getting into the meat of the process.

There are three stylised equations to frame the “How” of PM. They’re stylised in the sense that plus doesn’t mean plus and equals doesn’t mean equals; but you should understand their message.

Portfolio Management Equation 1

PME1: {results history} + {market context and effect of past actions} = {emerging profitability}

This captures the essence of the analytical work we have described, both the backward-looking (the results history) and the forward-looking (where this history is enriched with knowledge about other impacts on the portfolio).

As we have stated, {emerging profitability} is the single most important piece of information you can have about the portfolio, and especially so when it is cascaded to its component parts via portfolio slicing.

Portfolio Management Equation 2

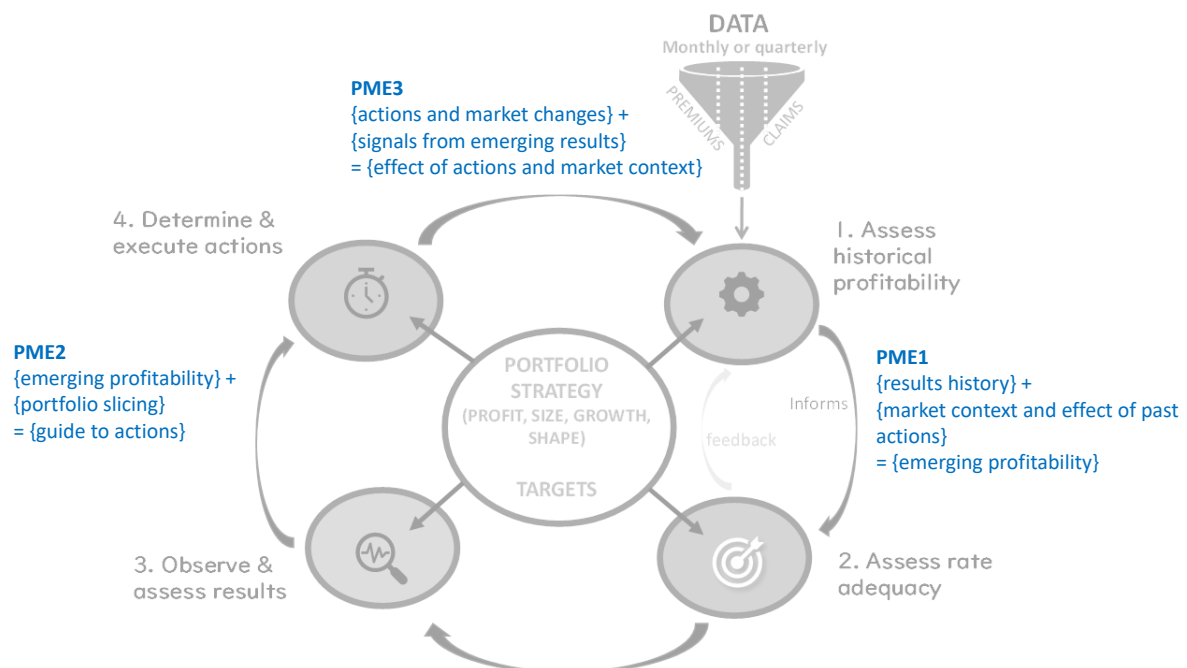
PME2: {emerging profitability} + {portfolio slicing} = {guide to actions}

Here we synthesize all the insight to determine what actions we are going to take.

Portfolio Management Equation 3

PME3: {actions and market changes} + {signals from emerging results} = {effect of actions and market context}

We come full circle. Back to PME 1.



Portfolio Management Equation 1

$$\{results\ history\} + \{market\ context\ and\ effect\ of\ past\ actions\} = \{emerging\ profitability\}$$

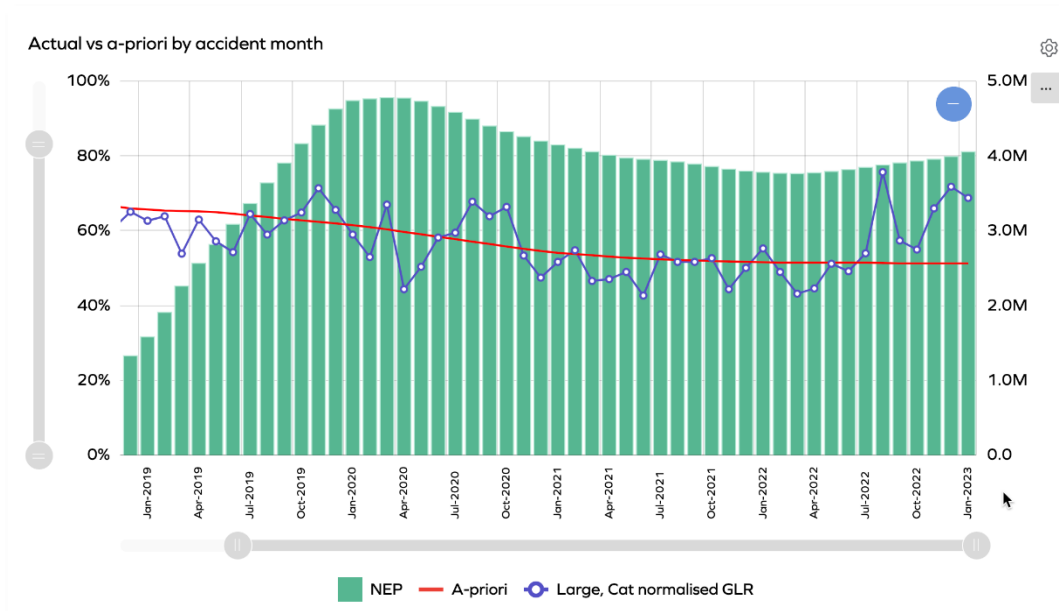
Our objective is to derive a model of the performance of the portfolio that we call the “a-priori”. The a-priori is the time series of mean expected loss (or combined) ratios that the portfolio delivers based on our assessment of past and current (and maybe future) rate adequacy.

Due to the Principle of Temporal Continuity, the a-priori is expressible either by accident period or underwriting period.

It removes the “noise” from actual claims and represents the “signal” of true underlying performance.

The value of the a-priori loss or combined ratio for business being written now (or the near future) is our portfolio gold-dust, the Emerging Profitability.

We must fit our a-priori to the actual history of results, in order for it to be a credible indicator of Emerging Profitability. It looks something like this (where we are showing a fit that is only partially accurate, so we will refine it later).



Our red line is the a-priori. The blue line (with the noise of claims volatility but indicating clearly the directional signals of profitability) is the actual results history. Note we normalise the actual results history for claims that have unpredictable volatility, in order that those signals may be identified⁴.

The green bars showing premium are an indication of the volume of business giving rise to the claims, so we may for example disregard time periods (early on) where the volume of business was small.

In order to fit the red line to the blue, we must assign a value to all changes we have codified in the history of the portfolio – both individual actions such as rate increases, and external effects that we

⁴ Normalising means we remove the source of volatile claims – here, large individual claims and catastrophe events – and replace them with fixed loads that we will have derived independently

summarise as “market changes” or “market context” in the portfolio management equations⁵. Assigning a value to each change and market effect determines the shape of our red line (up, down, with what gradient, and changes in these directions). We must also fit the “level” of the red line, which is the collection of starting point loss ratios across the DMUs.

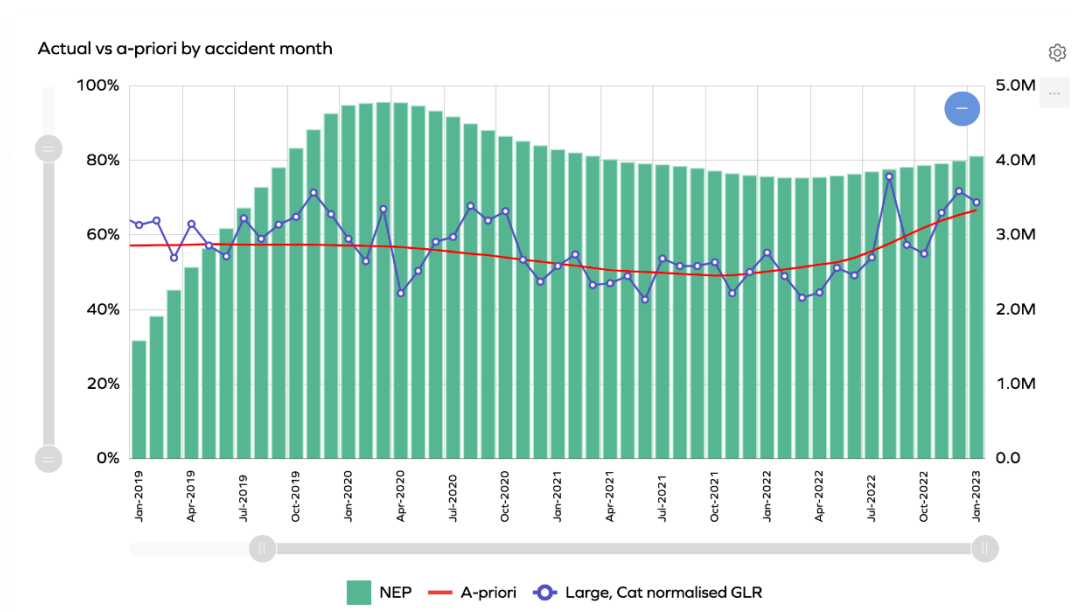
Lastly, in our graph, we have a version of combined ratio we call CCR: Claims and Commission Ratio. This is a slightly purer measure than the full combined ratio which requires judgment to allocate overhead expenses.

The idea is that the CCR may be the measure for which a portfolio target range is given.

Because our model of a-priori is by underwriting year, and we have information on recent market changes and portfolio actions as well as the ability to anticipate future changes of these types, we are able to forward-project both by underwriting period and by accident period the value of the a-priori. This is our Emerging Profitability, and it is to be compared with the portfolio targets.

Despite the a-priori model being by underwriting period, which reflects the levers we may pull to affect the portfolio which are generally by underwriting period, due to the Principle of Temporal Continuity we simultaneously maintain an expression of the a-priori by accident period.

As we can see, our fit (of red line to blue line) had reasonable veracity in the early period but over recent accident months it does not capture the direction of travel of the portfolio. In this case, something has happened that we are not capturing in the a-priori that has caused a consistent deterioration of results. Assuming it is genuinely an externality it may be something like inflation, changes in the legal or judicial or social landscape, competitive changes that have led to adverse selection, brokers or competitors targeting the best customers and enticing them away: whatever the effect it's not something we are currently allowing for, so we insert one or several “portfolio perturbations” into our model and assign them values to change the direction of the red line:



⁵ By way of nomenclature, we sometimes refer to market effects which are external rather than internal impacts on portfolio performance as “Portfolio Perturbations”. Perturbations are a very useful way of building our picture via the a-priori for not only are they there for strictly external effects but they can also account for changes in behaviour and approach of those internal to the business where we cannot codify or identify these activities.

We now have a far more credible model of a-priori and this may be our starting point for portfolio slicing.

A side note: while PM involves a good deal of actuarial work, this is not a primer for actuaries. I am not going to describe how to project claims triangles to ultimate or to adjudge the resulting models. I am not going to describe the maths on allowing for things like rate credits, elasticity, or allocation algorithms. And the fitting of a response variable to an explanatory variable, having in mind the statistical principle of parsimony, using least squares or generalised regression, is beyond my ambitions here. These are not difficult things to do, but they are a topic in their own right and would weigh this paper down with unnecessary technical detail.

Portfolio Management Equation 2

$$\{emerging\ profitability\} + \{portfolio\ slicing\} = \{guide\ to\ actions\}$$

PME1 gave us Emerging Profitability. We have been through the process in our chapter on “portfolio group theory” whereby we have decided on our various separations, which provide the lenses through which we want to view the results. We have discussed the need, via earning patterns and allocation algorithms, to cascade all the insight throughout the portfolio to the DMUs (and MinDMUs). And with the Principle of Temporal Continuity in mind, we can consider both the effect of actions and our results on either accident period or underwriting period bases.

What remains is the practical activity of portfolio slicing.

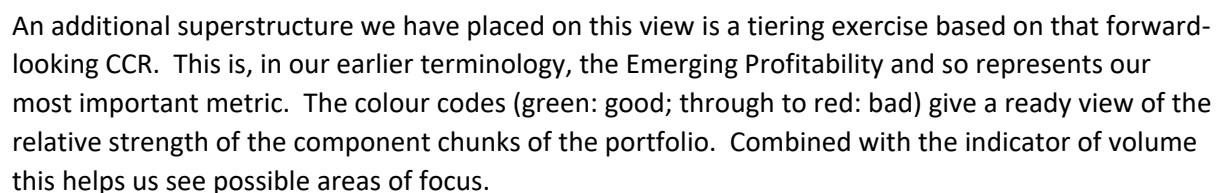
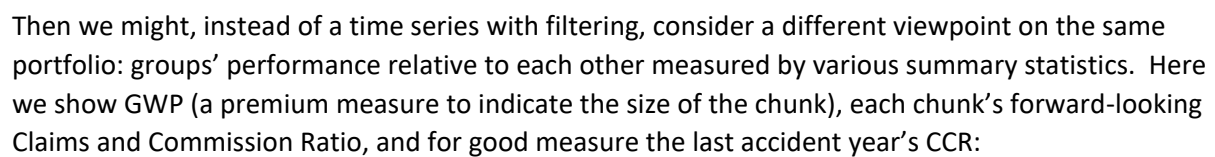
Maybe you have an enquiring manager who follows her nose to seek insights given the analytical work? Maybe you have a good actuary delivering good MI to you in a standard format each quarter? Maybe you have a dashboard that you can play with yourself?

Whatever the means of presentation, there will be some collection of the following:

- Time series of results to the present day.
- The above at the level of DMU (and DMU x DMU).
- Moving away from time series, create key summary KPIs from these time series, like “last 12 months’ average attritional loss ratio”, and place alongside premium and Emerging Profitability estimates to compare and contrast the various DMUs in the portfolio.
- All the above with the ability to zoom in and out (if I look at this DMU, what about a sub DMU within it? What was the IBNR versus Incurred Claims figure here? How did cat losses fare compared with the load?).
- Tables, charts, graphs (and bubble graphs, everyone’s favourite story-teller) of all the above.
- Diagnostic tools to evaluate the quality and robustness of the actuarial assumptions that have been made to deliver the analytical insight.
- Sensitivity testing (“if I’d assumed X instead of Y what would my results be?”) and scenario testing (“if I executed this action, what would the portfolio look like?”).
- Extra superstructure in our investigative enquiries on the portfolio, such as the ability for user-defined groupings (we call this “chunking” where some DMUs may be grouped and others left alone, or where for practical purposes we create a hierarchy within one separation to find signal from the noise) or tiering (where results are placed into different ranges as a clear guide to actions).

Using the analytical insight delivering Emerging Profitability and rich and diverse portfolio slicing the areas requiring actions tend to be obvious, this points the practical way forward.

A first step is usually to explore the history of results with filtering capability. In this screenshot we see a dashboard where “source” has been filtered to one of five options and beneath it is shown the various products that constitute that source:



23

Chunk ↑↓	Annual GWP ↑↓ 1	Forward Looking CCR ↑↓	Last 12 Accident Months CCR ↑↓	Last 12 Accident Months Large, Cat Normalised CCR ↑↓
Classic Car Fleet Insurance	1,256	92.4%	122.9%	92.4%
Any Driver Over 21 Fleet Insurc	1,262	83.4%	124.5%	105.9%
Agricultural Vehicle Fleet Insurc	1,288	174.2%	124.5%	76.2%
Short Haul Fleet Insurance	1,313	86.5%	95.6%	90.3%
Fleet Insurance for Established	1,342	42.3%	183.1%	153.8%
Any Driver Fleet Insurance	1,342	70.7%	98.5%	98.1%
Fleet Liability Cover	1,473	95.9%	85.9%	90.3%

Tier1

Forward Looking CCR

Tier 1 0% - 80%
Tier 2 80% - 90%
Tier 3 90% - 100%
Tier 4 >100%

A simple sort by the forward-looking CCR metric helps us scroll through to focus in on the good and bad. The following two screenshots (taken from scrolling through the many chunks of this portfolio) show a couple of areas, one at the better end of the performance spectrum and the other at the poorer end:

Chunk ↑↓	Annual GWP ↑↓	Forward Looking CCR ↑↓ 1	Last 12 Accident Months CCR ↑↓
Van Fleet Insurance	681	75.7%	64.4%
Taxi Fleet Insurance	1,581	75.8%	116.9%
Low Mileage Fleet Insurance	1,018	75.9%	59.1%
Fleet Medical Expenses Cover	609	81.2%	87.0%
Fleet Mechanical Breakdown Ir	207	81.4%	229.6%
Fleet Insurance for New Busine	157	81.5%	189.0%
Coach Fleet Insurance	463	81.5%	229.4%

Tier1

Forward Looking CCR

Tier 1 0% - 80%
Tier 2 80% - 90%
Tier 3 90% - 100%
Tier 4 >100%

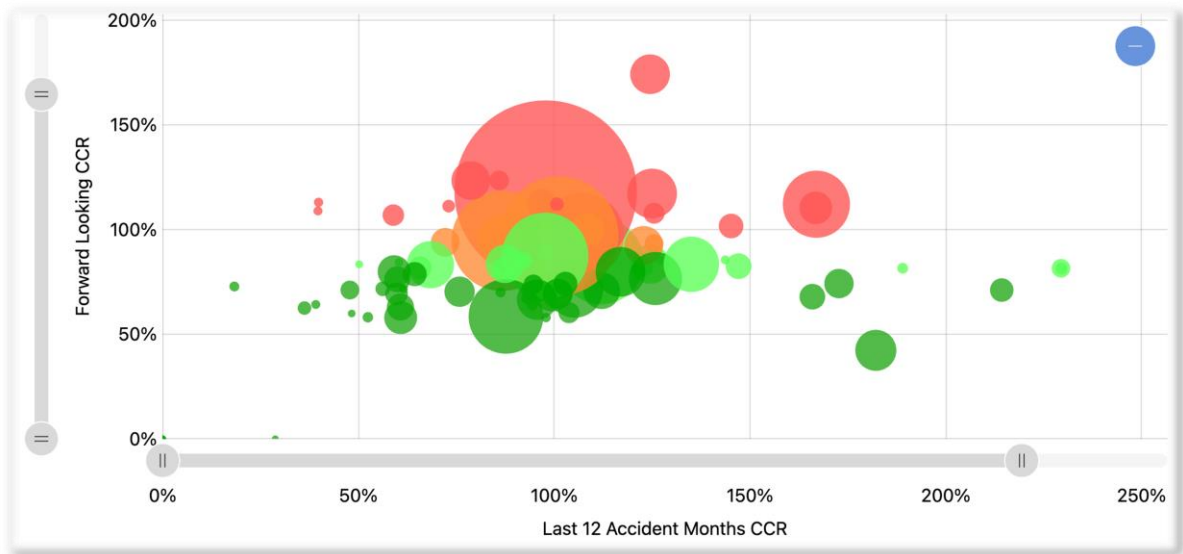
Chunk ↑↓	Annual GWP ↑↓	Forward Looking CCR ↑↓ 1	Last 12 Accident Months CCR ↑↓
Fleet Liability Cover	1,473	95.9%	85.9%
High Mileage Fleet Insurance	4,402	97.0%	101.2%
Any Driver Over 21 Fleet Insurc	3,037	97.3%	107.1%
Fleet Insurance 2	1,057	99.9%	108.4%
Named Over 50s Driver Fleet Ir	699	101.7%	145.2%
Any Driver Over 21 Fleet Insurc	721	106.0%	111.0%
Corporations Fleet Insurance	577	106.9%	58.9%

Tier1

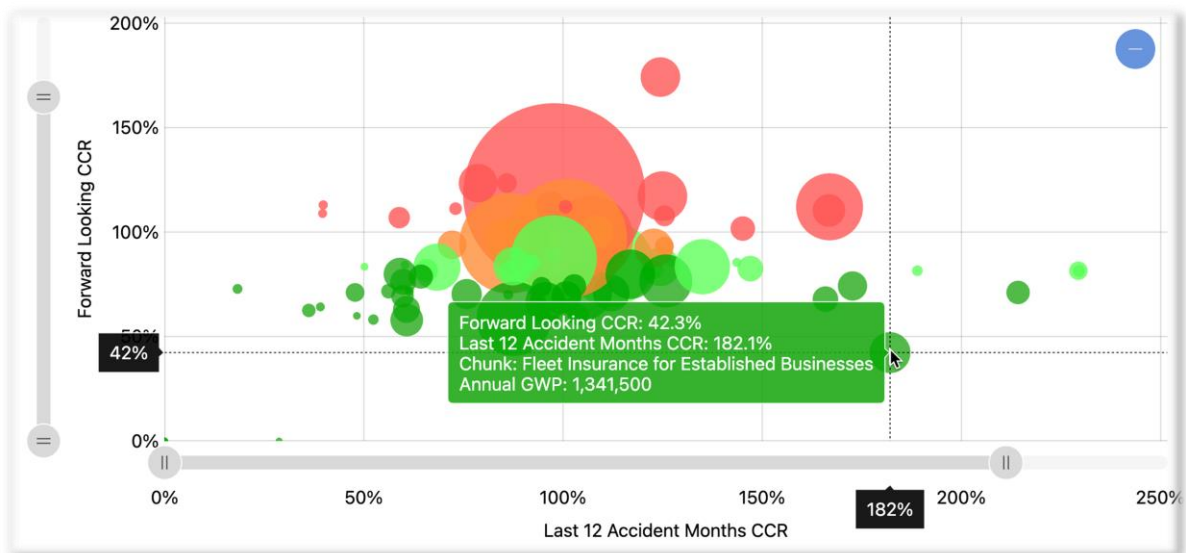
Forward Looking CCR

Tier 1 0% - 80%
Tier 2 80% - 90%
Tier 3 90% - 100%
Tier 4 >100%

Of course, some people are heavily pictorial, and we can imagine presenting the same information graphically. This bubble chart shows each component (or “chunk”) in the portfolio on two axes, determined by the measures of our columns above, where the size of the bubble is the GWP and the colour indicates its tier:



This chart, if interactive, can carry a great deal of information simply by hovering the pointer:



Portfolio Management Equation 3

$$\{actions\ and\ market\ changes\} + \{signals\ from\ emerging\ results\} = \{effect\ of\ actions\ and\ market\ context\}$$

Having determined, and hopefully executed, our actions, we are able to evaluate the effect of them over time. It may not be the next discrete step in the cycle: one quarter's actions may not even be fully implemented yet. But over time the control cycle approach steers us, much like Adam Smith's invisible hand, to the optimal position.

In PME1, when we fitted our a-priori model to the data, we made a series of assumptions that were, at that time given the data then available, the best we could make.

Over time, the data will tell us that those assumptions weren't fully accurate. This is nothing to be ashamed of! An archer at 400 metres will miss the target, but as he walks towards it his accuracy

improves until he hits it every time; and so it is with data and experience that matures and casts ever brighter lights on our assumptions. Of course as time progresses we make new assumptions and so the process repeats.

And so we refine our assumptions even as we make new ones (new “perturbations” we observe, new values to assign to new underwriting and pricing actions, etc). The constant refinement gives us in its own right more accuracy in the new ones. We may find, for example, that in this portfolio we suffer a mix-effect dilution following rate increases that means we can only give 75% credit (for profitability) to rate actions. This alone is valuable information, and when we started would likely have been a guess.

We have our new data ingested for the control cycle, and we have our refined assessment of the effect of actions and market context, and so the process repeats. We are now going to reassess Emerging Profitability and we find ourselves in the midst of PME1....

Key messages and learning points

We deliver our control cycle via three stylised equations:

PME1: {results history} + {market context and effect of past actions} = {emerging profitability}
Permits us to fit our model of rate strength (the a-priori) to the actual claims history overlaid with our assessment of market and portfolio changes

PME2: {emerging profitability} + {portfolio slicing} = {guide to actions}
Synthesising the insight (appropriately cascaded across the DMUs) to determine actions

PME3: {actions and market changes} + {signals from emerging results} = {effect of actions and market context}
Completing this iteration of the control cycle, refining and adapting our assessment as both new data comes in and the impact of past changes matures

Chapter 11: Data

I have already mentioned that this is not an actuarial primer. The same applies to the field of data infrastructure. That said, in my experience a conversation about PM turns within five minutes to a lament about the quality or availability of data. So I would like to touch on it briefly.

Unless they have approached data with the spirit of “anticipate, plan, design and build”, most insurers will find their data landscape thoroughly disheartening. It will be complex, unavailable except through a team of protective IT people, disparate and dispersed, infrequent, often inaccurate, opaque, incomplete, and inconsistently coded.

Happily we know exactly what data will be needed, and how frequently it is to feed our PM machine. This alleviates the strain we may feel when trying to match a complex new process to a data landscape of varying quality and manifold complexity. Knowing the end-goal helps navigate the forest of data.

So data must be taken seriously, and ideally you would have a well-

designed (well-platformed) data infrastructure that delivers easily everything you need. And it is true that without good data no realistic PM is possible. But the data required is so limited that we are unlikely to find insurmountable problems. We don’t need rating factors, detailed pricing model outputs, full policy-administration system access, or any operational metrics.

We need, simply, premiums and claims. We need the claims to link to the policies that gave rise to them, with some coding about the nature of claims (e.g. peril). We need premiums by policy with as many classifications (broker, region, etc: recall the DMUs) as will be useful to inform our portfolio groupings. And that is it, for hard data. It just has to be accurate, timely, and delivered each month or quarter. To this we will add soft data or qualitative information like rate actions, market context, and the like; but these are interview responses, not data-feeds, and easily ingested to our process.



Key messages and learning points

Do not be disheartened with a data landscape that is complex, inaccessible and unreliable. This is a common situation. A well-platformed data infrastructure is desirable, but even without you will find that the challenges can be addressed provided you have access to premiums and claims on a discrete monthly or quarterly basis.

Chapter 12: Platforming

It may be time to take a breather. It may be a little overwhelming to consider all the analytical work, and all the evaluation work of those analytics, and the constant need for this to repeat.

Well, reading about it is one thing but practising it is an even greater burden!

The only realistic way to address a deep and involved control cycle like PM as I describe it here is to platform it properly. By this I mean:

- a) Robust data ingestion process.
- b) Ability to keep track of all assumptions and parameters over time.
- c) Ditto sensitivity tests and scenario tests – at least in terms of ensuring we can return to the base case without forgetting the rabbit-hole we are currently exploring.
- d) Audit trails: being able to descend from results to the assumptions and back again.
- e) Sign-offs: ensuring that at least the most involved parts of the process have appropriate review.
- f) Version control with timestamps.
- g) Standard reports.
- h) User-friendly dashboards that are automatically fed from the analytical process to facilitate the human decision-making part of PM.
- i) Action logs with responsibility and timescale clearly indicated.
- j) Recall to earlier versions of our model.
- k) Actual to expected, including comparing past results with current.

If you think this cries out for a software solution, you are right. At least one such solution exists. But even if you do not have a specific software platform for this, you should give serious thought to what comes if you don't think in platform terms: spreadsheet proliferation, dead-ends, murky responsibility, changes of personnel leading to discontinuities, and the like. In short, a great deal of planning and organised thinking is needed – or, alternatively, a dedicated software solution!

Key messages and learning points

To manage a very involved cyclical process like portfolio management, you need a platform. This may be a dedicated software solution facilitating the analytics, the dashboards and visualisation and diagnostic tools, and the action-tracking. Or it may be just a very well organised and highly documented set of procedures. Either way, you must anticipate:

- Audit trails
- Version control
- Sensitivity and scenario testing
- Assumption and parameter tracking
- A repeatable data ingestion process
- Standard reports and dashboards
- Action logs (with owners and timescales)

Chapter 13: Governance and transparency

Because insurance is a dynamic market, our PM process needs to be governed with a clear and stable set of rules and procedures. Our stability can tame the market's shifting sands.

A governance process involves the following:

1. Clear accountability: an individual per portfolio with decision-making power. I do not favour bureaucracy and committee, other than as a means of cross-team communication or for setting the rules of cascading responsibility and monitoring them. The power of the individual may have some limits and for really big decisions we may go up the line, but that should be to someone else with the authority to take these big decisions. The individual with authority will be held accountable by the transparency of the decision-making process recommended here (data, analytics, portfolio slicing insight, etc). It is neither necessary nor effective to place a committee in charge of portfolio decisions.
2. Regular review sessions (probably quarterly, maybe monthly). The heart of governance is to ensure that there is time and space for the right decisions to be taken. These sessions should be documented to create the audit trail of what becomes a growing story of results, decisions, effects of decisions, and new results.
3. A standard set of information fed to the review sessions. The review sessions may cover more than pure PM (for example, they may cover things like regulatory compliance and operational KPIs). But the PM insight needs to be in a familiar shape each sessions.
4. A facility for ad-hoc insight, beyond a standard pack, to be assimilated. There will always be interesting things to explore and if the right people are doing portfolio management some of them will "follow their nose" and turn up interesting insight.
5. A standard set of terminology with common understanding. This is part of (3), of course, but if we don't have this common understanding then we won't be able to incorporate (4).
6. Involvement of the correct people who may oversee or carry out the actions described in Chapter 2, and also those (probably actuaries) whose work will deliver the insight that leads to the decisions.
7. Formal action tracking. This will include owner, do-er, timescale, and status.

The governance shines a light on the process. We are not going to make decisions in dark corners; we are going to be open about what decisions are taken and why. These decisions will be justified and tracked, and the documentation of the process will be available to the insurer's management (if they wish) to ensure transparency and openness.

By instituting a governance process of this type, portfolio management, like justice, can both be done and be seen to be done. This means that the board and management, as well as regulators, may be satisfied that controls and procedures are in place to assure sustainable profitability.

Key messages and learning points

Portfolio management must not only be done, but be seen to be done. The process must be governed with clear accountabilities and a properly constituted and documented series of review meetings, fed with high quality management information. The existence of this process together with the transparency with which it operates provides assurance to executives, boards and regulators who need to know that this oversight is in place.

Summary of learning points by chapter

Chapter 1: Defining portfolio management

Portfolio management is a process where human decision-making is informed by analytical insight to derive greater value from an existing portfolio.

The analytical insight should evaluate the historical results, and use this together with knowledge of actions and market context to derive Emerging Profitability. It needs to cut across functional boundaries (no silos). And the insight should be allocated comprehensively throughout the portfolio.

Humans must oversee and drive portfolio management, not a computer. Insurance is contextually nuanced and experienced judgment must be deployed to interpret the analytical findings. The objective is for those overseeing the process to synthesise the analytics into actions.

Portfolio management is a process not an event. The process is a control cycle, regularly refreshed with emerging data and self-correcting as previous assumptions are tested and refined, old actions re-evaluated, and new actions allowed for.

Chapter 2: What actions?

Portfolios don't manage themselves. The competitive environment requires constant vigilance and decisive activity.

The actions come in several flavours:

- Rate
- Shape
- Refine
- Negotiate
- Organise

Chapter 3: What is a portfolio?

A portfolio is the renewal rights and new business opportunities of a book of business defined by a product, a distribution mechanism, the operational infrastructure supporting the product, and a brand.

Drawing the line between one portfolio and another is a combination of the risk characteristics of the portfolios and the authority/accountability cascaded through the insurer for managing its business.

Each portfolio so defined will be the sum of its break-down into one or several collections of decision-making units.

Chapter 4: What do you want?

You want growth, and you want profit. But the only sustainable growth is *profitable* growth. Therefore focus on margin, which is the essence of portfolio management. Look after the profits and the growth will look after itself.

Chapter 5: Why do portfolio management?

If you grow through building or acquiring portfolios, it is expensive and risky. All portfolios have untapped potential, if it can only be found. Ensuring each existing portfolio performs to the best of its capability can lead to growth in its own right; but it also liberates resources and focus to pursue these riskier growth plays that, when they work, have game-changing payoffs.

The value from existing portfolios is typically in the range 1-5% sustainable combined ratio benefit. Releasing this benefit is not costly or risky, but it does take a mindset and organisational commitment.

Chapter 6: Why it is hard

Building a portfolio management process is low-cost financially, but a serious organisational commitment. The typical blockers are summarised by the 4 Cs:

- Complexity: the data and analytics represents significant repeated heavy-lifting
- Culture: we must be able to land on an agreed “single version of the truth”
- Consistency: portfolio management is a process, not an event
- Credibility: for brave decisions, especially the more material kind, decision-makers need to have confidence in the process and information they’re presented with

Chapter 7: Emerging Profitability

Emerging Profitability is the profit we expect from the business being written now and in the near future, based on our assessment of the overall rate strength of the portfolio.

This is the crucial forward-looking metric that is portfolio gold-dust. It is derived as the crux of the analytical process, before its insight is cascaded throughout the portfolio.

It is informed by the historical results, but also takes full account of market context and historical portfolio actions.

Chapter 8: Temporal continuity

Levers (our actions) and measures (how we evaluate the effect of our actions) usually exist in different temporal cohorts: the former Underwriting Year and the latter Accident Year.

We must be able to match the two. The Principle of Temporal Continuity states that a single model of performance (historical and future, aggregate and granular) must be expressible in both temporal cohorts.

Chapter 9: Portfolio group theory

Break the portfolio down via separations – discrete and complete sets of Decision Making Units (DMUs) of the portfolio. These constitute the lenses through which you will view the portfolio when you come to assess fine-grained performance (“portfolio slicing”).

You may have several separations, but if it is more than a few ensure you don’t have many dozen DMUs in each one because the analysis will stultify in the allocations to the most granular level.

Don’t worry about hierarchies unless they form naturally, like industry → trade or country → county.

Separations of macro portfolios, before we reach the ones where we will determine actions, determine not actions but targets for these front-line portfolios.

Chapter 10: The portfolio management equations

We deliver our control cycle via three stylised equations:

PME1: {results history} + {market context and effect of past actions} = {emerging profitability}
Permits us to fit our model of rate strength (the a-priori) to the actual claims history overlaid with our assessment of market and portfolio changes

PME2: {emerging profitability} + {portfolio slicing} = {guide to actions}
Synthesising the insight (appropriately cascaded across the DMUs) to determine actions

PME3: {actions and market changes} + {signals from emerging results} = {effect of actions and market context}
Completing this iteration of the control cycle, refining and adapting our assessment as both new data comes in and the impact of past changes matures

Chapter 11: Data

Do not be disheartened with a data landscape that is complex, inaccessible and unreliable. This is a common situation. A well-platformed data infrastructure is desirable, but even without you will find that the challenges can be addressed provided you have access to premiums and claims on a discrete monthly or quarterly basis.

Chapter 12: Platforming

To manage a very involved cyclical process like portfolio management, you need a platform. This may be a dedicated software solution facilitating the analytics, the dashboards and visualisation and diagnostic tools, and the action-tracking. Or it may be just a very well organised and highly documented set of procedures. Either way, you must anticipate:

- Audit trails
- Version control
- Sensitivity and scenario testing
- Assumption and parameter tracking
- A repeatable data ingestion process
- Standard reports and dashboards
- Action logs (with owners and timescales)

Chapter 13: Governance and transparency

Portfolio management must not only be done, but be seen to be done. The process must be governed with clear accountabilities and a properly constituted and documented series of review meetings, fed with high quality management information. The existence of this process together with the transparency with which it operates provides assurance to executives, boards and regulators who need to know that this oversight is in place.

Lexicon and mantras

I have introduced several concepts in this short book, and for both new concepts and some older ones I have sometimes adopted a new name. This is not a full glossary, for I expect the reader to be experienced in insurance and not require concepts like IBNR, accident vs. underwriting year cohorts and the like to be explained. But I would like to summarise here the novel terms I have introduced.

I've also got a number of phrases that I scattered through the book that I think capture pithily some of the ideas I'm trying to convey, and I summarise these mantras here in the hope they become so widely adopted that they become clichés.

Portfolio Management (PM): a process where human decision-making is informed by analytical insight to derive greater value from an existing portfolio.

Portfolio: a combination of the renewal rights for a book of business along with the new business possibilities of the same book. Supported by a product, operational infrastructure, distribution mechanism and (perhaps) brand. Split into Decision-Making Units.

Separation: the break-down of a portfolio into DMUs that are discrete and complete. A separation represents a "lens" through which we will view the portfolio in portfolio slicing (several are possible).

Decision-Making Units (DMUs): the parts of a Separation that represent valid levels at which portfolio decisions will be made. A DMU that is indivisible is a Minimum DMU (MinDMU).

Portfolio Slicing: the act of deciding on separations and DMUs and then evaluating performance through the lenses of these separations.

Emerging Profitability: the profits we expect from the business being written now and in the near future.

The four Cs (for why PM isn't easy): Complexity, Culture, Consistency, Credibility.

Principle of Temporal Continuity: a model of performance should be consistent whether expressed by accident period or underwriting period cohorts.

a-priori: time series of mean expected loss ratios (historical, current and future) that a portfolio delivers based on our assessment of rate adequacy over time. Shows the signal in the performance by removing the noise of actual claims volatility.

Portfolio Perturbation: an effect not measured as an action within the management of the portfolio that changes its level of profitability (changes the shape of the a-priori time series).

"Portfolio management is a process, not an event."

"Portfolios don't manage themselves."

"Look after the profits and the growth will look after itself."

"PM is a mindset and organisation commitment, not an expensive and risky investment."

"Portfolio management must not only be done, but be seen to be done."