

GA-COURTENAY SPECIAL SITUATIONS FUND

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MACRO PROTECTION WITHIN A UNIFIED FRAMEWORK FOR CAPITAL ALLOCATION

May 14th, 2024

“A greater uncertainty principle exists in financial markets and largely invalidates those economic theories that have been based on a physics-like methodology. And this weakens the notion of modelling outside of the natural sciences.

It ain't physics, I kept warning my trainees throughout my career.”

Nassim Nicholas Taleb, writing in 1996¹

“There's not much indication that subprime mortgage issues have spread into the broader mortgage market, which still seems to be healthy. And the lending side of that also still seems healthy. The US economy is likely to expand at a moderate pace over the second half of 2007, with growth then strengthening in 2008.”

Ben Bernanke, Chairman of the Federal Reserve, one year preceding the 2008 financial crisis²

“The greatest enemy of knowledge is not ignorance, it is the illusion of knowledge.”

Daniel Boorstin, American historian, speaking in 1984³

“You never know whether it will be next week, next year, next decade, but it will not be a century from now, that is for sure. The more intertwined and sophisticated the world financial situation gets, the more vulnerable it gets. It solves a lot of small problems but it also leaves the system more vulnerable to large problems.”

Warren Buffett, Berkshire Hathaway annual meeting 2024⁴

“Investing is most intelligent.. when it is most business-like.”

Ben Graham, The Intelligent Investor, 1949⁵

Executive Summary

The white paper presents a comprehensive examination of how intelligent investors can achieve competitive advantage through a differentiated approach to macro protection within a unified framework for capital allocation. Its key tenets are:

Unified Framework from First Principles: The paper derives its macro protection framework from a set of foundational *first principles* that also underpin successful approaches such as the Buffettian approach and the Venture framework. This results in a unified multi-domain approach driven by powerful yet simple principles.

Role of Positive Feedback and Behavioural Switches: Positive feedback in macro markets can lead to predictive utility through an *enforcement* property. This occurs when positive feedback coincides with a behavioural switch at the entity responsible for negative feedback, such as a central bank. Such switches can result from judgment errors, stigmatisation, or conflicts of interest at the entity responsible for negative feedback, leading to periods where negative feedback is absent or inverted.

Intermittent Deployment of Macro Protection: The paper advocates for the intermittent deployment of macro protection during rare instances when specific *initial conditions* are met. Investors can often capitalise on low option pricing volatility to implement asymmetric protection strategies with *indifference* characteristics. Historical case studies, including the 2008 financial crisis and the 2020 covid shock, illustrate the effectiveness of this approach.

Limitations of Scientific Method and Physics-Like Methodologies: The white paper critiques the limited utility of scientific method and physics-like economic models in assessing macro conditions, emphasising the interference caused by humans studying and acting on financial markets simultaneously. Instead, the paper argues that advantage is realised by understanding human behavioural dynamics in assessing macro developments.

A Business-Like Approach to Macro Protection: By focusing on *first principles* and deploying a business-like approach to macro protection, the framework presented targets both defending against, and profiting from, rare yet highly impactful macro dislocation events. This method avoids the constant costs of hedging throughout the market cycle and targets a more efficient and sophisticated strategy.

Avoiding Rigid Style Adherence: By focusing on *simple and understandable*, yet powerful, *first principles*, and simple *initial conditions*, a unified framework for capital allocation is achieved which can result in operation across multiple domains without imposing information overload onto its manager. The framework allows the investor to both target robustness and to capitalise on the reality of the intermittency of the most attractive opportunity types within each domain and across market periods.

Overall, the white paper targets a valuable contribution to intelligent investing, and provides a reasoned approach to macro protection that aligns with the realities of financial markets and human behaviour.

Introduction

“What I learned from Black Monday was that these things happen.

They are not outliers. They are a part of the financial system.”

Nassim Nicholas Taleb, interview with Bloomberg, 2017⁶

Whilst traditional, unhedged approaches to fund management that achieve excellence in stock selection can deliver strong long-term results, they also expose their unit holders to significant downside risk during periods of steep market dislocation. These periods by their nature may also be co-incident with unit holders themselves being subjected to increased liquidity requirements, crystallising losses at precisely the wrong time. The contention of this white paper is that an intelligent, differentiated approach to address the shortcomings of an unhedged operating method can deliver meaningful competitive advantage.

Our premise for this analysis also sits within our recognition that the current path of global development is presenting scenarios where future market volatility events may be characterised by ‘unexpectedly’ large amplitudes. One of the central influencing factors is the shift occurring from a unipolar to a multipolar world order, which raises uncertainty in outcomes as powerful nations with opposing ideologies compete. At the same time, gold mining reserves are being depleted faster than replenishment⁷, threatening to exacerbate a loss of confidence in the fiat currencies of sovereign issuers at a time of already high sovereign debt burdens.

An additional factor is that within energy markets, the shift away from fossil fuels threatens to lead to new conflict scenarios in the Middle East as the loss of fossil fuel revenues depletes the military budgets of otherwise lower population yet oil-rich nations. The rise of AI and quantitative funds in financial market decision-making also presents a volatility threat. AI use in financial markets may appeal to mechanistic minds but there is an error rate in using computing to assess the nature of financial markets which also are characterised by feedback loops and interference. In certain cases these errors will only be discovered after the event yet in the high volatility scenario they will be co-incident across multiple quantitative systems deploying scaled capital, given similar training data and methods.

“Poets do not go mad, but chess players do; life is not an illogicality, yet it is a trap for logicians.

It looks just a little more mathematical and regular than it is.

Its exactitude is obvious, but its inexactitude is hidden; its wildness lays in wait.”

G. K. Chesterton, writing in *Orthodoxy*, 1908⁸

We present with this white paper our approach for macro protection, and a framework that can achieve highly advantageous outcomes in terms of protection and yet without handicapping the delivery of attractive returns over the long-term. Broadly speaking the framework rejects the aspect of conventional hedge fund design that targets de-correlation by imposing hedging costs throughout the market cycle. Instead, the white paper argues that optimal macro protection corresponds to deployment in rare circumstances where specific criteria are met.

A key insight from the white paper is that at intermittent instances, self-reinforcing positive feedback loops can emerge in macro markets, and when co-incident with *simple and understandable initial conditions*, raises the probability of predictable and large price movements. For positive feedback to continue unimpeded, a lack of interference is necessary. This occurs when the governmental institutions with responsibility for providing the countervailing force of negative feedback fail to do so, either by an absence of response or by an inverted response which amplifies the positive feedback. Such institutional failures can arise when the human decision-makers overseeing these institutions are subject to judgment errors, stigmatisation, or conflicts of interest.

Historical case studies presented in the white paper demonstrate the higher amplitude outcomes that can occur when these factors are co-incident. However, market practitioners, adhering to the Kelly ratio criteria of asymmetry (or *indifference*), and forecast accuracy (or *enforcement*), can protect against rare and intermittent dislocations in a profitable manner from the thoughtful deployment of macro protection in selected instances co-incident with, ultimately, the simple set of *initial conditions* detailed in the white paper's conclusion.

The white paper targets an intelligent, business-like macro protection philosophy and derives the approach consistent with the *first principles* underpinning a unified framework for capital allocation. These *first principles* underpin optimal macro protection yet also underpin successful merger arbitrage deployments, the Buffettian approach and the Venture framework.

The intelligent, business-like minded investor, in order to achieve a unified framework for capital allocation, must use these *first principles* to also derive the set of *simple and understandable initial conditions* that thereon dictate allocation within each domain, including macro protection. The result is a multi-domain approach held together by unified and simple principles, and which can therefore perform without being handicapped by the intermittency of within-domain opportunity sets that also characterises financial market opportunities.

By integrating the insights outlined in this white paper, a unified framework for capital allocation can achieve a robust approach to delivering performance at the same time as, when advantageous, deploying protective constructs that permit the fund to capitalise on the rare, yet over time certain, future macro dislocation events that will continue to characterise the modern age.

1. Advantage in financial markets can be accreted when strategy is consistent with a set of *first principles* linked to human psychology

"Humans are plagued by bias from the non-mathematical side of our brain in its natural state as it deals with probabilities employing crude heuristics, and are often misled by mere contrast, and a tendency to overweigh conveniently available information, as well as other psychologically misrouted thinking tendencies."

Charlie Munger, The Psychology of Human Misjudgement⁹

"You have to be alert to what human nature does to both other people and to you, and if you think it through well, and you actually listen to what Charlie has told you, you'll have a big head start on other people."

Warren Buffett, Berkshire Hathaway, 2024¹⁰

Whilst this white paper aims to establish an optimal, business-like, macro protection approach within a unified framework for capital allocation, we also recognise at the outset that consistent success in macro allocation is rarely observed, with only a handful of practitioners identified over the trailing decades. As such, to optimise a macro protection approach we must lean more on *derivation* rather than the enhancement of an existing doctrine. We believe the most appropriate start point for this derivation process is the set of *first principles* that we have outlined in prior white papers.

Two of our previous white papers in particular, *How Far Away to Berkshire Hathaway* and *A Venture Framework for the Intelligent Investor*¹¹, revealed what we judged as the core set of *first principles* linked to human psychology which also permitted a unification of the Buffettian approach with the Venture framework.

As Galileo Galilei stated, "*truths cannot contradict one another*¹²", and as such our reasoning process is that if our existing observations as to *first principles* are correct, they must also be consistent with a framework underpinning optimal macro protection, and indeed, that our macro framework should be derived from these principles.

This white paper has therefore been written in a manner to guide the reader on our path from *first principles*, through to each set of *initial conditions* that dictate allocation within our multi-domain approach, and ultimately, those *initial conditions* that adhere to our macro protection framework. Let's then first look at the *first principles*, initially therefore the *why* of our contention as to an optimal macro framework, rather than the *what*.

1.1 Successful investors exploit intuitive *system one* heuristics within human reasoning that possess disutility in financial markets, having been shaped by evolution during simpler times

Daniel Kahneman's book "Thinking, Fast and Slow" proposes that humans use two cognitive systems: the instinctive *system one* for repetitive tasks which feel "simple", and the deliberative *system two* for slower and more manual, logical problem-solving¹³.

Our observation is that a foundational insight underpinning today's AI era is also relevant, however, in relation to Kahneman's work. The so called Moravec's Paradox, first discovered by AI pioneer Hans Moravec in 1988¹⁴, describes that the "simple" *system one* actions are not computationally simple. Moravec's observation was that, contrary to traditional assumptions, *system two* equivalent reasoning tasks require very little computation by AI systems, yet the more impulsive roles performed by *system one*, including sensory motor and perception skills, require enormous computational resources.

"It is comparatively easy to make computers exhibit adult-level performance on intelligence tests or playing checkers, and difficult to give them the skills of a one-year-old when it comes to mobility and perception".

Hans Moravec, Robotics Institute of Carnegie Mellon University, 1988¹⁵

Moravec's finding that, certainly before the AI era, humans had over-estimated the computational difficulty of many of the prior uniquely human reasoning-based tasks, might be simplistically put forward as a result of what Charlie Munger described as humanity's *excessive self-regard tendency*. However, the reason Moravec's Paradox exists is more foundationally linked to the human design's optimisation of *system one* throughput competency to address the higher volume of repetitive decision requirements during the majority of human evolution, and also consistent with a far lower throughput demand that *system two* needed to be optimised for.

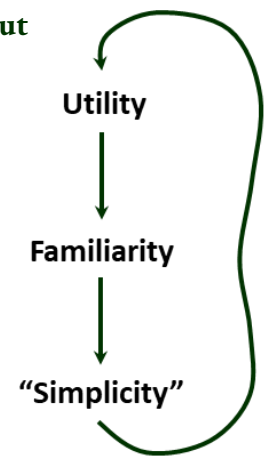
The archaeological record shows that primitive homo sapiens, with brains as large as modern humans, first appeared 300,000 years ago¹⁷. By contrast, the modern aspects of the decision-making environment that humans must today navigate, particularly when those humans are investors assessing situations such as, for example, corporate battles for market share, have only existed for 200 years or less.

The implication is that certain elements of the human cognitive *system one* are not suited for the modern age, leading to impulsive decisions that seem "simple", yet with disadvantageous outputs, but only because our design still prioritises *system one* to undertake these decisions irrespective of its modern maladaptation.

Moravec's Paradox reveals that decisions offloaded to *system one* are not truly simple, but rather are those high-utility and recurring decision types presented by our evolutionary environment, for which we have evolved efficient, high throughput, and innately deployed cognitive systems. Examples include judging seemingly 'simple' combat outcomes yet which actually involve complex dynamics, or judging the utility of an evidence-based method for reaching conclusions also for complex situations. Furthermore, our lack of innate-driven decision to reflect on the nature of our own behavioural dynamics, at least not until we have learnt through trial and error, is also part of this programming. In these examples and others, as a result of the differences between the average evolutionary environment and the modern world, *system one* impulses lead to disadvantageous decision-making.

Were the task simply for the human to recognise that their *system one* is in certain conditions outputting disadvantageous guidance, this would be more straightforward to address. However, on top of this sits two more challenges. The impulse to use *system one* is powerful and also must be either overcome or a route determined to sidestep it. And, despite the *system one* output being so efficient it often feels like the obvious choice, the human must successfully instead deploy their significantly lower throughput *system two*, a choice which feels "hard". More optimistically, the corollary of this statement is that those investors who can successfully identify *system one* judgment errors and develop a working method to overcome them can achieve meaningful competitive advantage.

Figure 1: Human cognitive programming is optimised for repetitive tasks, that therefore feel "simple". However, as the world changes this optimisation is revealed as maladapted, and humans reach conclusions which are not useful but destructive¹⁶.



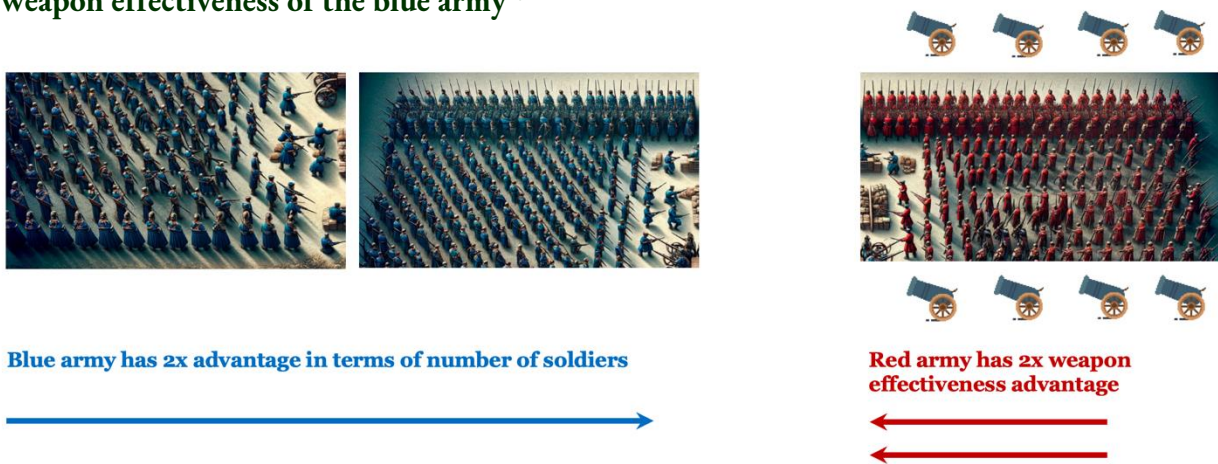
- Is "1 + 1" simple? Why?
- Is "X + Y" simple? Why?
- Is "+" simple?

1.1 a) Great investors can be observed as leveraging their understanding of widespread judgment errors in public markets to gain advantage, effectively acting as experts in deploying *system two* to overcome *system one*

Consider the following financially relevant example of an intuitive analysis that most humans would appraise as simple yet which likely triggers a disadvantageous use of *system one*.

Figure 2 shows two armies facing each other with projectile weapons. The blue army has twice the soldiers, but the red army has twice the weapon effectiveness.

Figure 2: Most humans fail to correctly judge the outcome of the following battle – the blue army has twice the number of soldiers of the red army, yet the red army has twice the weapon effectiveness of the blue army¹⁸



Our observation is that most humans, when presented with this battle scenario, would not feel the need to employ *system two* to manually assess outcomes using, for example, a math-based modelling system. Instead, they would contend an answer which feels "simple" using *system one*: the battle is roughly fair, with the blue army's size advantage offset by the red army's weapon advantage.


However, this conclusion is incorrect: in projectile battles, the ability to concentrate firepower results in army size achieving a square law advantage, whereas weapon effectiveness delivers a linear proportionality. Blue army has the square law advantage, and fully eliminates red army with a loss of just one third of the blue army's soldiers¹⁹.

The human error in judging the projectile battle scenario most likely arises because *system one* has been trained by the vast majority of human evolution occurring over periods where hand-to-hand combat, rather than projectile combat, predominated. In hand-to-hand combat battle outcomes army size results in a linear advantage, and the innate human programming judging the above battle outcome as fairly matched is correct only were it to be a hand-to-hand combat engagement.

In the early 20th century, British engineer Frederick W. Lanchester developed mathematical formulas, now known as the Lanchester Square Law, to calculate the outcome of projectile military conflicts²⁰. Lanchester's formulas formally recognised the innate judgment error made by humans when assessing such battle scenarios.

Masayoshi Son, the CEO of SoftBank, recognised this error in *system one* thinking deployed by humans. In our previous white paper, *A Venture Framework for the Intelligent Investor*, we examined how Masayoshi Son then adapted the Lanchester Square Law to also evaluate modern corporate battles for market share.

Figure 3: Masayoshi Son adapted the Lanchester Square Law to evaluate modern corporate battles for market share²¹

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|--|---|---|
|  <p>Aiming High A Biography of Masayoshi Son ATSUO INOUE</p> | <p>According to Frederick W. <u>Lanchester</u> the British engineer, a fleet with a strong force and a weak force must take different strategies. In this case, Son belonged to the latter. Breaking through from a single point of focus—it was a bold, yet meticulously thought out strategy.</p> <p>Generally speaking, if one aims to establish oneself as a major IT infrastructure provider, one should maintain neutrality. One should not patronize a certain brand or manufacturer. However, <u>Son adopted the ‘Lanchester strategy,’</u> in which one concentrated one’s resources in a specific area within the shared battlefield.</p> | <p><i>“One of the persons I respect the most is Mr Lanchester, in mathematics.”</i></p> <p>Masayoshi Son, SoftBank CEO, Softbank annual meeting of shareholders, June 2018²²</p> |
| | | <p>Lanchester’s Square Law²³:</p> <p>Combat Strength = [Army Size]² x Weapon Effectiveness</p> |

Masa’s perceptiveness was that the Lanchester Square Law also applied to corporate battles for market share, and that humans were innately misjudging these corporate outcomes as a result of our evolutionary programming still directing us to use linear thinking in such battle analysis.

The Lanchester Square Law dictates that in a monopoly market where the incumbent holds a 95% market share, a new entrant with a 5% share would need a product 9,000 times (i.e. $95^2 \text{ less } 5^2 = 9,000x$) superior to the incumbent’s to succeed. Yet, our observation is that most humans innately feel that a new entrant with a 5% market share and a 5x superior product would have reasonable odds of further success, even against a monopolist. However, a 5x superior product is insufficient; as Peter Thiel has also recognised, only a ground-breaking innovation offering a customer advantage thousands of times greater than the incumbent’s solution will succeed.

“The clearest way is to invent something completely new. If you build something valuable where there was nothing before, the increase in value is theoretically infinite.

A drug to safely eliminate the need for sleep, for example, would certainly support a monopoly business.”

Peter Thiel, Zero to One, Notes on Start Ups, 2015²⁴

1.1 b) The human innate prioritisation of scientific method can also result in disutility, or liability, in conditions more common than humans may intuitively assume

Our contention is that an additional aspect of *system one* design is that it orientates humans to be drawn to knowledge acquisition by scientific method, and over-ruling in most of us an internal debate as to whether that orientation is rational at all times, or only intermittently. This aspect of *system one* design is also most likely an optimisation resulting from the simpler times corresponding to most of human evolution, before the complex systems of the modern world and financial markets.

It is particularly in the complex systems of the modern world and financial markets where, rather than seeking *knowledge explicitly of a dataset*, humans should strive for *a broader understanding of the full situation*, and in the context of recognising *the dataset can only offer a small part*. This understanding includes recognising when the greatest utility is provided by acknowledging the uncertainty in data interpretation.

Nassim Nicholas Taleb provides an example: if you were about to board a plane and were told that the pilot was suspected of being on hallucinogenic drugs, would it be better to 1) make a best efforts ‘science-based’ investigation as to the pilot’s recent activity and then make a definitive decision, or 2) refuse to board the plane?²⁵ Taleb’s point is that the optimal choice, as the latter choice, is a readily ascertainable example of modern world conditions where higher value results from recognising uncertainty and therefore focusing on achieving an asymmetry in outcomes rather than pursuing unrealistic knowledge acquisition.

The over-prioritisation of scientific method by *system one* in the context of the modern world may lead us to overuse scientific methods. Our prioritisation of science can be a danger to us, and to remedy this, as this white paper explores, we must recognise that scientific method has intermittent rather than universal value.

Movarec’s Paradox also implies that the volume of information taken in by *system one*, including by the visual cortex, overwhelms that which can be reasoned about by *system two*. This also leads to the same conclusion, simpler times would have dictated prioritising decision making on the data we *see*: in other words data dependent scientific method, because what we saw had the greatest volume of information and therefore utility.

However, no tool, including scientific method, has utility in all scenarios. Even what is perhaps the greatest human tool invented – computing – does not have utility for all tasks, such as, for example, when attempting to sleep. Science too must be recognised in terms of the intermittency of its utility; and, as Section 2 of this white paper explores, the disutility of scientific method can become significant, particularly in financial markets, *when extrapolating from what we do see to what we don’t see*.

1.1 c) There is a stigmatisation from rejecting scientific method; however, successful investors learn to overcome this, and prioritise system two over system one

A challenge facing thoughtful investors can be that the nature of human dominance hierarchies often stigmatises those who reject scientific methods. Knowledge acquisition through scientism is associated, and doubtless more productively in simpler times, with success. Individuals who question the utility of scientific methods face criticism for *holding everybody back*, as Bill Nye puts it.

“Science is the key to our future.

And if you don’t believe in science, then you’re holding everybody back.”

Bill Nye, interview with Popular Mechanics, 2011²⁶

However, successful investors and intellectuals disregard stigmatisation. They can seem *unreasonably* rigid in this regard. As Stephen Wolfram says, *if I don’t understand it, then I don’t believe it*. Wolfram’s recognition is that his shield of seeming arrogance or unreasonableness is actually necessary in stubbornly rejecting *system one* in order to use the more deliberative, manual and slower *system two* for logical problem-solving.

“If I don’t understand it, then I don’t believe it.

And expressing my point of view in that way, it may be kind of outrageous and arrogant – but you need a way to deal with the stigmatisation that you do not know about something. So I say, if I don't understand it, it's not my problem. It's the problem of the person who explained it to me. Because I can understand sort of anything, so that's the self-image so to speak.”

Stephen Wolfram, public comments, 2024²⁷

1.2 Successful investors also exploit instances when human reasoning becomes susceptible to herd and gambling-like mentalities that can result in *unintelligent* decision-making

1.2 a) *The nature of the decision making of most humans, when conditions of danger or stress are imposed, is subject to a form of cognitive switching to herd and gambling-like mentalities*

“If you think about surviving in the jungle, the lion shows up and everyone starts running, well you run with them. But that does not work well in markets.

In fact, you generally have to do the opposite.”

Bill Ackman, comments, March 2024²⁸

“Bill Gates has told me if I was born some thousands of years ago, I'd have been some animal's lunch.. you know, I don't run very fast.

And so there are different human assets that are useful at different times..”

Warren Buffett, Berkshire Hathaway, 1995²⁹

In our prior white paper, *How Far Away to Berkshire Hathaway*, we reviewed the approach we refer to as *Buffettian*, originated by Warren Buffett in the 1970s when he broke away from Ben Graham.

The Buffettian approach differs from traditional "value investing" in its more deliberate focus on identifying the instances where the decision making of other market participants has become *unintelligent*. Buffett recognised that lowly valued securities are often priced as such for a reason. Therefore, the intelligent investor should aim to more specifically isolate situations where *unintelligent* decision making has resulted in *high quality companies* becoming undervalued *without justification*.

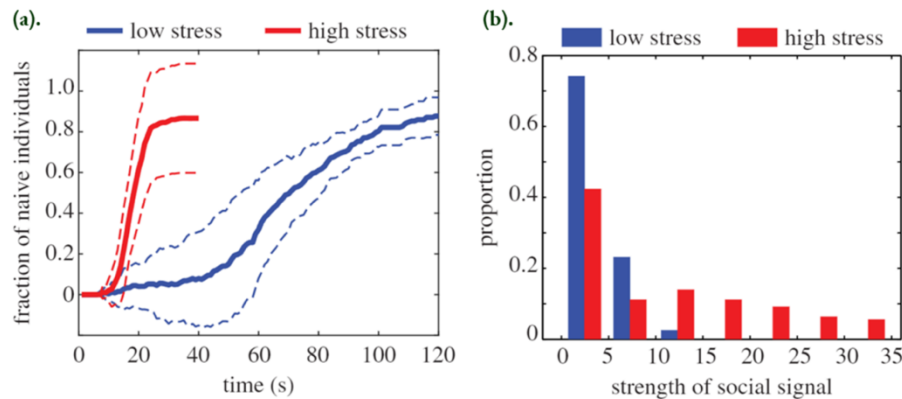
Buffett's disclosures also reveal his recognition that humans bias information when it comes to financial market securities, and in doing so they exploit the naivety of the investing public. Moreover, Buffett observed that this naivety can increase when coinciding with situations that foster gambling and herd mentality, where market participants can become *unintelligent*. In the subset of these situations that correspond to low security pricing, this presents opportunities for the Buffettian investor to act.

“The secret of life is weak competition.. in securities markets, if you have an IQ of 100 and everybody else has an IQ of 80, you are way better off than if you have a 140 IQ and all the rest of them also have 140.”

Warren Buffett, Berkshire Hathaway annual meeting, 1998³⁰

A closer examination of the human susceptibility to cognitive switching in decision making that, in financial markets, is often *unintelligent*, is provided by virtual reality studies with human participants. As shown in Figure 4, the percentage of humans displaying "naïve" decision-making, i.e., following existing crowd patterns, rises from less than 10% in low-stress conditions to 80% in high-stress conditions. This work has been undertaken by the Max Planck Institute and it not only suggests that high-stress conditions trigger herd behaviour in humans, but that *the strength of the social impulse is up to 10 times stronger under high stress compared to low stress conditions* (Figure 4b).

Figure 4: Experiments with human participants in crowds, using virtual reality, confirm herd behaviour in humans is driven by stress-based amplification loops³¹

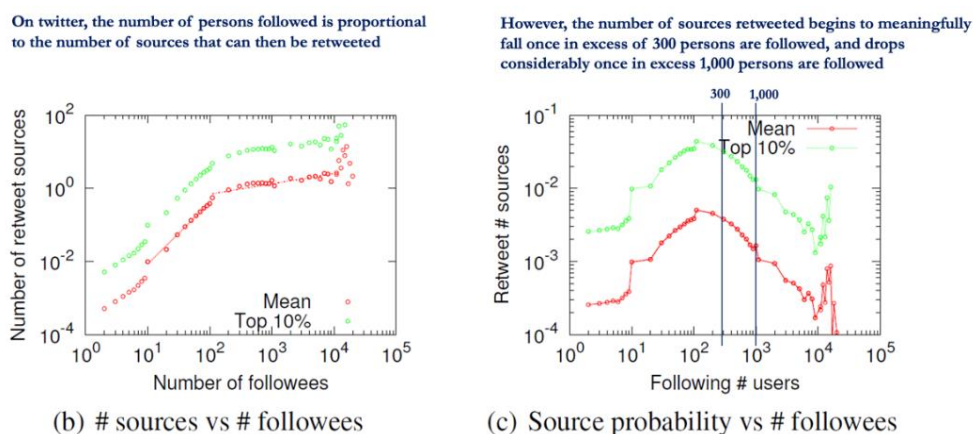


1.2 c) *The optimal framework for macro protection should incorporate the underpinning assumption set of the Buffettian approach and Venture framework, resulting in a unified group of first principles*

Our reasoning process is that if our existing observations as to the *first principles* that underpin the Buffettian approach and Venture framework are correct, they must also be consistent with a framework underpinning optimal macro protection, and indeed, that an optimal macro framework can be *derived* from these principles.

An additional benefit realised by deriving our macro framework from our existing group of *first principles* is that it lowers the volume of reasoning and information throughput required in managing a multi-domain portfolio of securities. It is the information and reasoning underpinning all security selection, as well as the consideration as to whether macro protection is imposed, that is linked to the same *first principles* theory structure. This cures for the otherwise disadvantage of the multi-domain approach: academic studies show that when humans take on too high a volume of information throughput, their prior level of competency in their existing decision-making declines.

Figure 5: Academic studies reveal that when humans are subjected to a high volume of information throughput demand, their prior competency of decision making declines, a type of “stun” reaction³²



The reduction in the required volume of information throughput from our *first principles*-derived decision making is combined with the Buffettian adaptation of removing inputs from other market participants, and focusing on independent reasoning and reading. The volume of information throughput is consequently lowered sufficiently to still permit high competency decisions, allowing confidence that an overall advantage is realised.

It is notable that the more commonly seen path to counter the disadvantage associated with information overload is to limit an investment approach to a *style*. However, as Buffett notes, this is a sub-optimal fix.

“Fund consultants like style boxes such as ‘long-short’, ‘macro’, ‘international equities’..

At Berkshire Hathaway, our only style box is ‘smart’.”

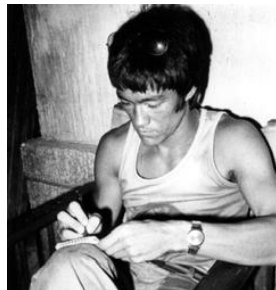
Warren Buffett, Berkshire Hathaway annual shareholder letter, 2010³³

The superior capital allocation decision is to the superior opportunity. And this includes the decision of macro protection – where necessary – the absence of which can result in damaging outcomes for the unprotected investor. However, when a market participant rigidly adheres to a *style*, they are also intermittently removing from their universe of decisions the superior opportunity. As Bruce Lee put it, *“and that to me is not right.”*

“I do not believe in the word *style* in combat.

The important thing is – how can we use ourselves to the maximum depending on the circumstances.

You have to have to develop all of the basic skills right, but after that you must ask yourself, how can you honestly express yourself *outside of the influence of others* – and that is out and out the most important thing.



Because of styles, people become separated into groups.

And for each group, their style becomes their law.

Yet the original founder of each style started out with a hypothesis whose only ambition was success.

But their style becomes the gospel truth, and their people become the product of each style.

And it doesn't matter who you are, how you are structured, how you are built – you just become the product of that style.

And that to me is not right.”

Bruce Lee, interview with Ted Thomas, 1972³⁴

Instead what should be pursued is a path to reduce information overload by achieving decision making based on simple yet powerful, foundational principles, at the same time as releasing the investor from the rigidity of a single style that otherwise imposes intermittency onto the frequency of opportunities available. The ability to release the investor from a single style is embedded within our *first principles*-derived framework which then also leads to a set of *simple and understandable initial conditions* dictating allocation rubrics across each of multiple domains.

However, our approach will remain elusive to most market participants as a result of their handicap in not recognising our *first principles* and as well in the challenge they will face in developing their own multi-domain competency accordingly in a world where many career trajectories erroneously reward single-domain specialisation.

This white paper puts forward that the first principles underpinning the Buffettian approach and the Venture framework are consistent also with an optimal framework for macro protection. This observation is not widely held: even George Soros, one of the most successful macro practitioners, described Warren Buffett's approach as "very different" from his own.

“Warren Buffett uses a very different approach to me, because he looks for fundamental value. He has been very successful, his way, but our styles are very different and it just shows that there are different ways of approaching the market.”

George Soros speaking on Warren Buffett, February 2015³⁵

However, Soros may not have studied Buffett carefully enough. Soros named his fund *Quantum* to reflect the dualist particle-versus-wave nature of the subatomic world, but also pointing to his recognition of the dualist, switching properties that characterise financial markets. Ultimately, these switching properties result from the dualist nature of human intelligence, be it *system one* and *system two*, or the cognitive switch from *intelligent*, to *unintelligent* herd following and gambling, concepts which also underpin the Buffettian approach and Venture framework. Soros did reflect on the trigger that flips humans into an unintelligent state: stress interferes with reason, the same trigger seen in the animal kingdom, however, we undertake a far deeper examination of the causative factors that result in the behavioural switching that underpins macro dislocations in this white paper.

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| <p><i>“Be greedy when others are fearful.”</i></p> <p>Warren Buffett, 2004³⁶</p> | <p><i>“The market climbs a wall of worry.”</i></p> <p>George Soros³⁷</p> |
|---|---|

Figure 6: Herding behaviour is observable across the animal kingdom, triggered when animals are subjected to an unanticipated, confusing or complex series of inputs that may represent danger³⁸



Readers of our white papers will not be surprised that the *first principles* that underpin our investment approach are universal in nature. Their presence and utility also extends to branding, an additional area of focus that great investors develop³⁹. Super brands aggregate customers using social proof, targeting a similar herd following behaviour type, and are particularly effective in higher stress decision-making situations such as fashion choices.

Gambling mentality, which values excitement over risk, can also be compared to the use by super brands of the colour red, connoting excitement, passion, danger, heroic action, energy, and warmth. Furthermore, branding itself is a form of information bias comparable to financial market information bias, where in both cases humans naively raise value attribution as a result of biased information: in fashion the higher value is placed on a garment with a certain logo whereas in the financial markets the higher value is placed onto a security that has been promoted using a biased narrative.

2. A closer examination of the disutility of scientism in financial markets

2.1 Scientific method is not robust unless multiple criteria are met, including the representativeness of observations, an absence of interference, and the ability of humans to form conclusions

As the first section of this white paper reviewed, Moravec's Paradox implies a human programming prioritising decision making on the data we *see*, because the visual cortex linked to *system one* takes in a far greater volume of information, which in simpler times was also information that did not possess the problems that data dependence can result in today, particularly in financial markets.

As such, we can reason that evolution has resulted in a knowledge acquisition route innately prioritised by humans as *the sight of change between initial observations and final observations, followed by conjecture as to some form of governing rules, and thereon the stipulation of predictive ability*, in other words, scientific method.

The symmetry in the structure of scientific method may be an additional factor that conveys a false feeling of its robustness. As we study a data series, we group our findings into *initial observations* and *final observations*. When initial observations are combined with conjecture as to scientific laws, the result is prediction, and when final observations are combined with the same scientific laws, the result is explanation.

However, whilst symmetry might provide robustness and beauty in physical structures, for the output of scientific method to be robust, all three of: 1) the representativeness of the data comprising the observations must be sufficient, 2) there must be an absence of interference in the actual scientific test, and 3) the ability of humans to form intellectually sound conclusions, must also be met.

2.1 For scientific method to be robust, the representativeness of the data comprising the observations must be sufficient, yet this is often not the case in financial markets

2.1 a) *The representativeness of the data is low in financial markets when the data has been deliberately biased*

"I do not understand why any buyer of a business looks at projections put together by the seller – we are just not interested."

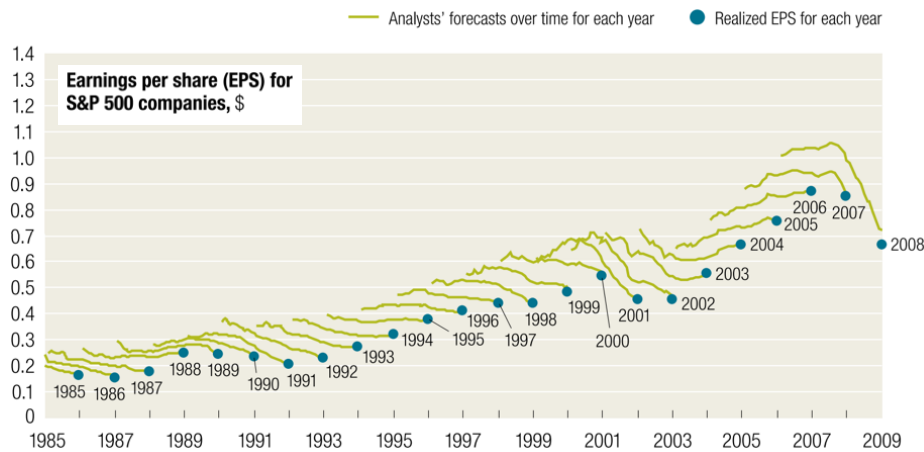
Warren Buffett speaking in 1994⁴⁰

"I have a terrible memory, so I tend to focus on the future rather than the past."

George Soros, 1995⁴¹

Information bias is an inherent feature of financial markets as a result of the human willingness to bias information combined with the utility of biased information in influencing market pricing developments which thereon drives the incentive to bias information⁴². An example that can be objectively measured is earnings guidance, where bias in financial communication results in this guidance, with few exceptions, exceeding realised earnings per share.

Figure 7: Bias in financial communication results in earnings guidance, with few exceptions, exceeding the earnings per share ultimately achieved by the companies in question⁴³



2.1 b) *The representativeness of the data is also low in financial markets when the data quality has been degraded by survivorship bias*

Financial data quality issues also stem from survivorship bias. For instance, a stock market of consistently profitable companies can, by its success, thereon attract lower-quality companies to seek listings, degrading future earnings quality relative to the past and exacerbating the pitfalls of extrapolating from historical data.

At the extremes, the disutility from the extrapolation of a trailing data series can be far more damaging. In 1998, hedge fund Long Term Capital Management, run by Nobel scientists⁴⁴, experienced severe losses resulting from a strategy which extrapolated trailing bond market data⁴⁵. The fund's distressed trajectory, leaked into the public domain, also resulted in a broader market dislocation until the hedge fund was bailed out by the Federal Reserve⁴⁶.

The extent to which survivorship biased data can degrade the utility of scientific method is also represented by the Nassim Nicholas Taleb concept of the turkey before Christmas, where scientism can result in conclusions diametrically opposite from reality. The turkey's learning through data collection has, rather than no value, negative value. Its feeling of safety reaches its maximum when the risk is the highest.

Figure 8: In 1998, hedge fund LCTM experienced severe losses from over-extrapolating trailing bond market data⁴⁷

September 24, 2000

More Was Less and Less and Less

How a brilliant investment firm learned that when people panic the market turns irrational.

Related Link

- [First Chapter: 'When Genius Failed'](#)

By FLOYD NORRIS

The rise and fall of Long-Term Capital Management, the multibillion-dollar hedge fund, is a tale of genius and hubris, of sleeping regulators and foolish banks. But most of all, it reflects the limitations of mathematical expertise in dealing with the human beings whose hopes and fears are always reflected in the gyrations of financial markets.

In "When Genius Failed," Roger Lowenstein, one of the best financial journalists there is, aptly quotes G. K. Chesterton, the English writer who called life "a trap for logicians" because it is almost, but not quite, reasonable. "It looks just a little more mathematical and regular than it is," Chesterton wrote. "Its exactitude is obvious, but its inexactitude is hidden; its wildness lies in wait."

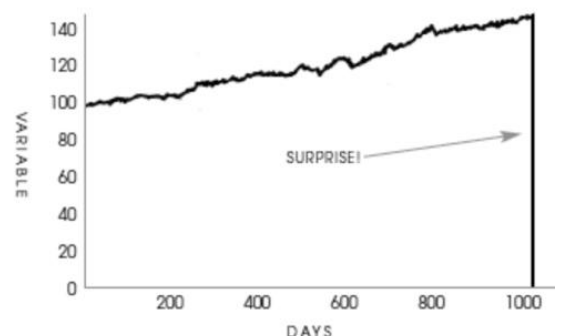
It is a fair bet that the men behind Long-Term Capital never read Chesterton. They thought in mathematical terms and relied on computers to find historical relationships between related securities. If those relationships got out of line -- if one security traded for more than it should relative to historical patterns -- they would place bets that prices would get back into line. They had programmed the market for a cold predictability that it never had," Lowenstein writes. "They had forgotten the human factor."

WHEN GENIUS FAILED
The Rise and Fall of Long-Term Capital Management.
By Roger Lowenstein.
264 pp. New York: Random House, \$26.95.

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Source: New York Times

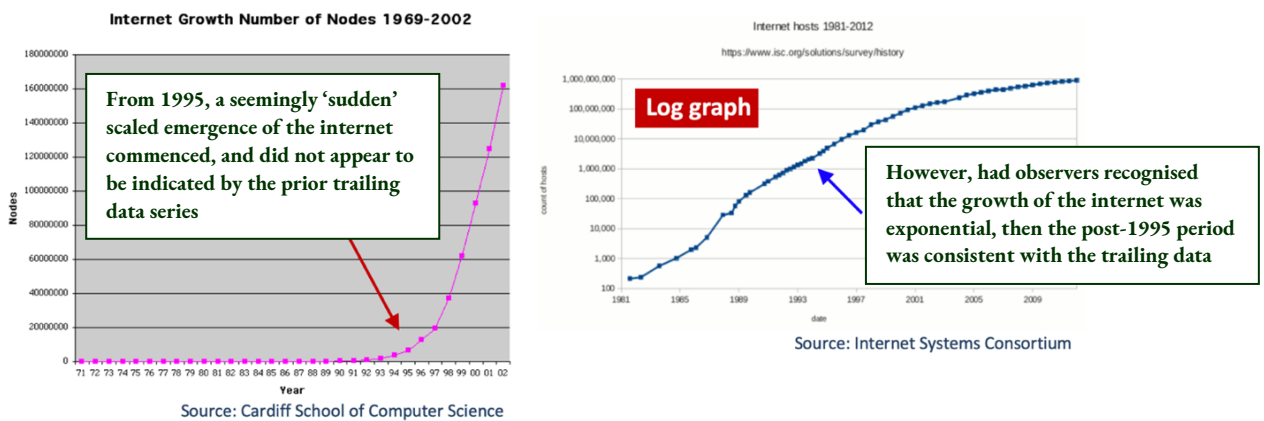
Figure 9: The turkey before Christmas; scientism concludes opposite from reality⁴⁸



2.1 c) An additional instance of the representativeness of data being low in financial markets: when the data is changing, potentially exponentially

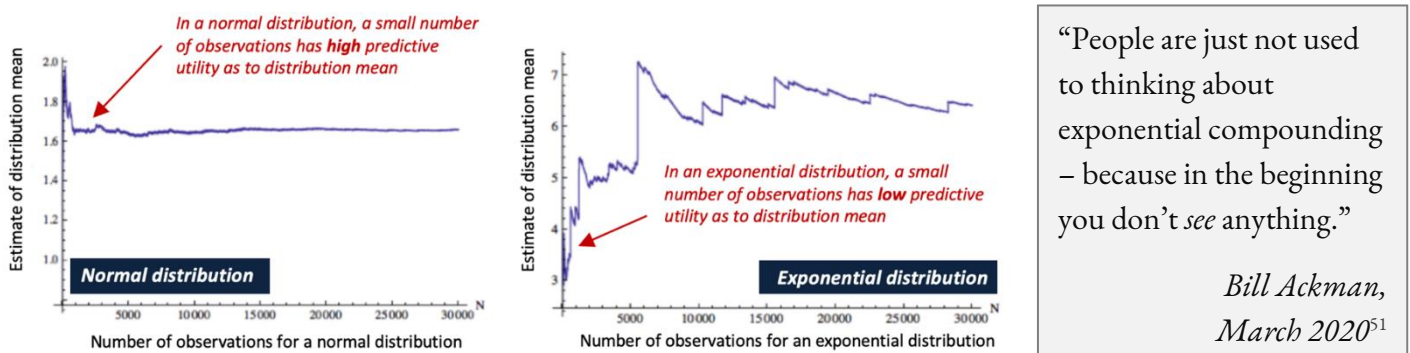
Failure of the data to meet the demands of scientific method also emerges when the data itself is changing, and this is particularly distortive when the rate of change is exponential. For example, and as discussed in our *Venture framework* white paper, investors initially extrapolated the growth of internet companies linearly. However, the trailing data series was insufficient to judge the actual reality: internet companies were growing exponentially, and as a result, the relatively sudden scaled emergence of internet companies surprised many investors. On a log graph however the growth of internet companies was at a constant exponential.

Figure 10: At the beginning of the internet era, many investors estimated linear growth; the trailing data provided insufficient resolution to ascertain the actual exponential growth occurring⁴⁹



We believe a parallel exists today with the exponential growth of AI and with regard to correctly valuing those monopoly, data-capturing, software platform companies where economic capture from the technological shift is prospectively concentrated. Whilst our hypothesis as to AI growth can not be unequivocally evidenced from the trailing data, we should not expect it to be. When dealing with exponentially changing datasets, simply collecting more data will generally be insufficient for accurate insights. Linear data series, normally distributed, allow for accurate estimates of the data universe after a relatively low number of observations, but exponential distributions require a sample size 30 times larger or more to achieve the same confidence interval. As such, the contention that AI growth is exponential must be derived using a reasoning approach, a concept we explore further in our white paper, *Capitalising on AI⁵⁰*.

Figure 11: Exponential distributions require a 30x or greater sample size to achieve same confidence interval in estimate of the mean as is the case for a data universe which is normally distributed



2.2 For scientific method to be robust, there must be an absence of interference in the scientific test and yet this requirement is absent in financial market situations where humans are studying other humans

The differentiation of financial market situations from those which may be more suitable for the use of scientific method is that in financial market situations both the subject *and object* are human.

When humans studying other humans either publicly discuss their findings, or conduct market actions based upon their findings (such as buying a security, and therefore causing movement in that security price), at the same time that their study is ongoing, *the scientist is interfering with the data during the experiment*. This invalidates the robustness of scientific method.

“In the natural sciences we are dealing with facts, whereas in the social sciences the facts change depending on the theories we derive from them. And so there is an additional element of uncertainty.

I make no claim to be a security analyst; I rather think of myself as – an insecurity analyst.”

George Soros, writing in 1995, and interview with Jeff Greenfield in 2002⁵²

Naturally, activist shareholders engage with exactly this intent in mind – influence upon the object – which in their case is the company itself. However, the principle more broadly applies in financial markets. Public discussion, or security price action, to various degrees imposes some interference upon the issuer in question to adapt their strategy, or make confirming or disconfirming influential statements of their own.

Figure 12: The outcome from humans studying humans co-incident with acting publicly based upon their conclusions can not fit within Newtonian constructs; Humans are not Newtonian (*apart from Newton, who was*)

“Economic theory tried to imitate physics. Classic economics took Newton as their model – forgetting that Newton lost a fortune in the South Sea Bubble.”

George Soros, writing in 1995⁵³

Whilst there are examples of this type of interference having little impact (for example a robust company with stable economics and whose earnings per share will not be materially impacted by such interference), there are also examples where the impact will be larger (for example a company in a position of financial distress, whose earnings per share will be heavily influenced by the price that it is able to issue new equity at).

More broadly, discussions by market participants relating to a corporate trajectory often take the form of a narrative, company X will do well because it has the strategy to pursue business opportunity Y. However, if public discussion results in recognition that business opportunity Y is attractive, other businesses may pursue the opportunity as well, lowering the probability through interference of company X succeeding in the business opportunity due to the new competition faced.

2.3 Finally, scientific method robustness requires that humans must be able, and willing, to state the correct conclusions; yet this is often not the case in financial market situations

2.3 a) Even with sufficient data, humans may be incapable of forming appropriate conclusions, particularly in complex situations such as financial markets and dynamic corporate developments

To illustrate our premise, consider the straightforward question as to which company within a sector possesses the dominant position. Add some modest complexity, a disruptive innovator, such as online bookstores displacing traditional bookstores, and determining dominance becomes unanswerable. In such cases, an investment approach based on market leadership as an input criterion loses its utility.

The issue lies not in the lack of data nor the theoretical ability of humans to apply the scientific method, but from the fact that the ability of humans to draw conclusions even from unbiased data is not always present.

Figure 13: Is it the zebra on the left or the right whose head is in front? Humans will not always be able to form conclusions even when a data series is unbiased⁵⁴



Humans also have a tendency to present their conclusions by way of categorisation, which degrades scientific method from its intended design as an intellectual approach to one that reveals the only human pathway to address our *lack of intellectual competency* is by a form of *dimension reduction*, where an answer is presented as an over-simplified and by necessity false *narrative*.

2.3 b) Sufficiency of data also does not cure for human unwillingness to state the correct answer when it is unorthodox within a dominance hierarchy. Truth seeking, including in financial markets, is restricted to the breakaway group

Scientific progress relies on human collaboration, which necessitates a dominance hierarchy to coordinate efforts, yet this hierarchy can also restrict scientism from exploring solutions that deviate from the established framework. Thomas Kuhn's 1962 book, *The Structure of Scientific Revolutions*, explores this phenomenon, noting that scientific progress historically occurred only intermittently through revolutions led by breakaway groups that displaced the trailing paradigm whose rigidity was a result of the restrictive structure of its dominance hierarchy⁵⁵.

The structure observed by Kuhn was that anomalies, or observations and reasonings that do not align with the trailing paradigm first precipitate a crisis, and a loss of confidence in the trailing paradigm's leadership occurs. A breakaway group of scientists then forms to challenge the paradigm, and only following this does the breakaway group achieve a truly free pursuit of truth outside the constraints of the established dominance hierarchy.

Truth-seeking financial market participants face the same challenge when the optimal approach diverges from traditional doctrines. Large investment firms operate with comparable dominance hierarchies, adhering to established styles or executive authority preferences, which can hinder an individual's success if they adopt a purely truth-seeking approach that antagonises the hierarchical structure. In terms of alpha generation, all else equal, this in our view gives boutique firms a material advantage over their larger peers.

Figure 14: Thomas Kuhn recognised scientific revolutions arise only when scientists also reject dominance hierarchies⁵⁶

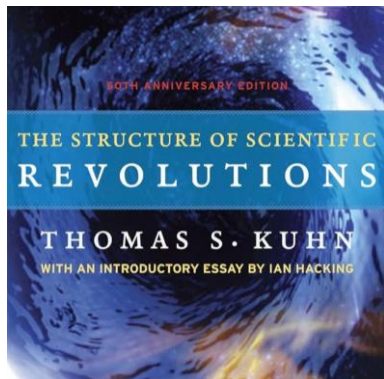
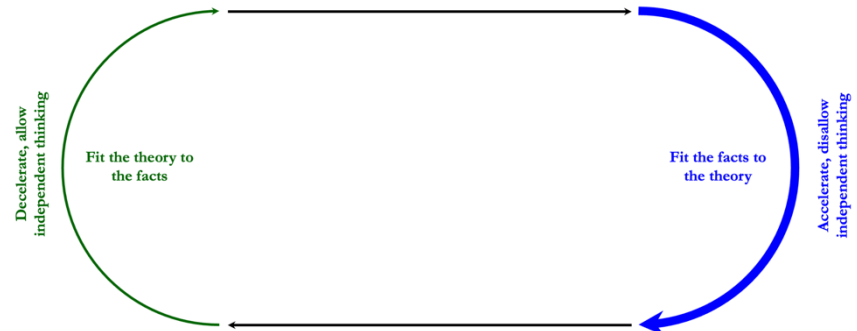
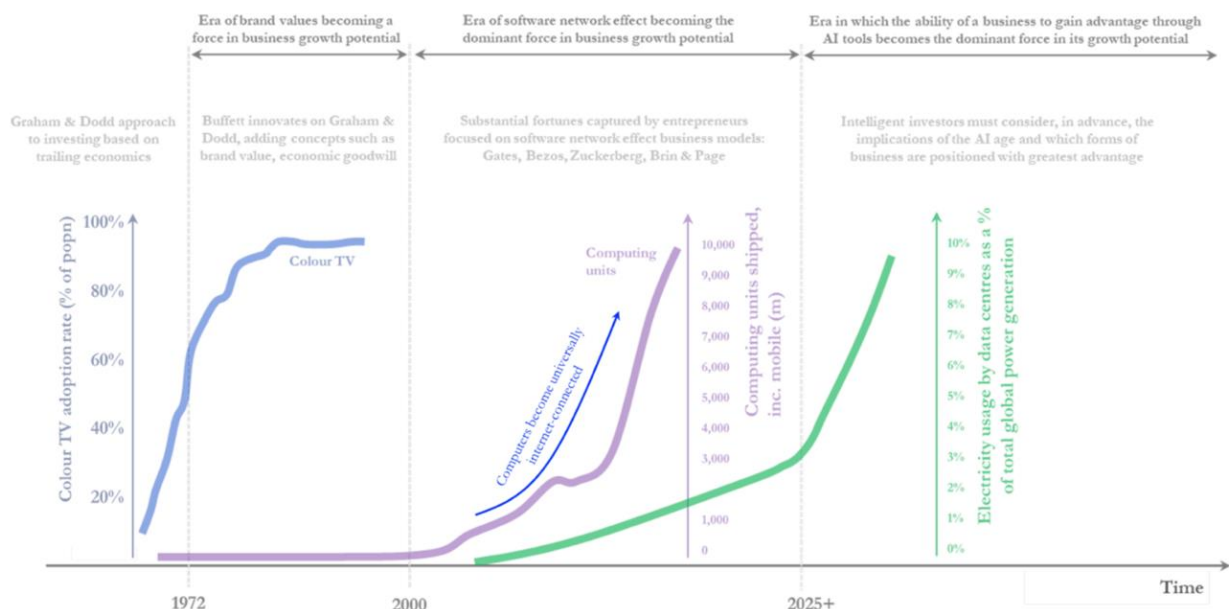


Figure 15: Thomas Kuhn’s understanding differentiates science into periods of *throughput* (large groups operate following established doctrine), and *discovery* (where a breakaway group rejects established doctrine). Both are necessary, but only the latter framework can adopt a sincerely truth-seeking approach⁵⁷.



Warren Buffett, by his breaking away from Ben Graham in the 1970s to form his own partnership, exemplified the necessity of truth-seeking in order to achieve a differentiation in investment success. However, today many Buffett-inspired market participants rigidly adhere to an oversimplified "value investing" approach, prioritising low valuation over business quality. In many cases, they not only fail to recognise the *first principles* that underpin the Buffettian approach, but also that style adherence is the opposite of an important aspect of Buffett’s legacy: a prioritisation of the pursuit of truth through breaking away from well-followed orthodoxy.

Figure 16: Universal technological shifts influence business dynamics, and successful investors are willing to break away from orthodoxy by thoughtfully adapting their principles⁵⁸



The unwillingness of humans in many instances to state conclusions counter to an existing hierarchy is likely also a result of our evolutionary history. Giordano Bruno’s execution in 1600 for correctly recognising, albeit publicly, that stars were distant suns surrounded by their own planets⁵⁹, was one of tens of thousands of executions during the Inquisition, and likely only a repetition of consequences that the primitive, anti-hierarchical human also faced.

3. Great investors develop a working method to address the nature of human decision-making error

3.1 Great investors recognise that without the self-governance to control ourselves, we must instead control our environment; in doing so they achieve an operating method that avoids behavioural biases

Buffett's wisdom was not simply in recognising that advantage could be gained through awareness of information bias, herd and gambling like mentalities, but in recognising that the investor must adapt their working method and environment to avoid exposure to the conditions that result in these tendencies.

Without these adjustments, it is not clear that humans can overwhelm their susceptibility to these behavioural biases – as per Figure 4b, the strength of the impulse signal under certain conditions increases by 10 times.

Thoughtful reasoning will recognise that it is not just that the impulse signal itself is strong, but that the human susceptibility to these behavioural biases must also have a form of 'override system two' instruction within its design. Herd mentality for example must subconsciously override conscious thought; if herd following were part of conscious decisions, it would disenfranchise the herd as the primary input to participant decision-making and the phenomenon would not exist.

Humans also typically stigmatise discussion relating to our herd mentality, however, our consequent lack of discussion of the topic raises our unawareness of it and therefore its truth value. The stigmatisation may exist because the recognition that humans switch from individual reasoning to herd mentality when faced with unanticipated, confusing, or stress-inducing inputs that may represent danger would be also controversial for society to widely accept. It is unsurprising that political dialogue discourages acknowledging this aspect of the human condition.

Similarly, using thoughtful reasoning we can recognise that gambling mentality, like herd mentality, must have an impulsive, innate nature. It is *triggered by the amplitude of upside without adjusting for accuracy in judging the probability of upside*. This mentality is a rational *system one* response in simpler times when maths had not been developed and therefore probability calculation was not even a known *system two* possibility, and advantage was also gained by the speed of response characteristic of *system one*. In these circumstances, if *system two* could easily override *system one*, *system one's* utility would be lost, resulting in an evolutionary disadvantage in these simpler times. *The historic utility of system one required it to override system two.*

3.2 Great investors address biased information risk, and herd and gambling mentality, by both focusing on understandable businesses, rejecting promotional inputs, and prioritising independent thought

Great investors can similarly be observed to have adjusted their working methods in order to remove their exposure to biased information. Warren Buffett, for example, has adapted his working method to target the mitigation of biased information risk by prioritising simple and understandable businesses whose analysis is possible without input from other market participants. Buffett also prioritises the assessment of business value using the *cash return relative to initial cash outlay methodology*, and in doing so removes the PE or EBITDA multiple based valuation approaches which are typically used by stockbrokers or other promotional entities⁶⁰.

Great investors can also be observed as *rejecting most daily information as at best corresponding to noise, and replacing this information flow with independent thought.*

As Peter Fenton of Benchmark Partners notes, this is a *somewhat of a secret* approach and which he describes using words in his remaining comments that almost exactly match the word choice by Warren Buffett in describing the same philosophy.

*“This is somewhat of a secret, and is to **sit back and not react** to the flow of information coming your way.*

*But rather to **sit back and think** about the question – what will we look back on in five or ten years that is in a compounding network effect or growth curve that we will deeply regret not being part of.”*

Peter Fenton, Benchmark Partners, speaking in 2021⁶¹

*“I insist on a lot of time being spent, almost every day, to just **sit back and think**. That is very uncommon in American business.*

*I read, and I think. And I do more reading, and thinking, and make **less impulse decisions**, than most people in business.”*

Warren Buffett, speaking to Charlie Rose⁶²

The focus of great investors on independent thinking thereon results in a virtuous circle, defending them against trusting others, whose information is likely to be biased. The defence is effective because the investor has a thoughtfully prepared alternative: their own, well-developed, independent methods and thinking.

“Apply critical thinking, and don’t assume that what you have been told is right.”

Peter Fenton, Benchmark Partners, 2016⁶³

Great investors can furthermore be observed to adapt their working environment to remove those inputs that otherwise risk incentivising herd and gambling mentality. This includes Buffett electing to work in a relatively isolated manner, from a provincial location, and rejecting the use of computing-based stock ticking and minute-by-minute news-flow provision, and removing the input from stockbrokers⁶⁴.

Buffett also prioritised steps to lower the stress levels that are otherwise coincident with human cognitive switching to *unintelligent* decision making. In this regard it is notable that whilst Berkshire Hathaway is well known to be conservatively managed in terms of its disdain for leverage, perhaps less well known is that even at its preceding entity, the Buffett Partnership, conservative leverage limits were imposed, restricting gearing to 25% of equity capital (albeit with typically up to half of the fund invested in merger arbitrage).

“My self-imposed standard limit regarding borrowing is 25% of partnership net worth, although something extraordinary could result in modifying this for a limited period of time.”

Buffett Partnership letter, 1963⁶⁸

Similarly low leverage is also observed today at Bill Ackman’s Pershing Square Holdings⁶⁵, and at Masayoshi Son’s SoftBank⁶⁶, although both investors only shifted to the more astute low leverage approach following significant losses during periods when they operated with higher leverage⁶⁷.

3.3 Great investors also develop their intellectual approach to reject scientific method, prioritising those highly selective opportunity types that offer either *enforcement* or *indifference*

Promoters of securities communicate using a narrative-based strategy *precisely because innate human programming makes us susceptible to this strategy*. Our susceptibility is related to the human evolutionary path innately prioritising our use of scientific method and therefore its related conjecture that a so called ‘expert’, or person who has studied a significantly above average volume of situation-specific data, can offer utility when they reduce this data to a simpler story.

However, the mindset of great investors is to *reject scientism in financial markets*. The rejection implies that in a complex, feedback-loop orientated financial market system, and where the criteria that result in the robustness of scientific method are not met, the investor will not achieve utility from the summations of a person who has reductively produced, from their data capture, a simplified narrative describing the system. As Nassim Nicholas Taleb notes, this rejection takes conscious effort, precisely because it is a rejection of an innate programming.

“Not theorising is an act that takes effort.. our default is to theorise and it is barely under our control: it is largely anatomical, part of our biology, so fighting it requires fighting one’s own self.”

Nassim Nicholas Taleb, writing in *The Black Swan*, 2007⁶⁹

What replaces the rejected scientism is a search process by the great investors targeting identification of the rare instances where the conditions of the Kelly formulas are met. The Kelly formulas dictate capital allocation when either maximum forecast accuracy (a concept we also describe in this white paper as *enforcement*), or maximum asymmetry (a concept we describe in this white paper as *indifference*), or both, are met⁷⁰. As such, the Kelly ratio dictates that forecast accuracy and asymmetry are interchangeable.

Figure 17: Simplistically, the Kelly ratio dictates increased capital allocation proportional to forecast accuracy (*enforcement*)⁷¹

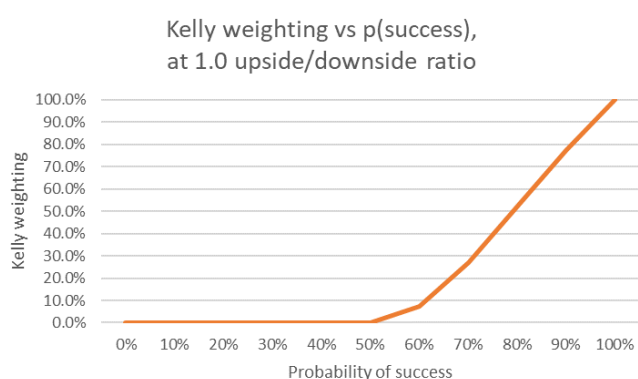
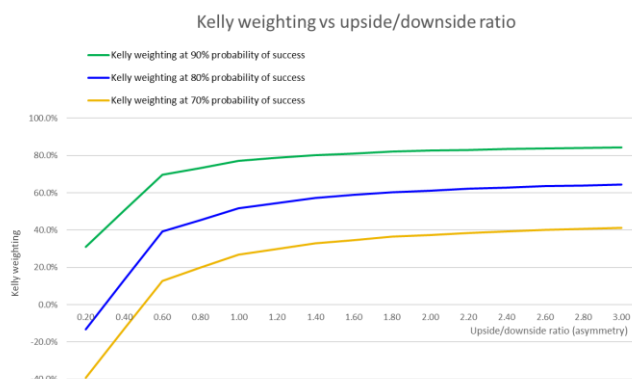


Figure 18: However, the Kelly ratio also dictates a proportionality of increased capital allocation to asymmetry (*indifference*)⁷²



Enforcement exists when a financial market outcome has a binding, or binding-like, characteristic based on simple principles without the potential for interference. A rudimentary example is the merger arbitrage subject to a binding offer without antitrust opacity. However, in the Venture framework, the prioritisation of a monopoly business, that dominates an entirely new industry that itself is growing by positive feedback, whose monopoly is additionally robust resulting from the possession of properties such as the Lanchester Square Law⁷³, or Metcalfe’s Law⁷⁴, and whose product and business design exhibits *last mover advantage*, is also a form of seeking a binding-like, enforcement characteristic which only occurs when rare criteria are met⁷⁵.

Indifference, by contrast, requires finding situations possessing such pricing asymmetry that a wide range of outcomes – independently each accepted as unpredictable – will be *reasonably attractive*, whilst still giving exposure to the blue sky outcome that can be *unreasonably attractive*.

Whilst the Buffettian opportunity also demands the initial conditions of business durability, it is its low pricing that offers the margin of safety attribute commensurate with indifference. Simplistically, the value investing aspect of the approach works because it can accept the unknowns which are consistent with the disutility of scientific method, and when the unknowns in due course do emerge their upshot is most frequently positive as a result of the asymmetric price point at which the allocation occurred.

4. A simple set of initial conditions, rules-based outcomes, lack of interference: the necessary precursors for the *enforcement* or *indifference* opportunity

4.1 Intelligent investors define their principles in advance to defend against the error of assessing equivalence in reductively similar situations which do not output the same properties in outcome

Logic dictates that for the *enforcement* or *indifference* opportunity to be identified accurately it must possess *understandability* and *determinism* and the conclusion as to its identification must also possess *duration*. *Understandability* is achieved when an opportunity is defined by simple initial conditions, *determinism* is provided by a rules-based outcome, and a conclusion possessing *duration* is provided by a lack of interference in outcome. Hence, the intelligent investor must target the opportunity possessing a simple set of initial conditions, rules-based outcomes, and a lack of interference.

“Focus on situations with limited conditions. They are predictable. What you don’t want is multiple conditions because it is harder to isolate that the Turkey scenario cannot be produced.”

Nassim Nicholas Taleb, writing in 2018⁷⁶

The intelligent investor must also clearly define in advance the set of initial conditions corresponding to the *enforcement* or *indifference* opportunity. This defends against the error of later assessing equivalence in reductively similar situations yet which do not output the same forecast accuracy in outcome, as well as to stop a promoter-originated narrative biasing the decision-making of the investor at a later stage.

“I went back to the core principles – I had a member of the investment team literally engrave them in a stone tablet not dissimilar from Moses’s Ten Commandments. I had that stone tablet, what you might call a deal toy, sit on everyone’s desk in the office and we’ve adhered to those principles ever since.”

Bill Ackman, public comments, 2020⁷⁷

Let’s consider an example of how reductively ‘similar’ situations do not output the same *enforcement* characteristic, yet their differentiation is only revealed as so by the objective criteria we have so far laid out. Our simple example is – assume a person jumps off from a surfboard wearing just swimming trunks and onto the beach. It is impossible to predict what they will then be doing in ten minutes time. Whilst the initial conditions are simple, there are no rules dictating their subsequent outcomes, and these outcomes may also be subject to interference from new inputs.

Let’s now take a second example, the same person jumps out of a plane, mid-flight, again, wearing only swimming trunks. Simple initial conditions are present, however, in this case gravity and the absence of parachute dictate the outcome as rules-based, and no scenario of interference is possible. It is only this second situation type that possesses an *enforcement* characteristic despite its reductive similarity to the first situation described.

Figure 19: Reductively “similar” situations do not output the same *enforcement* characteristic in outcome; prediction requires all of – a simple set of initial conditions, rules-based outcomes, a lack of interference⁷⁸



A person jumps off of a surfboard wearing just swimming trunks. It is impossible to predict what they will then be doing in ten minutes time.



The same person jumps out of a plane, mid-flight, again, wearing just swimming trunks. The outcome is deterministic, and no scenario of interference is plausible.

4.2 The intelligent merger arbitrage practitioner selects separately for both *enforcement*, and *indifference*, opportunities

In merger arbitrage, a focus on rules-based situations, with limited conditions, and without counter-position interference scenarios, results in the targeting of *enforcement* situations as the primary criteria and yet also allowing for *indifference* optionality to accrete these situations further in the competitive bidding scenario.

Figure 20: John Paulson’s white paper, “The Risk in Risk Arbitrage” emphasises a focus on rules-based situations, limited conditions, and a lack of interference⁷⁹

| Table 1 Screening criteria | |
|---|---|
| Avoid <ul style="list-style-type: none"> • Agreements in principle • Deals subject to financing • Deals subject to due diligence • Targets with poor earnings trends • Targets with negative earnings • Deals in cyclical industries • Deals in highly regulated industries | Focus <ul style="list-style-type: none"> • Definitive agreements • Strategic rationale • Large acquirer • No financing condition • No due diligence condition • Solidly performing target • Reasonable valuation • Limited regulatory risk |

Condition →
Condition →
Condition →
Condition →

← Lack of condition
← Lack of condition
← Lack of condition
← Lack of condition

Figure 21: Comparable GA-Courtenay arbitrage principles: rules-based situations, limited conditions, lack of interference⁸⁰

| | |
|--|---|
| Definitive binding agreements only | Reject conditionality: no financing condition, no due diligence condition, no antitrust opacity |
| Large acquirer with understandable and strategic rationale for acquisition | Reasonable valuation of deal value and solidly performing target |

Enforcement situations in merger arbitrage possess binding constructs with limited conditions, without the interference that would result from anti-trust opacity, and the rules based element is the ability for the holder of that contract to enforce the tender of their shares, if necessary, through the court process.

Well selected allocations in merger arbitrage with *enforcement* properties can be assessed as possessing superior de-risking attributes than even to the so called “risk-free” rate on government bonds. Court enforcement of robust merger arbitrage deals does not introduce scenarios of re-pricing of principal, whereas even in the United States, the government is able, if it so desires, to re-price the principal on its debt. Notably, the five year credit default swap on US government debt is currently 43, implying a default probability within the five year period of 4%⁸¹.

Such situations, purchased at attractive yield to maturity, can also then possess the additional attribute of *indifference* as to whether a forecasted competing takeover bid occurs. If the competing bid does occur, a windfall return is realised, however, the polarity of the potential outcome is upward only, resulting in the *indifference* property.

The opportunity type in merger arbitrage which is rejected is the complex antitrust analysis situation. These types of situation not only possess complex initial conditions in terms of ascertaining the reality of the market share position (also exposing the investor to information biasing dynamics), but additionally fail to have rules-based outcomes given the subjectivity of the application of antitrust law imposed by regulators, and also possess interference scenarios such as the failure of a proposed divestiture that would otherwise cure an antitrust breach.

4.3 In equity investing, the Buffettian approach focuses on opportunities possessing a high indifference characteristic yet co-incident with strong robustness and long-term prospects

Figure 22: Charlie Munger has spoken to the Buffettian allocation rubrics – which adhere to a simple set of initial conditions, rules-based outcomes, and a lack of interference⁸²

1. We have to deal in things that we're capable of understanding
Simple initial conditions which adhere to rules
2. We have to have a business with some intrinsic characteristics that give it a durable competitive advantage
A situation which will remain adhered to rules – because of the business model
3. We would prefer a management in place with a lot of integrity and talent
A situation which will remain adhered to rules – because of the management team
4. We have to have a price that makes sense and gives a margin of safety considering the actual vicissitudes of life
Unknowns will inevitably still persist, and if this scenario occurs the initial pricing should have been low enough that unknowns still result in positives

Figure 23: Comparable GA-Courtenay Buffettian approach principles: rules-based situations, limited conditions, lack of interference⁸³



The Buffettian approach to capital allocation adheres to the same underlying three pillars: simple initial conditions, rules-based outcomes, and lack of interference.

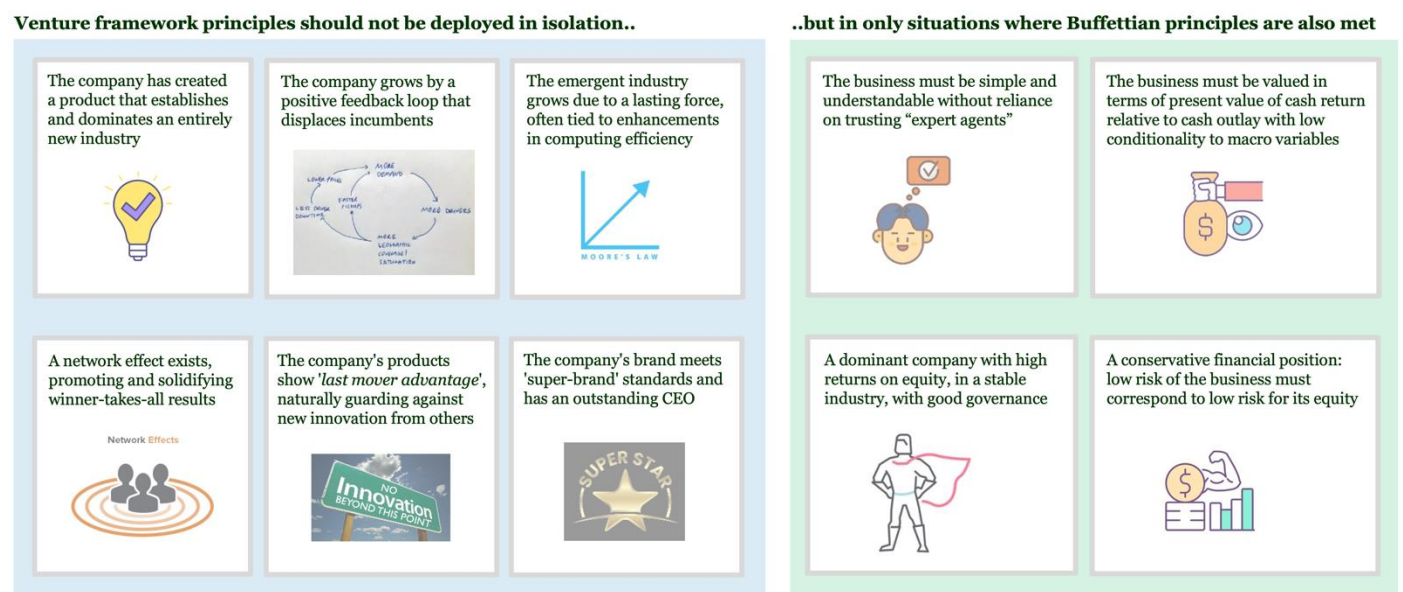
As Figure 22 summarises, Charlie Munger has outlined the Buffettian allocation rubrics, listing just four criteria that can be grouped into: simple initial conditions and rules-based outcomes (in blue) and interference-free characteristics (in green). However, by adding the margin of safety requirement (in grey), the Buffettian rubrics can be observed as also demanding *indifference* as a result of rejecting scientism in financial markets. Unknowns will inevitably still persist, and the margin of safety concept is applied because, so long as the initial pricing condition is correct, most unknowns can still result in positives.

This can be compared to the *indifference* opportunity in merger arbitrage as that appraised as likely to be subject to competitive bidding, where the initial arbitrage allocation must also be made at pricing sufficient to output a positive result regardless as to whether the forecast competing bid outcome thereon occurs.

4.4 By contrast, the Venture framework is an equity investing approach focused on opportunities possessing enforcement characteristics, and specifically enforcement of long-term growth

By comparison, for the Venture framework, which is a differentiated approach to opportunities more typically described as ‘growth investing’, it is the principle of *enforcement* that is targeted.

Figure 24: For the type of investments typically described as ‘growth investing’, successful allocators also demand a simple set of initial conditions, rules-based outcomes, and a lack of interference. We refer to this differentiation, applied to growth investing, as the Venture framework⁸⁴.



The insight of the Venture framework is that when certain initial conditions are present, in growth businesses, the result is also a close to rules-based outcomes and a lack of interference. These rules are explored in our white paper, *A Venture Framework for the Intelligent Investor* and are summarised in Figure 24. Broadly the rules seek that the business which has *monopolised* a new innovation, grows by a process of *self-reinforcing positive feedback*, and is overseen by an *exceptional management team* pursuing a multi-decade campaign to displace incumbents.

The *enforcement* property of the Venture framework is exhibited when these conditions are met in combination with certain ‘laws’ of enduring business dominance, for example, a monopoly business whose dynamics benefit from Lanchester Square Law, often combined with Metcalfe’s Law, combined with *last mover advantage*, can possess a form of unassailability from competition in certain conditions, as our prior white paper explored.

“Our success comes down to *finding a company that escapes competition*, due to both the dynamics of the product and of the business design that they are building, whether it’s a network effect or another mode of economies of scale that enable the company to escape competition.

And we also need to know that the founder is going to be able to navigate successfully through all of the competitive dynamics.

That idea – of escaping competition, when you find it, you should really lean in as hard as you can.

Because as an investor these opportunities are *very rare*. And when you find it – and when they work – they tend to lead to very large outcomes.

And someone said this to me once, and you know –

it really struck me –

If you like everything but the price, you should pay the price.”

Sarah Tavel, Benchmark Partners, comments May 2024⁸⁵

4.5 Track records from Buffettian and Venture framework investors demonstrate the success possible by focusing on simple a simple set of initial conditions, rules-based outcomes, and a lack of interference

Figure 25: The Buffettian approach deployed by Warren Buffett delivered 25.3% net annualised returns over the lifetime of the Buffett Partnership, and 27.8% annualised returns for the 20 yrs following Warren Buffett taking control of Berkshire Hathaway⁸⁶

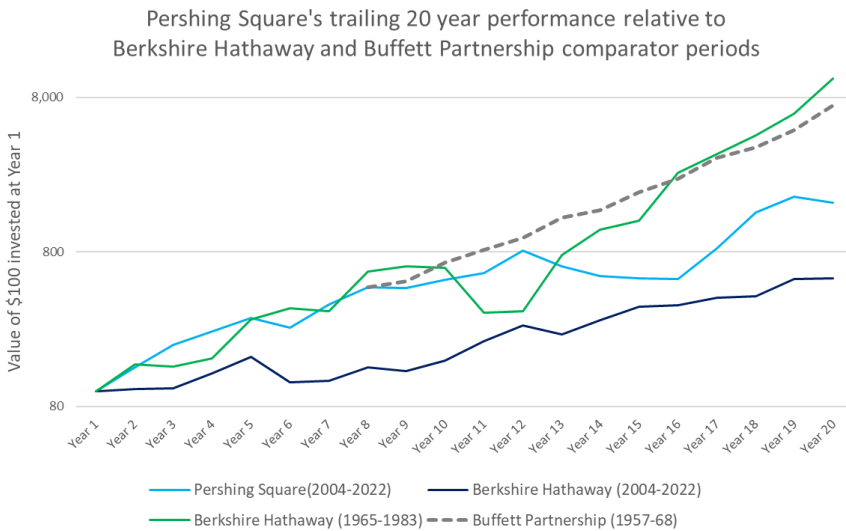


Figure 26: Elite investors following the Venture framework, including Tom Perkins, Masayoshi Son, and Benchmark Partners, achieved annualised returns in the region of 30-40% over multi-decade periods

“Over the years, Kleiner Perkins has been the most successful venture capital partnership. Well, I can go beyond that. It’s been the most successful financial institution in the history of the world.

We’ve had returns of about 40% per year, compounded, for coming up on thirty years next year. Nobody else has done that well.”

Tom Perkins, co-founder, Kleiner Perkins, interviewed in 2001⁸⁷

Figure 27: However, in macro investing, George Soros also achieved an almost two decade track record of net annualised returns at 29.6%, a rate of return then continued by Stanley Druckenmiller⁹⁰. The implication is that, for this level of success and consistency, there must also exist a set of macro principles that underpins this performance differentiation, and these are principles that this white paper now examines.

| Quantum Fund N.V. | | | |
|-------------------|-------------------------------|----------------------------|--------------|
| Date | Net Asset Value Per "A" Share | Change from Preceding Year | Size of Fund |
| 1/31/69 | \$ 41.25 | — | \$ — |
| 12/31/69 | 53.37 | + 29.4% | 6,187,701 |
| 12/31/70 | 62.71 | + 17.5% | 9,664,069 |
| 12/31/71 | 75.45 | + 20.3% | 12,547,644 |
| 12/31/72 | 107.26 | + 42.2% | 20,181,332 |
| 12/31/73 | 116.22 | + 8.4% | 15,290,922 |
| 12/31/74 | 136.57 | + 17.5% | 18,018,835 |
| 12/31/75 | 174.23 | + 27.6% | 24,156,284 |
| 12/31/76 | 282.07 | + 61.9% | 43,885,267 |
| 12/31/77 | 369.99 | + 31.2% | 61,652,385 |
| 12/31/78 | 573.94 | + 55.1% | 103,362,566 |
| 12/31/79 | 912.90 | + 59.1% | 178,503,226 |
| 12/31/80 | 1,849.17 | + 102.6% | 381,257,160 |
| 12/31/81 | 1,426.06 | - 22.9% | 193,323,019 |
| 12/31/82 | 2,236.97 | + 56.9% | 302,854,274 |
| 12/31/83 | 2,795.05 | + 24.9% | 385,532,688 |
| 12/31/84 | 3,057.79 | + 9.4% | 448,998,187 |
| 8/16/85* | 4,379.00 | + 43.2% | 647,000,000 |

Soros manages Quantum

1986
1987
1988
1989
1990
1991
1992
1993

1988-1992 average, +40% per annum

+60%

Druckenmiller joins Soros

“For the investment business we have an IRR of 44%.

I think in this scale of investment, compared with any private equity company or any venture capitalist, over the last 18 years, I have not known any other companies which beat this 44% compounded return on investment.”

Masayoshi Son, SoftBank, 2016⁸⁸

“Over the years, Benchmark’s eight funds have paid out \$22.6bn. Its backers received a 1,000% gain – net of fees – over the past decade (an annualised return of 26%).”

Forbes on Benchmark Partners, 2015⁸⁹

5. Interference, and the resultant disutility of scientific method, is a defining feature of macro markets, where the securities traded *are* the fundamentals

5.1 In macro markets the securities *are* the fundamentals, resulting in a more consistent occurrence of interference than in equity markets where security pricing may only intermittently impact the fundamentals

The implication from the differentiation between macro markets, where the securities *are* the fundamentals, and equity markets, where security pricing *only in instances* impacts the fundamentals, is that in macro markets scientific method is more consistently invalidated as a premise for those economic theories that have been based on a physics-like methodology.

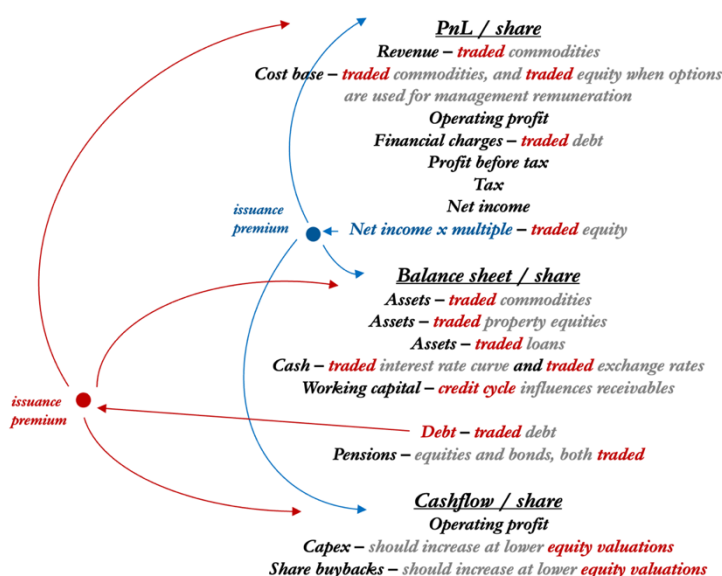
Scientific method is invalidated when the scientist interferes with the data during the experiment. It is in macro markets, because the securities are the fundamentals, that when humans are both studying these macro fundamentals at the same time as conducting actions based upon their findings (such as buying a security, and therefore causing movement in that security price), or making public statements that deliberately or inadvertently encourage others to also adjust their security buying in the market, that this invalidation is more consistent.

Figure 28: There are *instances* in equity markets where *equity pricing impacts the fundamentals* they are supposed to represent⁹¹

Equity pricing may influence the fundamentals *directly*, i.e. through capital raising by equity issuance, attraction of management talent by share option accretion, use of security price for M&A transactions, accretion of earnings per share by share buybacks.

or, equity pricing may influence the fundamentals *indirectly*, i.e. through human communication, for example, falling prices may trigger bearish communication which may also influence business leaders to adjust business strategies, thereon impacting the fundamentals.

Figure 29: However, in macro markets the securities *are the fundamentals* – almost all core line items in financial statements are traded in macro markets⁹²



The implication is that in macro markets, the utility of scientific method is the lowest. As such, macro market participants must recognise that in most scenarios they will be dealing with uncertainty, and not uncertainty that can necessarily be cured by increased data gathering with regard to a particular situation.

5.2 Macro markets can also exhibit positive feedback, which, when the countervailing force of negative feedback is absent, results in enforcement

5.2 a) Positive feedback results in enforcement as a consequence of the force imposing movement increasing as movement occurs

As we have detailed in the Venture framework, when an emergent business achieves monopoly status in an entirely new innovation, so long as its growth mode is through positive feedback – reductively – a form of *enforcement* can occur. Change resulting from positive feedback outputs enforcement because the force causing growth increases as the change occurs.

A simplistic representation of positive feedback is illustrated in Figure 30, depicting iron filings relative to a magnet. As the filings are drawn to the magnet, their attraction to the magnet *increases* proportional to the square of the distance of separation, accelerating their rate of movement, and *enforcing* their movement to their ultimate destination.

Negative feedback exhibits the opposite behaviour to positive feedback. In the latter phenomenon, illustrated by the example of a rubber band in Figure 31, the magnitude of the force causing attraction *decreases* as the process of movement toward the destination occurs, consistent with the force of attraction varying inversely proportional to the square of the distance of separation. As such, whilst positive feedback results in enforcement to a single destination point, enforcement in negative feedback is absent, and is replaced by variance around an equilibrium.

Figure 30: In the circumstance of positive feedback, the force causing movement increases as movement to the mean occurs⁹³

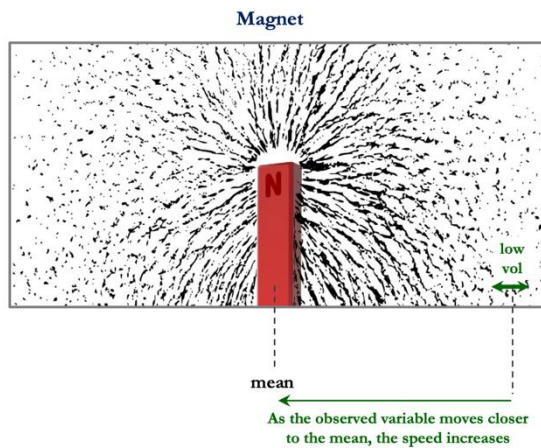
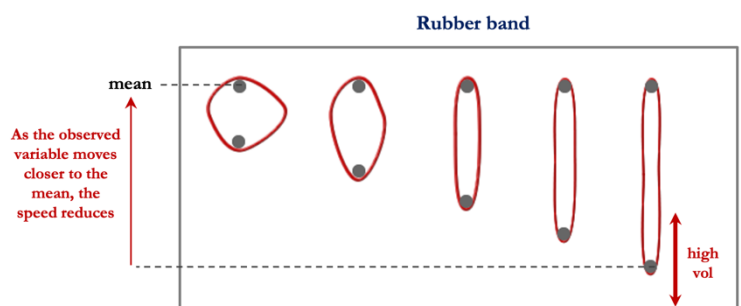


Figure 31: In the circumstance of negative feedback, the force causing movement decreases as movement to the mean occurs⁹⁴



5.2 b) However, in financial markets positive feedback is normally met with the countervailing force of negative feedback, disallowing positive feedback from resulting in enforcement-like outcomes

In financial markets, positive feedback occurs when statements made about, or actions with regard to, a security price are self-reinforcing, in other words, they have an impact on the fundamentals of the security with the same polarity of the statements made about or actions taken with regard to, the security price, and resulting in a relationship with the same square law properties.

Positive feedback results in large movements in price, because the fundamentals and the security price both change in the same direction. However, for such outcomes positive feedback must also be occurring without attracting the opposing force of negative feedback, which is rare, precisely because many aspects of the financial system are deliberately designed to limit market disorder, normally by imposing negative feedback.

Figure 32: Whilst situations involving positive feedback can be observed in financial markets in instances, in most cases they also attract a countervailing force of negative feedback, ruling out large price moves

Example: *positive feedback is triggered* when a company with some need to raise capital in the future yet without the need to raise capital immediately, finds itself in circumstances where statements are made by market participants that the company needs to raise capital immediately. The company consequently sees its security price decline.

The security price decline imposes the commencement of positive feedback – as management recognise that unless the security price decline is addressed, they may indeed have to immediately raise capital, since if further declines in security price occur then the window for capital raising would be closed.

However, the threat of positive feedback thereon triggers a corrective force: *negative feedback*.

Because the management of the company hold the opposing interest to the statements being made about the company, management are incentivised to make a series of public counter-statements. For example, the management of the company may make public statements that they do not need to raise capital immediately. That is, they can interfere with the opposing statements being made about them. To the extent they are successful in this path, positive feedback is opposed by negative feedback, and enforcement is ceased.

The implication is that there is normally within a financial relationship an entity which has a role imposing negative feedback, should positive feedback begin to occur. As such, in normal circumstances, the observation of positive feedback in terms of its base case implication does not allow a prediction to be made regarding the directionality of security prices, including in macro environments.

The observation of positive feedback in terms of its base case implication can, however, imply the potential for higher volatility: either the process of positive feedback will continue, or else, it will be successfully met with negative feedback, imposing up to a reversal.

6. The Kelly ratio criteria of *indifference* offers a macro opportunity type that exists when positive feedback is recognised only in its base case implication – higher volatility, and when this is combined with *asymmetry*

6.1 The observation of positive feedback, even when visibility as to negative feedback is absent, implies the potential for higher volatility

In most cases for the market participant observing positive feedback, it will not be possible to determine when or if negative feedback will act as the countervailing force. For example, predicting when, by how much, or if, the International Monetary Fund might intervene to stop positive feedback worsening an emerging market debt crisis in many cases will be genuinely uncertain, as IMF regulators themselves will debate the topic without objective determinism, and outsiders can not achieve accurate insight as to the outcome of such discussions.

Nevertheless, the observation of positive feedback has been recognised as a potential volatility signal by traders since ancient times, and their knowledge of this risk has led experienced operators to price the merits of protection in advance against prospective scenarios such as crashes and squeezes.

Our hypothesis is that volatility may often also be *underpriced* in these circumstances, as a result of the divergence of incentives that differentiate between the trader and the long term investment professional. Whilst the trader senses a profit opportunity from recognising increasing uncertainty, the long term investment professional rarely advances their career prospects by widely communicating their increasing uncertainty as to prospective outcomes.

The implication is that the observation of positive feedback in isolation can present opportunity: not simply because its observation increases the probability of market volatility but because it may also coincide with a lack of willingness amongst long term investors within larger hierarchies to discuss the increasing uncertainty, resulting in a low pricing of option volatility persisting for a period sufficient for the intelligent investor to act.

6.2 Nassim Nicholas Taleb's profits from the October 1987 crash are illustrative as to a rewarding strategy design in circumstances of sensing increasing market uncertainty; Taleb deployed a put option construct with *indifference* characteristics designed to benefit him from rising volatility

6.2 a) Taleb did not explicitly forecast the 1987 crash; instead, his accumulation of a significant put option position was for “no other reason than” noticing the extremely inexpensive pricing of out-of-the-money put options.

*“I was at First Boston and I was an option trader and I was trading a lot of things mainly fixed income options, and currency options. **These options were extremely inexpensive during that period for some weird reason, particularly for out-of-the-money options.***

*So I had accumulated a very large amount of out-of-the-money options in Treasuries, and in short-term fixed incomes, **for no other reason than they were much cheaper than I had seen in the past** and I was happy buying.”*

Nassim Taleb interview with Bloomberg, 2017⁹⁵



6.2 b) Taleb's option construct possessed indifference characteristics: it allowed him to earn money if nothing happened, and yet make a lot of money if a large market correction event did occur

As a trader at First Boston during the 1987 crash, Taleb had to approach market volatility exposure in a business-like manner, targeting modest income if wrong while maintaining significant profit potential if right. His business-like decision was to sell at-the-money options and to use a portion of the proceeds to fund out-of-the-money options. This strategy allowed him to earn money if nothing happened, modestly lose money if a mild market downturn occurred, and make substantial profits if a major crash event took place. This, he notes, was his business-like model at First Boston.

"I was short volatility at-the-money. I would have been harmed by a small move down because I was set up to be harmed by a small move.

*But if the small move became a larger move, I would gain. And so because the income I was earning from the at-the-money short volatility position exceeded the decay cost I was exposed to from the far out-of-the-money long volatility position **it was a nice way to earn money if nothing happens, lose money if something mild happens, and of course make a lot of money if something huge happens.***

That kind of position allows you to accumulate a lot of options in the tails.

*And so **my business at First Boston was buying tail options, out-of-the-money options, and waiting for a large event to happen and trying to survive in between, that was my business at the time.**"*

Nassim Taleb interview with Bloomberg, 2017⁹⁶

Taleb's approach was business-like because it was based on realism, aiming for *indifference* yet with some sense of wisdom regarding directional bias; no matter Taleb's comments, the fact he accumulated the large volume of out-of-the-money options indicates he made at least some assessment of a favourable probability whilst still admitting he could not know with certainty. We would compare his indifference positioning to that which the merger arbitrageur in competitive bidding situations targets, *indifference yet with a hypothesis*.

"Once you admit that you're not sure, you can make money from that statement.

Be very aggressive when you can gain exposure to asymmetry [at no cost], when an error in a model can benefit you. [In these circumstances] you then want the maximum volatility, maximum uncertainty."

Nassim Nicholas Taleb, speaking in 2017⁹⁷

"It's not whether you are right or wrong that should matter.

What matters is that when you are right, you [should have been able to design your portfolio in a way that you] have the maximum position.."

Stanley Druckenmiller,
comments made in 1984⁹⁸

A closer look at the market characteristics that preceded the October 1987 crash reveals that elevated asymmetry had indeed become more visible, and additionally that a process of positive feedback was also part of the dynamics developing, threatening to significantly raise the low level of trailing market volatility that Taleb had identified.

Sophisticated investors could already be observed earlier in the year to have become cautious with regard to the high market valuation, in other words recognising that the asymmetry was to the downside. Hedge fund manager Michael Steinhardt wrote to his clients in March 1987 that the attractiveness of a long exposure to market was becoming “*more difficult to gauge*”⁹⁹, adding, that his normal approach “*..is to seek opportunities where the downside risk seems manageable, yet this is not the case now in my judgment.*” Citing a number of other potential problems that could hurt the stock market, which included high interest rates and rising inflation, he added: “*I am inclined to be far more cautious in these circumstances.*”

A deeper insight was required to more precisely identify the factor resulting in the more damaging growth of positive feedback within the equity market. The recent introduction of low-margined equity index futures was leading to the increasingly widespread use of a ‘risk management’ design called *portfolio insurance*.

Q: “What in your view is going on?”

*A: “We’ve got a **market that has been seriously overvalued for some time** and what we’ve witnessed now in the past couple of days has been the piercing of this bubble. **Wall Street was uniformly unprepared for this magnitude of a drop.**”*

Paul Tudor Jones, interviewed on Financial News Network, October 19, 1987¹⁰⁰

Portfolio insurance, a dynamic hedging strategy, aimed to limit losses by progressively selling equity index futures as markets declined. However, its increasingly widespread adoption, combined with what was then an absence of regulatory controls on limit-up or limit-down equity index price movements, resulted in a self-reinforcing positive feedback structure. On Monday 19th, October 1987, as markets fell, the synchronised selling of index futures from multiple unlinked accounts across the market progressively amplified the decline, thereon leading to the crash.

*The crash of 1987 was interesting because **it probably never would have happened except for the market infrastructure at that point in time.** I remember when I started out in 1976 trading commodities and all commodity futures had limits. I remember so many times in the late 70s early 80s where the cotton market would be limit up or the soybean market would be limit down because that was the allowable amount that prices could move and they would not let them go any more, because the regulators knew the irrationality of human nature and the and the possibility of what a mob can do.*

*Yet for equity index futures in 1987 there were no limits. It was just an **absolute accident waiting to happen, and then they started portfolio insurance, and in 1987 you could just look on any kind of historic historical metric and see the stock market was overvalued.** Ten year rates were 10 and a half percent and I think the dividend yield on the stock market was about four and a half or five percent. And I knew for a fact that **if and when it broke because of the derivative structure that the downside was going to be literally un-limited because there were no limits on futures.**”*

Paul Tudor Jones, speaking with Lloyd Blankfein in 2018¹⁰¹

7. The Kelly criteria of *enforcement* is also a characteristic of macro markets, yet only rarely. Specifically: when the entity responsible for negative feedback undergoes a *behavioural switch* disallowing or inverting its normal role

7.1 The *indifference* requirement of Taleb-type option constructs also limits their payout size

There are limitations that result from the design of the option constructs used by Taleb. In reality many options specialists will be employing the same approach, the outcome of which is a breakeven or modest profit basis during most periods and yet retaining some market beta relating to small moves down in the market, and hence therefore a defined loss scenario, due to the sale of the in-the-money put options. However, during high amplitude market downturns, the out-of-the-money put options owned generate substantial payouts.

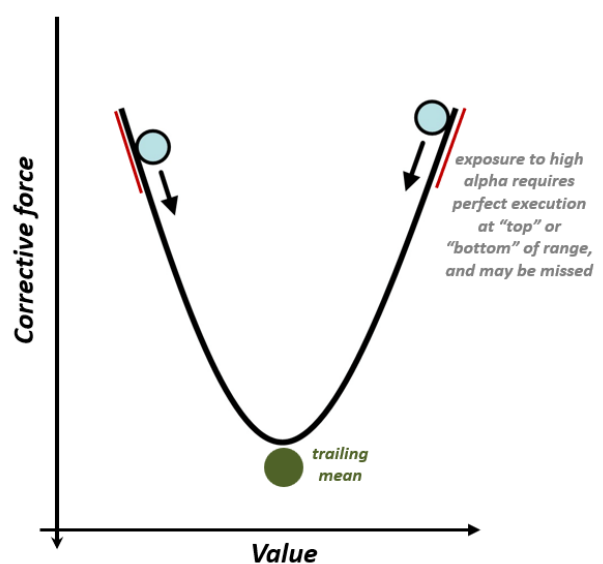
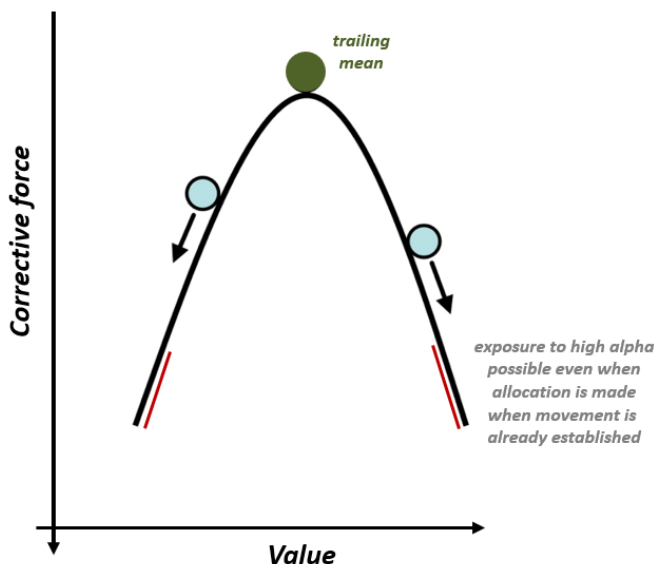
Still, the *indifference* requirement restricts the potential payout size. The volume of out-of-the-money put options purchased must be funded by the in-the-money option sales, and the loss scenario limits this volume. A small move down in the market causes losses on at-the-money options without being a large enough move down to produce commensurate profits on the out-of-the-money options. If losses are accumulated this reduces the funding base, deployable construct size, and therefore payout size, until steadier markets allow in-the-money option sale income to rebuild the funding base or a large market correction triggers the more substantial payout scenario.

7.2 Positive feedback results in *enforcement* when the countervailing force of negative feedback is either absent, or inverted; however, the identification of these instances in the macro is initially challenging

As described in section 5.2, as iron filings are drawn to the magnet by positive feedback, their attraction to the magnet increases, accelerating their rate of movement, and *enforcing* their movement to their ultimate destination, which is differentiated from their start point, or *trailing mean*.

Figure 33: In a situation of positive feedback, the force imposed is away from the trailing mean, and square-law proportional to the distance from the mean¹⁰²

Figure 34: In a situation of negative feedback, the force imposed is toward the trailing mean, and square-law proportional to the distance from the mean¹⁰³



This mode of action of positive feedback is the opposite of negative feedback: the consequence is that negative feedback neutralises the enforcement otherwise exhibited by positive feedback.

As such, the macro practitioner targeting an *enforcement* outcome must identify a situation which has *escaped the normally observed countervailing force of negative feedback*, in a directly analogous manner that a practitioner of the Venture framework is seeking to identify a company, growing by positive feedback, yet which also is escaping competition or negative feedback.

Let's consider the commencement of an early stage credit crisis, which possesses positive feedback due to the circularity of the link between the pricing of collateral and the creditworthiness itself. Normally this would trigger a negative feedback reaction by a central bank in cutting interest rates or commencing monetisation activities.

However, there will also be genuine uncertainty as to exactly when, or by how much or if, a central bank will intervene. There are no rules governing when the protective, negative feedback reaction occurs precisely because it is overseen by humans who themselves will be subject to error in their understanding of market developments.

The implication reverts us initially to Taleb's premise: macro outcomes cannot be known with certainty. More specifically with regard to our example of when, or by how much or if, a centralised authority will intervene with a countervailing force, it is notable that even highly successful macro market practitioners who specialise in these situation types such as George Soros have conceded that they are absent "*a well developed theory that can explain or predict them.*"

*"There are almost always forces at work that would take us into far-from-equilibrium territory. They are resisted by countervailing forces. **Usually, the countervailing forces prevail, but occasionally, they fail.***

*That is when we have a change of regime or revolution. I am particularly interested in these occasions, but **I would be lying if I told you I have a well-developed theory that can explain them or predict them.**"*

George Soros, Soros on Soros, writing in 1995¹⁰⁴

However, we do not at this stage require a well-developed theory to simply *describe* the scenario in which positive feedback is not met by negative feedback and therefore when the enforcement outcome does occur. As Soros notes, "*usually the countervailing forces prevail, but occasionally, they fail*". Therefore, we can simply state, *positive feedback results in enforcement in outcome when the normal countervailing force of negative feedback is either absent, overwhelmed, or inverted.*

7.3 A conceptual diagram illustrating the scenario necessary for positive feedback to result in enforcement in macro markets

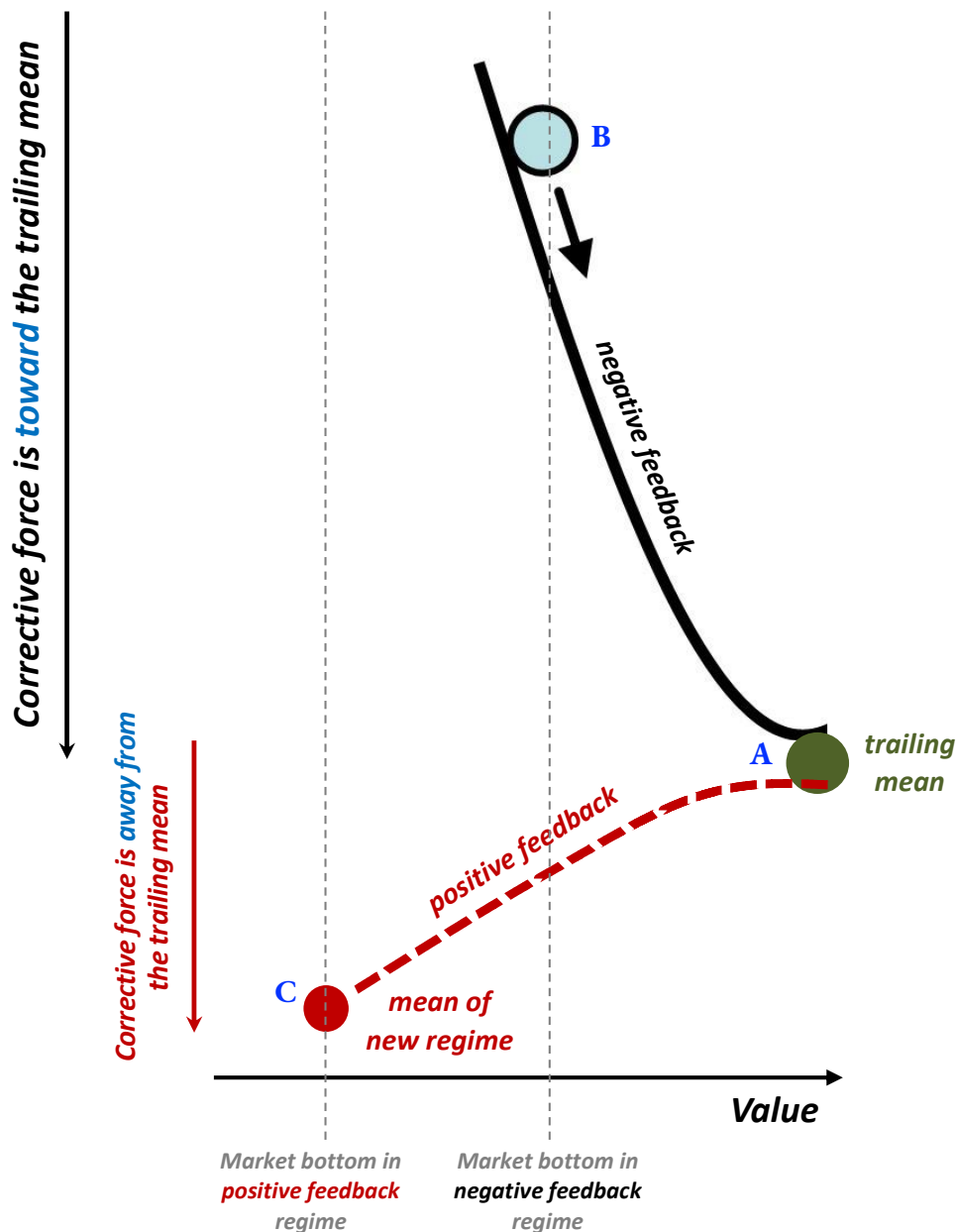
Let's illustrate with a conceptual figure representing bear market conditions in instances of both negative and positive feedback. The market value commences at **A**, which is the trailing mean, and in normal non-credit crisis market corrections, the value of the market may deviate from **A** to **B**, and from **B** back to **A**, that is, normal market deviations within conditions that overall maintain equilibrium through negative feedback mechanisms including greater buying of the market by investors at low valuations and central banks lowering interest rates or monetising in instances of steeper deviation.

However, now let's introduce an early stage credit crisis, which possesses positive feedback due to the circularity of the link between the price of collateral and the creditworthiness itself, and as such threatens to much more significantly deteriorate corporate earnings, and by self-reinforcement introduces the risk of the path from A to C.

In this example, therefore, the positive feedback enforcement outcome would occur when, for whatever reason, the entity responsible for negative feedback (in this example the central bank) either takes no action, is overwhelmed, or takes inverted action.

Figure 35: For a normal bear market where negative feedback exists, when the price B is below its average level A, a form of negative feedback is imposed, returning the price to A. However, in bear market circumstances where positive feedback develops and negative feedback is *somehow switched off, overwhelmed or inverted*, an *enforcement* outcome is imposed to significantly lower pricing, marked C.

As such, for bear markets, a \hookrightarrow shape is presented where negative feedback is replaced by positive feedback, and where the Y-axis represents the corrective force and the X-axis represents the security value¹⁰⁵.



7.4 Logic dictates that instances of *judgement error, stigmatisation, or conflict of interest at the entity responsible for negative feedback may trigger the behavioural switch which disallows or inverts its normal role*

The illustration provided by Figure 35 is useful as a guide to help us more clearly describe the macro conditions in which positive feedback *enforcement* would occur.

Positive feedback results in *enforcement* in macro outcome when the entity responsible for negative feedback undergoes a behavioural switch which disallows, or inverts its normal role

As to what may trigger this behavioural switch, we put forward that under most conditions it will be circumstances, excluding the overwhelmed scenario, of either judgement error, stigmatisation, or conflict of interest at the entity normally responsible for negative feedback. This does not of course rule out other theoretical causes of such a switch, for example deliberate malice, corruption or infiltration at the negative feedback entity, which the intelligent investor must also aim to consider.

However, the most common circumstances defined as either judgement error, stigmatisation, or conflict of interest also allows us to identify the situation types where positive feedback in macro markets may be more regularly coincident with the absence of negative feedback and as such will result in *enforcement*, and therefore, position ourselves to identify real-world examples.

Figure 36: In macro markets, the entity responsible for negative feedback can have its normal role disallowed or inverted in instances of judgement error, stigmatisation, or conflict of interest¹⁰⁶

| | | |
|---|--|--|
| 1. When the entity responsible for negative feedback undergoes a behavioural switch which disallows or inverts its normal role, as a result of a judgement error | 2. When the entity responsible for negative feedback undergoes a behavioural switch which disallows or inverts its normal role, as a result of stigmatisation | 3. When the entity responsible for negative feedback undergoes a behavioural switch which disallows or inverts its normal role, as a result of a conflict of interest |
|---|--|--|

This final step of identifying the in-common characteristics of the situation types that may result in *enforcement* is central to achieving a business-like approach to addressing market uncertainty. We must achieve this identification for our intellectual framework to be calibrated to prospective real world developments such that we can achieve competitive action in the markets and not simply put forward an academic concept.

“Knowledge has no value unless it leads to successful competitive action.”

Georges Doriot, Manufacturing Class Notes, Harvard Business School 1937-1966¹⁰⁷

8. Historical case studies where *judgement error, stigmatisation, or conflict of interest* at the entity responsible for negative feedback disallowed or inverted its normal role, resulting in a macro market *enforcement* outcome

8.1 Case study 1: When a *judgement error* results in the entity responsible for negative feedback undergoing a behavioural switch which disallows or inverts its normal role

To illustrate the general principle of a judgement error resulting in the normal negative feedback entity undergoing a switch which disallows or inverts its normal role, consider the following thought experiment.

A car commences a journey, and unbeknownst to the driver, the accelerator and brake pedals have been swapped. As soon as the car begins to roll forward, even a touch on what the driver believes is the brake results in greater acceleration. As such, a process of positive feedback has commenced.

The driver’s natural reaction to the unexpected acceleration is then to slam on the “brake”, yet this again results in increased acceleration. The driver’s *judgement error* is not recognising that the pedals have been swapped, and the driver’s normal *negative feedback role* of slowing the car upon recognising excessive speed is *inverted*.

An *enforcement* outcome results, and the destination of the car has become predictable: into the roadside hedge.

Figure 37: A swap of the brake and accelerator pedal on a car creates positive feedback, and the normal corrective judgement by the driver – through negative feedback – is inverted. Subjected to this error, the driver’s action results in the outcome becoming predictable: the car ends up in the roadside hedge¹⁰⁸.



It is as if the driver is saying to the car “*I am trying to protect you*”, but instead, the driver’s later recognition is, “*my actions were responsible for harming you.*” The condition that results in this behaviour *was a judgement error by the human – a lack of knowledge of the appropriate pedal that would impose negative feedback.*

8.1 a) The response by governments in the West relating to the 2020 covid-19 crisis can be contended as form of this type of judgement error, with government lockdowns intended to help society, yet instead imposing a financial crisis

Defining that our macro protection framework seeks to recognise circumstances where a human judgement error results in the entity responsible for negative feedback undergoing a switch which disallows or inverts its normal role allows greater efficiency in identifying such developments, both on a historical and forward basis. As our examples detail, in most instances concerning macro markets, the entity responsible for negative feedback is government.

Democracy dictates that the government and its institutions should act in the interests of its citizenry, and therefore, also in the interests of stable economic development. However, the responsibilities of this *dual mandate* come into conflict when the interests of the citizenry are judged by the government to oppose the interests of stable economic development.

The covid crisis exhibited positive feedback in terms of its emergence properties: viral growth is self-reinforcing, and declining security prices co-incident with the spreading of the virus were also part of the set of conditions raising concern and most likely having an aggravating influence on Western governments to impose lockdowns which thereon deteriorated the fundamentals further and as such resulted in a second positive feedback dynamic.

The lockdowns also represented an inversion at the level of government. Central bank institutions had their normal role acting as a, broadly speaking, protector of economic conditions including financial markets, overwhelmed by the executive branches of government imposing lockdowns and as such imposing a dramatic economic shock: a switch to protecting the health of the populace *at the expense of financial markets*.

The contention that the imposition of lockdowns by governments was a judgement error, given the covid crisis still remains a politically sensitive topic, might seem a controversial statement. Let's instead state that it is certainly *possible* that the imposition of lockdowns was a judgement error. The median age of death of covid was above life expectancy¹⁰⁹, whereas more typical seasonal influenzas result in an average age of death modestly below life expectancy and prior atypical scares, such as the 2009 H1/N1 swine flu pandemic, which precipitated no lockdowns, resulted in an average age of death at less than half of life expectancy¹¹⁰. Sweden, which had no lockdowns, in 2020 and 2021 had an average excess death rate of 56 per 100,000 persons, half or lower of the equivalent excess death levels recorded in nations which imposed lockdowns, including the UK (109), Spain (111), Germany (116), and Italy (133)¹¹¹. The long-term consequences of lockdown policy including its direct effect on social and educational development in children, and its indirect consequences today of increased sovereign debt and lower real wages, are still subject to analysis¹¹².

“Fear of death interferes with reason, and people do things out of fear, which is actually harmful.”

George Soros, writing in 1995¹¹³

A broader truth is that a high speed of events degrades the potential for knowledge acquisition, thereby increasing the probability of judgement error. At the time that Western governments made the lockdown decisions, approximately just two months after covid-19 was first recognised¹¹⁴, the probability of judgement error was therefore high. A number of government ministers were themselves caught flouting the lockdown regulations, suggesting also a recognition that lockdown policy represented judgement error within government¹¹⁵.

The covid crisis also exemplifies the situation type where an understanding of human psychology – and the manner by which stress, and fear of death, can potentially interfere with reason, superseded an understanding of scientism. To the extent that the lockdown political response to the virus was an over-reaction, an expertise in virology possessed negative value with regard to predicting government behaviour. Instead, it was expertise in human psychology that was required, specifically the knowledge that under conditions of stress, herd following decision making by humans – lockdowns had already been introduced in Asia – dramatically increases.

Whether classified as a judgement error or conflict of interest, the covid crisis fits within our framework: the crisis presented the scenario where the entity responsible for negative feedback underwent a switch in behaviour which disallowed or inverted its normal role.

From the perspective of whether an intelligent market participant would impose macro protection upon the emergence of the virus, where the potential for assessing government action was still subject to opacity, the first requirement is that option pricing volatility is low, such that asymmetric protection constructs can be achieved with business-like, or *indifference*, characteristics.

Bill Ackman’s public comments with regard to the successful macro protection actions he took at the early stages of the crisis reveal his thinking exactly along these lines, and comparable to the approach of Nassim Nicholas Taleb prior to the 1987 stock market crash. Whilst Ackman was concerned with regard to the trajectory of the virus, the core driver for his action in protecting his fund was that the cost of protection was extremely low. As Ackman put it “*if you looked at the credit spread indices, they were actually tighter than all time tights.*”

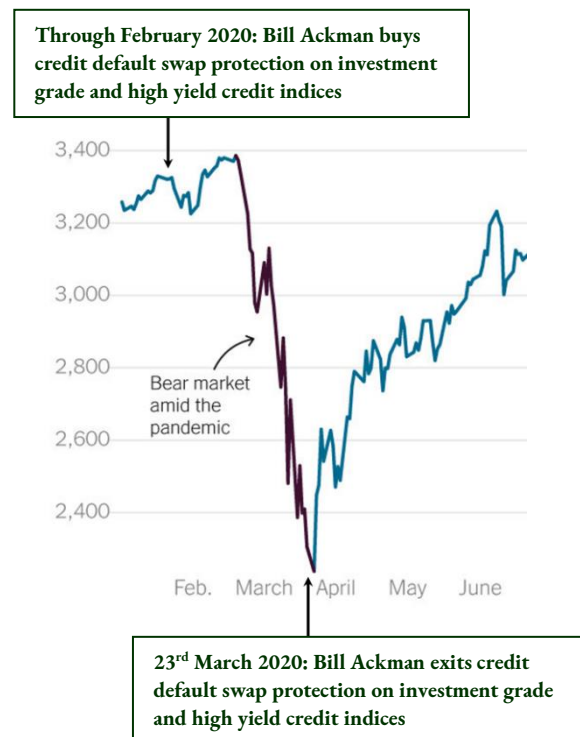
Figure 38: Bill Ackman’s purchase of protection preceding the 2020 covid crisis was business-like, focusing on the low pricing of credit default swaps, allowing protection with *indifference* characteristics¹¹⁶

“We were thinking about hedging this covid risk, and credit spreads were extremely tight.

And we thought it was an interesting *asymmetric* that even without a virus risk, just the theory that how much tighter could credit spreads really get –

If you looked at the credit spread indices, they were actually tighter than all time tights, once you took out a few esoteric credits that were substantially wider than the rest of the credits in the indices.”

Bill Ackman, Pershing Square earnings call, Q1 2020¹¹⁷



The financial bear market corresponding to the crisis was both steep in its gradient but also relatively short lived, with a market recovery having occurred by summer 2020. The speed of recovery is consistent with our framework for macro protection which dictates that a return to equilibrium conditions can recur when the entity responsible for imposing negative feedback is again empowered, and acts with sufficient impact such that the positive feedback that caused the crisis is reversed.

As the crisis developed, the Federal Reserve initially took insufficient negative feedback action relative to the magnitude of the crisis, cutting rates by 1.5% and announcing monetised purchases of treasuries at up to \$700bn¹¹⁸. Realistically, these initial actions from the Federal Reserve in terms of its absence of sufficient negative feedback commensurate with the prospective financial shock consequence of nationwide lockdowns, were due to the dual mandate of the Federal Reserve that also requires it to not act in a way which exacerbates inflation.

Logic dictated the outcome thereon actually observed: it was only following lockdown announcements and a 35% decline in the S&P500 that on March 23rd that the Federal Reserve announced policy action that allowed the force of its negative feedback to become the dominant factor, announcing monetised purchases of treasury securities would shift to *unlimited* –

“In the amounts needed to support smooth market functioning and effective transmission of monetary policy to broader financial conditions”, and that interest rates would remain at zero until “the economy has weathered recent events and is on track to achieve its maximum employment and price stability goals”¹¹⁹.

On the same day, Bill Ackman, acting consistent with an understanding of the dynamics at play, also announced he was exiting credit default swap protection and using proceeds to reinvest further in equities¹²⁰. The Federal Reserve’s monetised purchases of treasury securities over the next two months reached \$3 trillion, resulting in almost a double of US money supply.

Scott Pelley: “So you simply flooded the system with money?”

Jay Powell: “Yes, we did.”

Jay Powell, Chairman of the Federal Reserve, speaking to 60 Minutes, May 2020¹²¹

Incidentally, the highly amplified pace at which the Federal Reserve’s purchases of treasury securities thereon occurred resulted in a decline in US government bond yields to multi-decade lows, presenting *indifference* characteristics for a short sale of those treasuries, at the same time as the monetisation that funded those purchases resulted in the pre-conditions precipitating multi-decade highs in inflation¹²². The subsequent normalisation in treasury yields, still ongoing at the date of this white paper, has additionally been a development for market participants to consider, albeit has not resulted in macro shock conditions in its own right.

8.2 Case study 2: When *stigmatisation* results in the entity responsible for negative feedback undergoing a behavioural switch which disallows or inverts its normal role

8.2 a) *The decisions taken by the Federal Reserve preceding the 2008 credit crisis can be put forward as a form of this stigmatisation, their concern of being labelled as failing to address inflation preventing a normal proactive response to a deteriorating credit crisis trajectory*

As the covid crisis illustrated, when government entities hold *dual mandates*, these mandates may come into conflict, and as a result the entity normally responsible for negative feedback may be unwilling to act. This second case study examines a situation where the fear of prospective *stigmatisation* for violating one aspect of the dual mandate prevents the government entity from fulfilling its second responsibility of providing negative feedback.

Our assessment is that this condition, where the normal imposition of negative feedback is prevented by stigmatisation, was a central feature of the 2008 credit crisis. It is also true that the crisis had a certain build-up independently, predatory lending in the form of subprime mortgages targeting low-income homebuyers, excessive risk-taking by global financial institutions, a continuous build-up of toxic assets within banks, and the bursting of the United States housing bubble¹²³. However, this build-up could also have realistically been addressed by the higher impact tools available to the Federal Reserve to support markets, assuming a match to those used to alleviate the covid crisis, including lowering interest rates and monetisation activities.

The dual mandate of the Federal Reserve – to promote low unemployment and maintain stable prices – can result in the stigmatisation of negative feedback through monetary easing when already high inflation would also be worsened by monetary easing. As we have noted, this prospect of stigmatisation was also an aspect of developments within the 2020 covid crisis in terms of delaying the highest amplitude response of the Federal Reserve. However, it was in the 2008 credit crisis that the stigmatisation of negative feedback action by the Federal Reserve played the central role.

Figure 39: Leading up to the 2008 crisis, oil prices became unusually elevated, reaching \$200 per barrel in early 2008¹²⁴

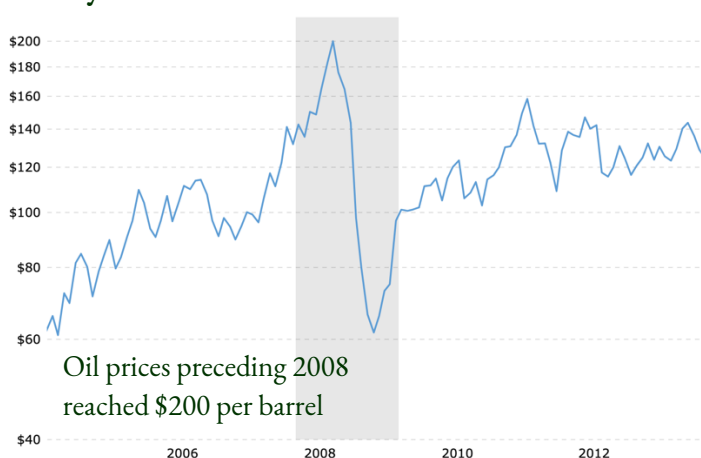
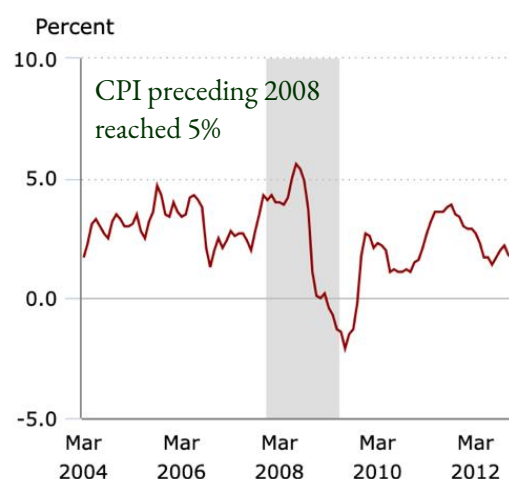


Figure 40: High oil prices pushed the consumer price index in early 2008 to above 5%¹²⁵



The period preceding the 2008 crisis had seen a run up in oil prices to elevated levels, as China’s then rapidly growing demand for oil (up 150% over the trailing 10 years) had coincided with declining oil production from key oil fields in the US, the North Sea, Mexico, and unchanged production in the Middle East¹²⁶. The period also preceded the shale oil boom in the US, and as such, oil market conditions were tight¹²⁷.

As the 2008 crisis approached, US inflation had reached 5%. This presented the stigmatisation on cutting interest rates that would have otherwise addressed the underlying deterioration in credit quality that was leading to crisis emergence. Confirmation that this stigmatisation was the driving force delaying interest rate cuts is provided by transcripts of the three Federal Reserve meetings that took place during the summer of 2008, immediately before the crisis worsened. Across these meetings, Federal Reserve governors mentioned inflation 919 times, unemployment 98 times and scenarios of prospective systemic risk or crisis 58 times¹²⁸.

It was not, as might be assumed, that preceding the credit crisis Federal Reserve governors were not concerned. They were concerned, but monomaniacally about inflation, based on data dependence, rather than the emerging credit crisis, which required a greater reasoning component. Their fear of the prospective stigmatisation from failing to address inflation continued even after the bankruptcy of Lehman Brothers, when meeting transcripts reveal Ben Bernanke's apprehensions relating to inflation as the explicit justification for not cutting interest rates. Within six months, the S&P500 had declined by almost 50%.

"I believe that our current funds rate setting is appropriate, and I don't really see any reason to change. Cutting rates would be a very big step.

We should be very certain about that change before we undertake it because I would be concerned, for example, about the implications for the dollar, and commodity prices."

Ben Bernanke, Fed meeting notes, September 16th 2008¹²⁹
(one day following the bankruptcy of Lehman Brothers)

A common thread amongst these case studies is also that their precipitation is co-incident with a period of low option pricing and tight credit spreads, resulting in the availability of highly asymmetrical constructs allowing *indifference* macro protection.

A potential reason for this may be that in order for dangerous conditions to be created, a lack of market concern on volatility and credit may also be a factor, resulting in unprotected exposures. This may be because during credit expansionary periods, a reverse form of positive feedback exists, where easy credit conditions allows poor quality issuers to operate with low credit impairment rates, falsely signifying benign fundamentals.

Bill Ackman also largely protected his funds during the 2008 credit crisis, benefitting again from the ability to buy protection cheaply rather than, as per his comments, an explicit forecast of a crisis.

"While we made large profits hedging the financial crisis in 2008, we made no material macro-related investments after the crisis until February 2020.

While we have continued to identify interesting asymmetric macro investments over the past three years, there is no certainty that similar opportunities will present themselves."

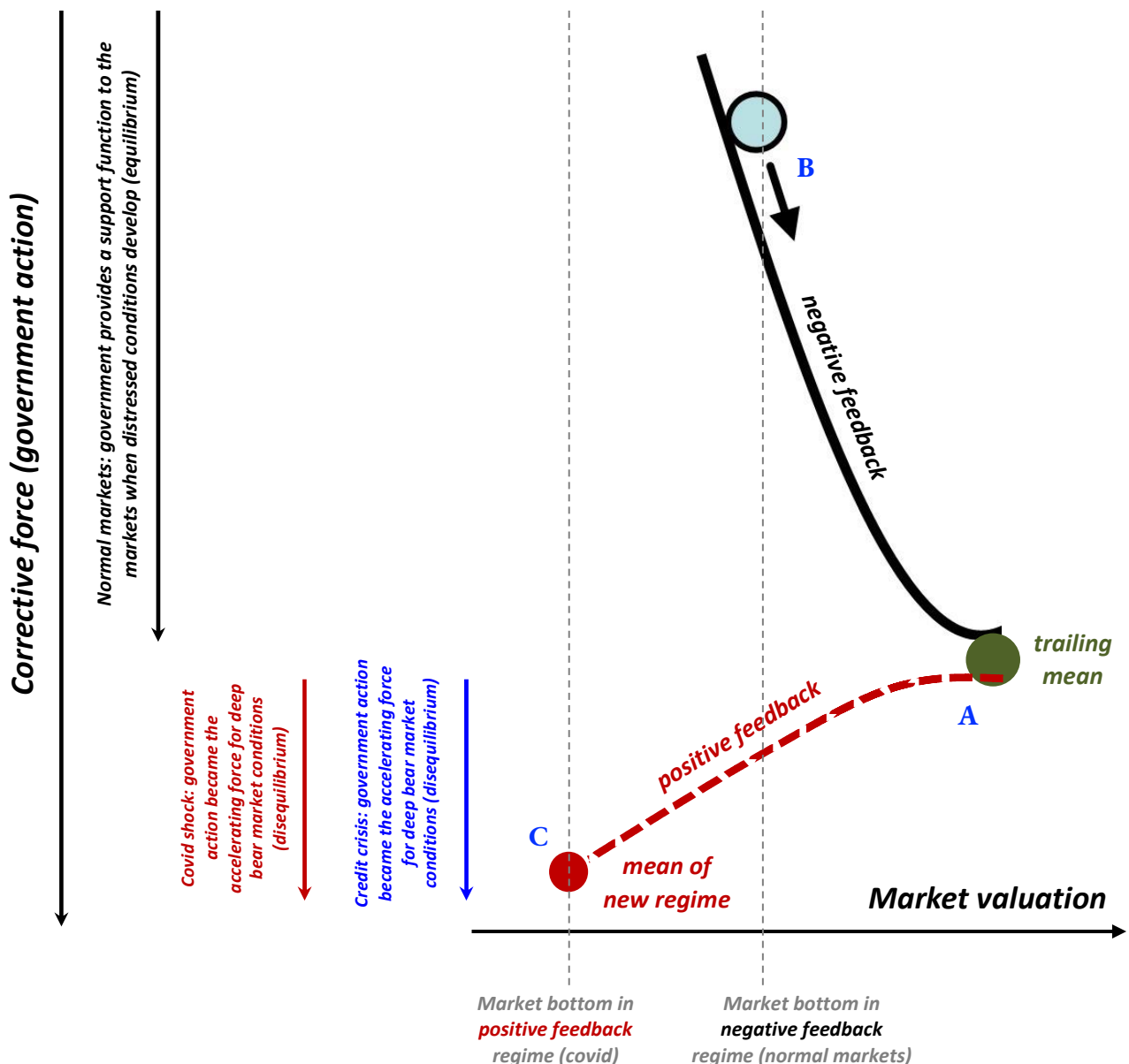
Bill Ackman, Pershing Square Holdings Annual Report, 2022¹³⁰

8.2 b) Both the 2020 covid shock and the 2008 credit crisis can be recognised as matching our theory of positive feedback described in section 7.3; the conditions presented switched the role of government from market support function (negative feedback) to exacerbating decline (positive feedback)

Had the crisis events not been present in either 2020 or 2008, the trailing mean A may normally in market corrections deviate to B, yet would then be subject to negative feedback leading reversion back to A.

However, in both the 2020 covid shock and the 2008 credit crisis, the government entities responsible for imposing negative feedback as a result of either judgement error, conflict of interest or stigmatisation, exacerbated positive feedback, reinforcing the deterioration in both market conditions and the fundamentals at the same time, and therefore resulting in a much larger market deterioration path, from A to C.

Figure 41: Both the 2020 covid shock and the 2008 credit crisis can be recognised as matching our theory of positive feedback described in section 7.3; the conditions presented switched the role of government from market support function (negative feedback) to exacerbating decline (positive feedback)¹³¹



8.3 Case study 3: When a *conflict of interest* results in the entity responsible for negative feedback undergoing a behavioural switch which disallows or inverts its normal role

As our prior two examples have illustrated, when government entities hold *dual mandates*, they can come into conflict, and as a result the entity normally responsible for negative feedback may be unwilling to do so. This third case study examines a situation where a *conflict of interest* within the government entity responsible for negative feedback results in it undergoing a behavioural switch which disallows or inverts its normal role.

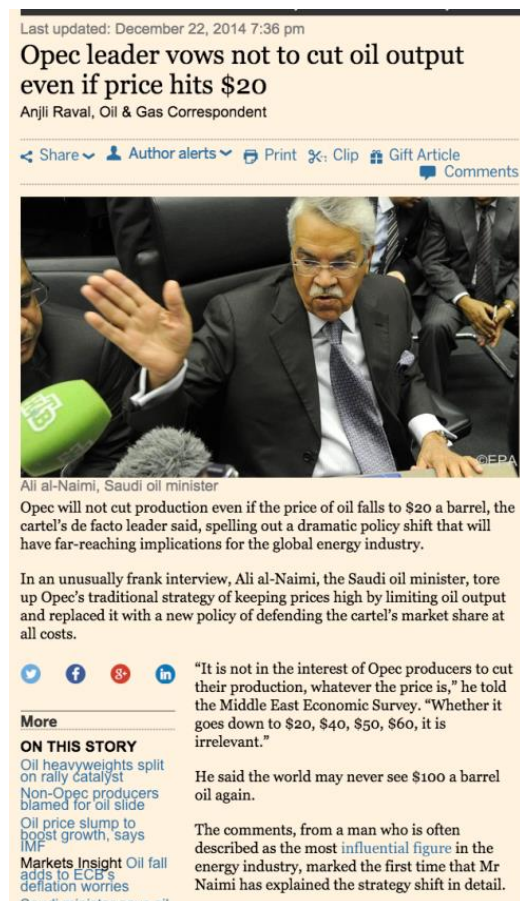
The example reviews how the decision making of the OPEC cartel in the period from December 2014 to December 2015 resulted in positive feedback and an *enforcement* outcome in the oil market. The period inverted the typical functioning of the cartel which normally imposes negative feedback on oil prices by instructing members to cut volumes during bearish markets, stabilising prices and allowing for superior long-term planning and budget balancing, despite lower short-term revenues at each OPEC member.

However, a conflict of interest exists in the design of cartels resulting from the cartel leader, in the case of OPEC, Saudi Arabia, being incentivised not only by production economics but also by the geopolitical advantages derived from their leadership position. This results in *dualist* interests which are differentiated from other OPEC members whose only interest is in production economics.

The cartel leader’s geopolitical status is proportional to the cartel’s overall relevance relative to the global oil market, and as such Saudi Arabia had uniquely the most to lose from a scaling new market entrant that would diminish OPEC’s relevance. As a result, Saudi Arabia, also lowest cost producer, when threatened by the new market entrant, was incentivised *as a result of a conflict of interest to undergo a behavioural switch which inverted its normal role* of negative feedback to positive feedback, and so responding to low oil prices by *increasing* volumes, despite the disproportionate financial impairment that this decision imposed on smaller cartel member countries as a result of the even steeper oil price declines that resulted.

This conflict materialised in 2014 when OPEC, led by Saudi oil minister Ali Al-Naimi, assessed US shale oil as such a threat. Al-Naimi reasoned that OPEC should change its strategy from maintaining price stability (negative feedback) to defending the cartel’s market share relative to US shale at all costs (positive feedback)¹³³. At the November 2014 meeting, Al-Naimi announced a new strategy focused on improving market share, and refusing to sign on to a proposed output reduction meant to boost prices. Instead, he instructed members not to cut production, even if prices fell further¹³⁴.

Figure 42: OPEC signals they will not lessen production as the oil price drops¹³²



“It is not [any longer] in the interest of OPEC producers to cut their production, whatever the oil price is. Whether it goes down to \$20, \$40, \$50 or \$60 it is irrelevant. The world may never see oil at \$100 a barrel again.”

Ali Al-Naimi, speaking to the Middle East Economic Survey, December 2014¹³⁵

The oil price, trading at \$60 when Ali Al-Naimi made his comments, traded with low volatility between \$50 and \$70 for the next three months, likely due to market participants failing to understand that both positive feedback and *enforcement* were now in place. However, within 12 months of Al-Naimi's comments, the oil price had declined by more than 50%.

Figure 43 provides an overview of the period in which OPEC acted counter to its normal operations in comparison to the prevailing periods. The Y-axis represents the oil price, the X-axis volume of production. Typically, represented by the purple dots, oil production volume is proportional to price, resulting in negative feedback and price stability.

However, from late 2014 through 2015, as conveyed by the orange dots, the relationship inverted. Oil production became inversely proportional to price, and resulting in positive feedback, accelerating prices to the downside.

As this white paper has noted, intellectual insight must be calibrated to real world developments in order for successful competitive action to be achieved.

Figure 45 reveals our theoretical framework as calibrated to the reality in Figure 43 (rotated 90°).

The market value commences at **A**, which is the trailing mean, and in the normal cartelised market the pricing of oil may deviate from **A** to **B**, and from **B** back to **A**, that is, normal market deviations within conditions that overall maintain equilibrium through the negative feedback mechanisms imposed by the OPEC cartel.

However, when we impose the positive feedback scenario of the cartel undergoing a behavioural switch which inverts its normal role, a new path is introduced, from **A** to **C**, which results in an *enforced* outcome with considerably lower oil pricing (inflation adjusted, the oil market bottom in 2015 was 40% below the prior market bottom in 1998)¹³⁷.

At the bottom of the oil bear market in 1998, Warren Buffett had purchased oil futures. However, he undertook no such purchases at the bottom of the OPEC-enforced bear market in 2015, despite its 40% lower pricing below 1998 in inflation adjusted terms.

Nevertheless, our argument as laid out in this white paper, is that the intelligent investor using a business-like approach could have foreseen the impact of OPEC's action as it commenced in December 2014, and additionally taken advantage of low oil pricing at the market bottom in 2015 as OPEC's unity began to shatter in recognising that Al-Naimi's market share policies were not succeeding¹³⁹.

Figure 43: The normal relationship between oil price and production broke down, Dec 2014-Dec 2015¹³⁶

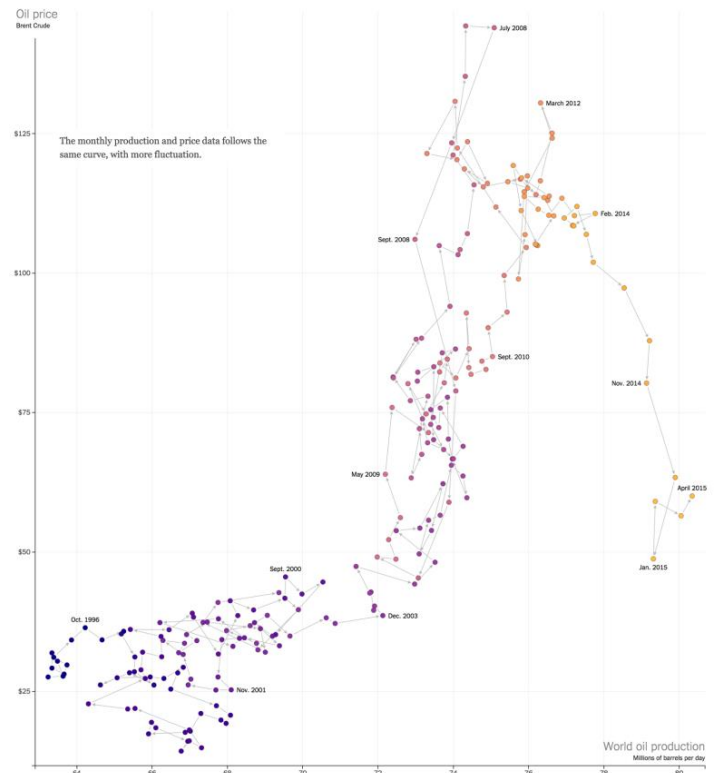


Figure 44: Buffett's purchases of oil in 1997-8 were not repeated in 2015¹³⁸

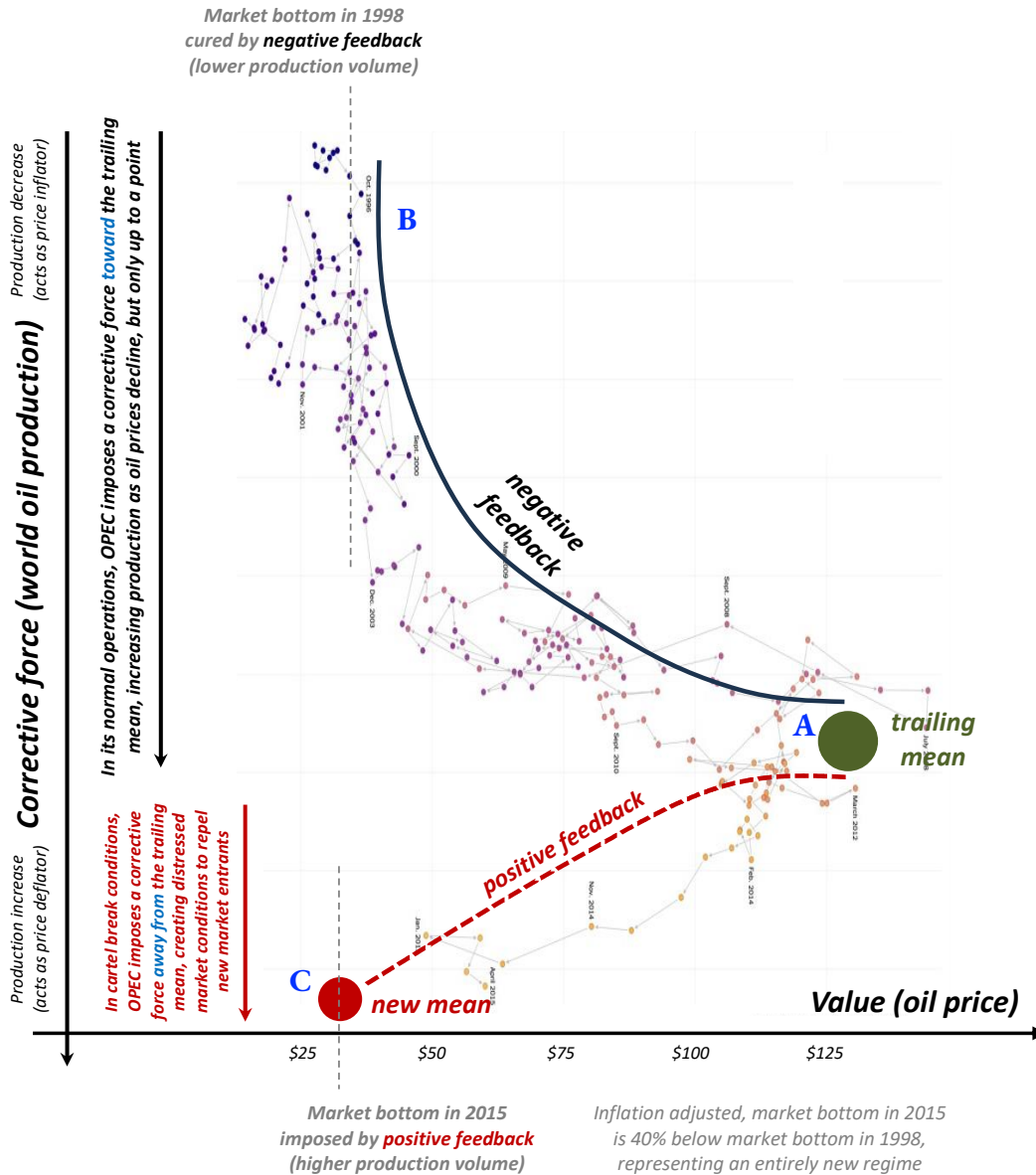
The New York Times

INVESTING IT: THE SUMMER SWOON -- THE MASTER INVESTOR; Is There a Bear on Mr. Buffett's Farm?

By Robert D. Hershey Jr.
Aug. 9, 1998

In recent years, Berkshire took a large position in oil futures, of which contracts for 14 million barrels remained at the end of 1997. And the company stunned the metals market last year by buying 111 million ounces of silver.

Figure 45: The conditions of the 2015 OPEC cartel break revealed a match of reality to theory; the entity responsible for negative feedback underwent a behavioural switch which inverted its normal role, as a result of a conflict of interest. The outcome was the same } shape presented by Figure 35, where the Y-axis represents the corrective force and the X-axis represents the security value¹⁴⁰.



Conclusion

Optimal macro protection requires a sophisticated theory structure, yet thereon drives outperformance

Traditional, unhedged approaches to fund management that achieve excellence in stock selection can deliver strong long-term results, however, they also expose their unit holders to significant downside risk during periods of steep market dislocation. These periods by their nature may also be co-incident with unit holders themselves being subjected to increased liquidity requirements, crystallising losses at precisely the wrong time. The contention of this white paper is that an intelligent fund management approach can gain advantage by investigating a differentiated route to address the shortcomings of unhedged investing.

The white paper's conclusions reject the conventional hedge fund design that achieves de-correlation only by imposing hedging throughout the market cycle, a rejection on the basis that this design results in significant costs to unit holders due to the absence of a more sophisticated intermittency framework for macro protection. Our observation is that when fund managers hedge throughout the market cycle they typically also seek to overcome their hedge costs using leverage. However, the use of leverage presents a danger in its own right, and the stress upon the fund manager that leverage appropriately imposes can also result in a poor decision making heuristic, a concept that this white paper has explored.

Instead, the white paper argues that a business-like approach to macro protection can be designed to restrict protective action to those conditions that possess both a low market pricing of option volatility allowing the purchase of protective constructs with *indifference* characteristics, as well as those in instances when significantly heightened market downside probability is recognisable once the simple *initial conditions* that drive disequilibrium outcomes in financial markets are correctly derived.

When comparing investment funds, including listed vehicles such as Pershing Square Holdings, a question which often arises is how differences in the more readily ascertainable fees charged should be judged. However, the implication from our work is that it is the *design* of the fund's investing model that in many cases will be the much more significant variable, as the common decision of most hedge fund managers to impose hedges throughout the market cycle results in a far higher 'management fee' than the commensurately small deviations in the more readily ascertainably presented fee percentages can adjust for.

Whilst the intermittent hedging fund design consistent with the conclusions from this white paper represents a departure from traditional hedge fund models, our contention is that the design is commensurate with performance advantage. It is notable that the form of intermittent hedging that our conclusion favours is also consistent with the hedging actions observed in deployments by Bill Ackman.

Enforcement occurs when positive feedback is left unimpeded

The white paper has reviewed that great investors prioritise those highly selective opportunity types that offer either or both of *indifference* or *enforcement*, consistent with Kelly ratio principles. In the case of the Venture framework, Sarah Tavel's comments that "*our success comes down to finding a company that escapes competition*" is a statement that *it is the negative feedback that growing companies normally attract from competitors* that Benchmark Partners seeks to avoid. When positive feedback is in place, and negative feedback is avoided, *enforcement* occurs as a result of the definitional property of positive feedback: the force imposing change increases as the change occurs.

In order to identify positive feedback in macro markets, the investor must understand the characteristics that define its presence. Our observation is that many investors wrongly classify *momentum* as positive feedback and hence stipulate positive feedback as a common process. However, this is incorrect. For positive feedback to be present in the macro markets both the security price *and* the fundamentals must change in the same direction, and in a self-reinforcing manner. Momentum stock buying or selling instead is characterised by negative feedback. At its inception it may trigger some reinforcement through herd behaviour, however, because momentum buying does not change the fundamentals, this ceases and ultimately inverts when stress levels change as a result of the resulting price development caused. At this stage, a full mean reversion then occurs.

Positive feedback can be defined more precisely as existing only when a square law relationship results in an amplification of the force imposing change as change occurs. It is found in growth situations where the force is the square of size, be it the dominance of an army in combat, or the growth of a virus, or of a network. Debt crises fit the same relationship: it is the growth of debt that leads to the deterioration in the pricing of debt, which then, by making each debt refinancing more expensive, becomes a square law force accelerating the growth of debt.

Similarly, in freely floating commodity markets which possess negligible variable costs of production and discretion over immediacy of production volumes, such as oil, an initial linear price decline incentivises a linear increase in volume to maintain stable producer revenues. However, because the change in volume also impacts price, there is factoring of the two linear relationships resulting in the square law outcome and the commencement of positive feedback.

When positive feedback is left unimpeded this results in large moves in price, because the fundamentals and the security price both change in the same direction. Large moves to the downside across equity indices are naturally unwanted. However, humans cannot explicitly task institutions with rules imposing negative feedback onto markets as doing so would disallow the market function.

"Everybody would agree that excessive volatility is harmful – but there is no constituency for dealing with it."

Paul Volker, Former Chair of the Federal Reserve, speaking in 2000¹⁴¹

Instead, what is present is institutions that possess *dual mandates*, with one aspect of that mandate only indirectly targeting negative feedback. In certain circumstances, including judgement error, stigmatisation, or conflict of interest, the other aspect of the mandate dominates, and the imposition of negative feedback is either absent or inverted.

It is in these circumstances that positive feedback can be left unimpeded and the resulting macro outcome is consistent with *enforcement*, yet only for the period of such time that negative feedback does indeed remain absent.

Only simple can be smart; the simple initial conditions necessary for protective deployment to occur

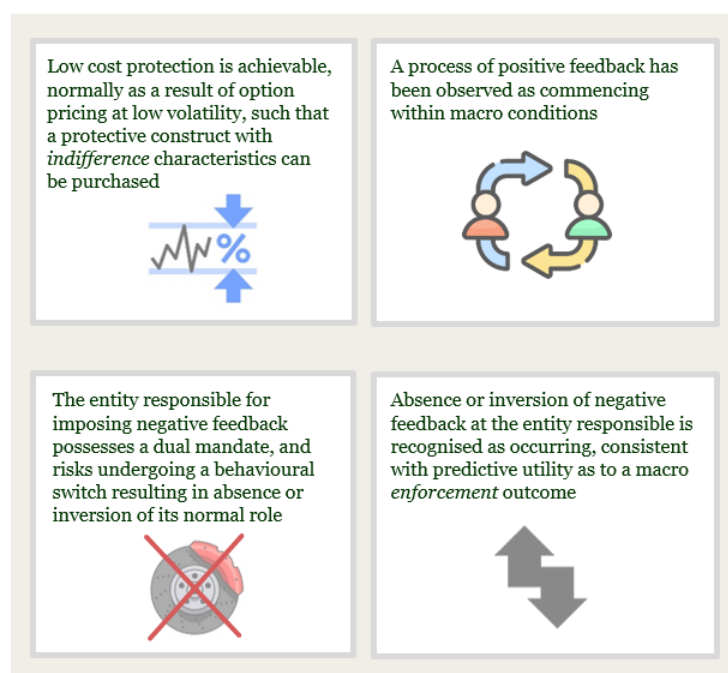
The white paper has also pointed to academic studies which reveal that when demand is placed on humans to process an unusually high volume of information, their otherwise competent decision making relating to their existing straightforward tasks declines, a type of *information stun* reaction. We would suggest that the popular acronym, *keep it simple, stupid*, might be more insightfully, yet perhaps counter-intuitively, worded: *only simple can be smart*. The implication is that an investor operating across multiple domains must be guided by simple, yet powerful, foundational *first principles* at the same time as within each domain establishing a set of simple *initial conditions* for allocation and whose logic holds so well together precisely because they have been *derived* from the same *first principles*.

“We all know people who have flunked, and they try to memorise their lessons better, and they try to sprout back.. but it doesn’t work. The brain doesn’t work that way. You’ve got to array facts on a theory structures which answer the question ‘why? And if you don’t do that, you just cannot handle the world.”

Charlie Munger, the Psychology of Human Misjudgement, 1995¹⁴⁶

The set of simple *initial conditions* that must be met for a protective allocation which adheres to our framework for macro protection to be made, are: 1) a low cost of protection is achievable, normally as a result of option pricing at low volatility, such that a protective construct with *indifference* characteristics can be purchased, 2) a process of positive feedback has been observed as commencing within macro conditions, 3) the entity responsible for imposing negative feedback possesses a dual mandate, and risks undergoing a behavioural switch resulting in absence or inversion of its normal role, 4) absence or inversion of negative feedback at the entity responsible is recognised as occurring, consistent with predictive utility as to a macro *enforcement* outcome.

Figure 46: Our framework for macro protection is summarised by *simple and understandable initial conditions* which must be met for protection to be deployed¹⁴²



Successful outcomes prioritise an understanding of human behaviour above ‘macroeconomic theory’

“*A greater uncertainty principle exists in financial markets*”, writes Nassim Nicholas Taleb¹⁴³. Yet the question is *why*. Whilst there are a large number of, and complexity of, variables that serve as inputs to financial market outcomes, this in isolation would not result in a greater uncertainty principle but in a temporal inability to understand the outcome until all of the information was processed.

The answer to the *why* is that in financial markets, a greater uncertainty principle exists because humans engaging in studying other humans are often publicly discussing their findings, which can influence the behaviour of the humans they are studying. Alternatively, the humans engaging in studying other humans may also be conducting actions based upon their findings (such as buying a security, and therefore causing movement in that security price), also prospectively influencing the behaviour of the humans linked to the security they are studying.

This invalidates scientific method as a result of the interference in the data by the communications made by, or the actions of, the scientist during the experiment. The implication, as Taleb adds, is that “*economic theories that have been based on a physics-like methodology are largely invalidated*”¹⁴⁴. Correspondingly, the differentiation of our approach from doctrine is that it does not focus on an understanding of ‘macroeconomic theory’, but on an understanding of humans, and in particular the dynamics that result in those humans overseeing the entity responsible for imposing negative feedback facing a higher probability of undergoing a behavioural switch which results in a discontinuation of the equilibrium conditions that much of macroeconomic theory aims to describe.

Recognising the intermittency of market opportunity reveals the multi-domain approach as optimal

The consequence is that a sophisticated understanding of macro protection dictates only an intermittency of opportunity, for example, in 2008 and 2020. However, intermittency is also a characteristic of the optimal approach that we contend for other investment domains. For example, merger arbitrage really shines when the frequency of competitive bidding situations rises, yet this only occurs intermittently. Similarly, for Buffettian allocations, long periods can pass where only limited new opportunities are found (for the period 2004-2014, the turnover of the stock portfolio of Berkshire Hathaway averaged just 20% per annum)¹⁴⁵, and for Venture framework allocations, we have also reviewed in prior white papers that it is only during periods of universal technological shift, which can be decades apart, that a pleasing frequency of robust opportunities exists.

Correctly recognising this intermittency is not a shortcoming; it corresponds to correctly recognising reality. It is the lack of recognition of intermittency that would be the problem, and *is* the problem that handicaps single-domain approach investment strategies. The optimal design that addresses intermittency is instead the multi-domain approach, yet which must be informed by simple, yet powerful, foundational *first principles* and at the same time as within each domain establishing a set of simple *initial conditions* for allocation and whose logic holds so well together precisely because they have been derived from the same *first principles*. This approach, just as the breakaway group in science rejects a trailing paradigm, or as Bruce Lee rejected style in combat, *is the intelligent approach to capital allocation and favours the focal point as first principles rather than an established style doctrine*. This approach allows the allocator to adapt to the most promising opportunity at the time, whilst retaining the unchanged set of *first principles*.

For example, at the time of writing, we would contend that both Buffettian and macro opportunities in the market are relatively limited, and yet the AI era is resulting in a universal technological shift commensurate with strong opportunities for the deployment of the Venture framework.

An intermittent deployment of macro protection remains in adherence with a Buffettian assumption set

Based on the findings of this white paper, intelligent investors must also recognise that it is acceptable to be exposed to the form of normal market variance around an equilibrium point, as these moves will in due course return to the mean as a result of negative feedback. Hedges should not be used to expensively impose additional “fees” to counter this modest volatility, but only to address the much rarer emergence of disequilibrium conditions and with a motive of both protection and profit.

However, readers may still view our conclusion in favour of the intermittent deployment of macro protection, at least initially, as sitting at odds with Warren Buffett’s contention that no prediction of short term market moves is possible, and the implication is that there may be some stigmatisation risk attached to our mode of operation.

“No one can predict short-term market movements with any degree of accuracy”

Warren Buffett, Berkshire Hathaway shareholding meeting, 1997¹⁴⁷

However, a closer examination reveals compatibility. Our interpretation of Buffett’s comment is that he is primarily rejecting the naïve concept that there is a predictive utility with regard to market movements in normal conditions, where instead a form of random walk process results in lower valuations being corrected by negative feedback dynamics as a result of both increased investor appetite in buying securities at lower valuations and by central banks acting as an additional support for markets during periods of detraction.

Adding to this random walk hypothesis, as this white paper has outlined, the utility of scientific method is the lowest in macro markets, and as such, macro market participants too must recognise that in most scenarios they will be dealing with genuine uncertainty. Such uncertainty is again consistent with the comments from Buffett, and it is cured only by those rare macro opportunities possessing *indifference* and *enforcement* properties.

Therefore, our conclusion is also in favour of the random walk hypothesis *during normal market periods which exhibit negative feedback*. Negative feedback by its nature is a force that decreases in its magnitude as movement toward the equilibrium value occurs. As such, modest and broadly random market volatility, around equilibrium, is also dictated as a definitional feature of normal market conditions.

It is additionally notable that Buffett’s word choice was no *one* can predict short term market movements – Buffett is making a further statement as to the limitations of human intellectual capacity. However, if we accept this aspect of his statement as correct then we, and Buffett, must also accept that those humans overseeing the institutions normally responsible for imposing negative feedback will possess the same deficit. And as such, their same inability to understand market developments also results in instances of error in their decision making.

It is once we possess this recognition that the power of our macro protection framework is revealed. Our aim is not to target an understanding of a global financial system whose complexity and interference characteristics result in it being not only beyond our intellectual means but also beyond the means of economic theory. Instead our aim is to recognise through *simple and understandable* logic, and for the same reason that Buffett focuses on simple and understandable businesses, when the humans overseeing those institutions normally responsible for imposing negative feedback have shifted to an absent or inverted orientation. And a shift that, often under the pressure and stress imposed by emerging conditions of positive feedback combined with the conflicts resulting from a dual mandate, is resulting in a damaging mistake that other market participants will be yet to sufficiently recognise.

Our first principles, linked to human psychology, combined with Charlie Munger's additional insights, are the building blocks to establishing a well-developed theory to greater describe the conditions triggering behavioural switching at those entities normally responsible for negative feedback

As this white paper has reviewed, the Buffettian approach differs from traditional "value investing" in its more deliberate focus on identifying the *human psychological tendencies* that result in the decision making of other market participants becoming *unintelligent*. The identifiers used by Buffett and Munger include the *first principles* in section 1 of this white paper, as well as the broader set of human psychological misjudgement biases that Charlie Munger recognised in his 1995 essay *The Psychology of Human Misjudgement*¹⁴⁶.

Broadly speaking these *human psychological tendencies* are all linked to the human deployment of the instinctive *system one* yet in circumstances in the modern age where the more deliberative *system two* would have been the more rational choice. Hence repeating forms of human behaviour are observed across different situations.

"The one thing that I would say I've learned the past 40 years is **these patterns – it is the same old story so often, just with different characters, different times, different plots.**"

Paul Tudor Jones, speaking to Lloyd Blankfein in 2018, regarding the 1987 crash¹⁴⁸

These tendencies have resulted in sufficiently wide enough dislocations at the level of the single stock to empower the returns commensurate with the Buffettian approach and Venture framework. As such, it can be stipulated that they must also be a factor, and quite possibly the dominant factor, that results in the behavioural switching observed at the government entity normally responsible for negative feedback in the instances when this role is disallowed or inverted, and resulting in an *enforcement* outcome.

In other words, it is the *human psychological tendencies* that lead to the repetitive form of judgement errors, stigmatisation or conflicts of interest that then also lead to the behavioural switching phenomenon. This understanding fills the intellectual gap that George Soros spoke of, in reflecting he was absent a "*well developed theory that can explain or predict*"¹⁴⁹ the shift in conditions that resulted in the failure of the countervailing forces, or negative feedback. Whilst Soros also spoke of the differentiation of the Buffettian approach from his own¹⁴⁹, he has not publicly recognised that his search for a more complete framework would have been achieved by a greater investigation of that same differentiation. That this paper has been able to bridge the gap and incorporate it into a unified framework is a further demonstration of the utility realised from the multi-domain approach.

The reason that our closer understanding of the Buffettian approach bridges this gap is a result of the divergence in underlying mode of thought between Soros, and Buffett and Munger.

Soros, like Taleb, focuses on human fallibility yet primarily from the perspective of the interference which characterises humans-studying-humans situations, and then combines this with a broader recognition of the disutility of scientific method within financial markets. Consequently his thinking is alert to *raised uncertainty*.

By contrast Buffett and Munger also focus on human fallibility yet primarily from the perspective of the disutility of certain *human psychological tendencies* in modern times. Consequently the thinking model of Buffett and Munger can achieve *an insight as to directionality*, for example, recognising stress triggering flight-to-safety also dictates a directionality toward the pre-existing herd orientation.

As such, the mode of thought of Soros leads to the recognition that humans at those institutions responsible for negative feedback *may* undergo a behavioural switch that disallows or inverts their normal role, because the disutility of scientific method will also result in error by these humans. However, it is the mode of thought of Buffett and Munger that can be deployed, even though they did not use it for this purpose, for the assessment of *when* humans at those institutions responsible for negative feedback undergo the same behavioural switch.

Figure 47: Our *first principles*, linked to human psychology, combined with Charlie Munger's additional insights, are the building blocks to greater describing a well-developed theory to determine the conditions triggering behavioural switching at those entities normally responsible for negative feedback



Whilst we do not, in this white paper, disclose an even fuller refinement of theory to describe *when* positive feedback can be recognised as possessing unimpeded characteristics, we would suggest that the intellectual steps required from those so far laid out are not overwhelmingly large. We can certainly demonstrate the general legitimacy of deploying the Buffett and Munger human psychological building blocks to raise our understanding of such critical periods.

For example, whether the covid lockdowns were an astute policy, or a *social-proof tendency*-influenced judgement error within government triggered by *stress-influence tendency* and *doubt avoidance tendency*, is something future generations burdened with the cost of higher national debt and lower real wages may still wish to subject to analysis.

However, certainly in the case of the 2008 credit crisis, we can point to Charlie Munger's recognition of the human *incentive super-response tendency*, *inconsistency-avoidance tendency*, *overoptimism tendency* and *availability-misweighing tendency* (inflation data was available, whereas recognising the emergent financial crisis required a greater use of reasoning), as behind Ben Bernanke's failure to cut rates. Jerome Powell did not repeat precisely the same pattern of decision making during the 2020 covid market crisis, where he recognised with greater speed that the threat from a high enough amplitude financial crisis justified the imposition of *inconsistency* onto his own record in maintaining stable prices. However, our building block structure remains consistent with events. Powell's initial hesitancy to impose sufficient negative feedback only occurred following his *overoptimism* that led to the lag in response to covid from the Federal Reserve, initially exacerbating the market crisis. The delay was in weeks rather than months – as unlike for Bernanke, the media spotlight placed upon the spread of covid resulted in a strongly *available* form of data as to the financial crisis that was emerging.

Finally, Munger's recognition of the human *authority-misinfluence tendency* and *reward and punishment superresponse tendency*, when combined with the conflict of interest existing in the design of cartels combined with the new market entrant as we have described, reveals the utility of the same building blocks in understanding Saudi Arabia's behaviour that resulted in cartel break conditions when the geopolitical power of Saudi Arabia in its unique position as OPEC's leader was threatened by the rise of shale oil in 2015.

From theory, to *sit back and think*. And then, when *initial conditions* occur, decisive protection action

As we have reviewed, the successful deployment of macro protection also requires the intelligent investor to clearly define in their mind the properties they are seeking to identify. Positive feedback is not simply an occurrence of momentum, but an emergence of a self-reinforcing relationship with square law properties that results in an amplification of the force imposing change, as change occurs.

Peter Fenton's reflection, which he believed was somewhat of a secret, was of the considerable value in his choosing to "*sit back and think*" about the question – what business model will he look back on in 5 or 10 years and recognise was growing by positive feedback, and unimpeded, today.

It is the two components of the phrase *sit back and think*, corresponding to making best efforts to *switching off system one* and *prioritising system two*, that the mindset for macro protection also must embrace. To regularly *sit back and think* as to whether positive feedback in a macro market is observable or developing. This alertness to identifying positive feedback in its early stages is combined with our derivation of the simple *initial conditions* that dictate when business-like protective deployment is highly advantageous. And those rare yet critical moments are when the intelligent investor deploys protection successfully, with conviction, and with attractive asymmetry in the context of both the lack of recognition by most other market participants as to the findings of this white paper and of the developing disequilibrium conditions that they face.

Footnotes

1. Dynamic Hedging: Managing Vanilla and Exotic Options, Nassim Nicholas Taleb, 1996 [\[link\]](#)
2. Ben Bernanke, Chairman of the Federal Reserve, one year preceding the 2008 financial crisis [\[link\]](#)
3. Daniel Boorstin, American historian, speaking in a 1984 Washington Post interview [\[link\]](#)
- 4., 8. Warren Buffett, Berkshire Hathaway annual meeting 2024 [\[link\]](#)
5. Ben Graham, The Intelligent Investor, 1949 [\[link\]](#)
6. Nassim Nicholas Taleb, interview with Bloomberg, October 2017 [\[link\]](#)
7. Mined gold supply still not keeping up with demand [\[link\]](#)
8. G. K. Chesterton, writing in Orthodoxy, 1908 [\[link\]](#)
- 9., 146. Charlie Munger's Psychology of Human Misjudgement, June 1995 [transcript [link](#), video [link](#)], revised in 2005 [\[link\]](#)
11. GA-Courtenay white paper, How Far Away to Berkshire Hathaway [\[link\]](#), GA-Courtenay white paper, A Venture Framework for the Intelligent Investor [\[link\]](#)
12. Letter from Galileo to Cardinal Dini, 1615 [\[link\]](#)
13. Thinking, Fast and Slow: Daniel Kahneman, 2012 [\[link\]](#)
- 14., 15. Locomotion, Vision and Intelligence, Hans Moravec 1988 [\[link\]](#)
- 16., 18. Diagram: GA-Courtenay research
17. The Evolution of Modern Human Brain Shape, National Library of Medicine, 2018 [\[link\]](#)
19. GA-Courtenay modelling using Lanchester Square Law
- 20., 23, 73. Aircraft in Warfare: The Dawn of the Fourth Arm, Frederick W. Lanchester, 1916 [\[link\]](#)
21. Aiming High: Masayoshi Son, SoftBank, and Disrupting Silicon Valley, 2021 [\[link\]](#)
22. Masayoshi Son, SoftBank CEO, Softbank annual meeting of shareholders, June 2018. Source: CapitalIQ
24. Zero to One: Notes on Startups, or How to Build the Future, Peter Thiel, 2014 [\[link\]](#)
25. Nassim Nicholas Taleb, February 2020: "If I am 'uncertain' about the skills of the pilot, I take another plane. And if I am 'uncertain' about an investment, I say no." [\[link\]](#)
26. Bill Nye Explains Why Evolution Belongs in Science Education, Popular Mechanics, 2011 [\[link\]](#)
27. Stephen Wolfram, public comments, March 2024 [\[link\]](#)
28. Bill Ackman, public comments, March 2024 [\[link\]](#)
29. Warren Buffett, Berkshire Hathaway annual meeting, 1995 [\[link\]](#)
30. Warren Buffett, Berkshire Hathaway annual meeting, 1998 [\[link\]](#)
31. Crowd behaviour during high-stress evacuations in an immersive virtual environment, Max Planck Institute for Human Development in Germany, 2016 [\[link\]](#)
32. Quantifying Information Overload in Social Media and its Impact on Social Contagions, Max Planck Institute, 2014 [\[link\]](#)
33. Warren Buffett, Berkshire Hathaway annual shareholder letter, 2022 [\[link\]](#)
34. Bruce Lee, interview with Ted Thomas, 1972 [\[link\]](#)
- 35., 149. George Soros speaking on Warren Buffett, February 2015 [\[link\]](#)
36. Warren Buffett, Berkshire Hathaway annual report 2004 [\[link\]](#)
37. George Soros, attributed quotation
38. Behavioural activity patterns of adult and juvenile Greater Flamingos, National Library of Medicine [\[link\]](#)
39. See GA-Courtenay white paper, A Super Brand That Travels [\[link\]](#)
40. Warren Buffett, Berkshire Hathaway shareholder meeting, 1994 [\[link\]](#)
- 41., 53. George Soros, writing in 1995, Soros on Soros [\[link\]](#)
42. Studies reveal that the average human lies up to two times a day, yet also appears to believe that they are the only one lying [\[link\]](#)
43. Bias in financial communication results in earnings guidance, with few exceptions, exceeding the earnings per share ultimately achieved by the companies in question, McKinsey [\[link\]](#)
- 44., 43. When Genius Failed, Roger Lowenstein, 2002 [\[link\]](#)
46. Greenspan defends hedge-fund bail-out, the "fragile" condition of the markets had prompted the Federal Reserve to act quicker than usual, Greenspan said [\[link\]](#)
47. More Was Less and Less and Less, NY Times 2000 [\[link\]](#)
48. Nassim Nicholas Taleb: Consider the Thanksgiving Turkey, Business Insider [\[link\]](#)
49. Source: Cardiff School of Computer Science and Internet Systems Consortium
50. See GA-Courtenay white paper, Capitalising on AI [\[link\]](#)
51. Bill Ackman, speaking March 2020 [\[link\]](#), See Nassim Nicholas Taleb, The Statistical Consequences of Fat Tails [\[link\]](#)
52. George Soros, interview with Jeff Greenfield in 2002 [\[link\]](#), aggregated with comments by George Soros, writing in 1995, Soros on Soros [\[link\]](#)
54. Public domain image, the answer is, it is the zebra on the left whose head is in front
- 55., 54. The Structure of Scientific Revolutions, Thomas Kuhn [\[link\]](#)
56. Diagram: GA-Courtenay research
57. Figure is from GA-Courtenay white paper, A Venture Framework for the Intelligent Investor [\[link\]](#)
59. Giordano Bruno and the freedom to enquire, Adam Smith Institute [\[link\]](#)
60. See -Courtenay white paper, How Far Away to Berkshire Hathaway [\[link\]](#), page 14
61. Peter Fenton, speaking in 2021 [\[link\]](#)
62. In a Few Words, Warren Buffett Reminds Us of a Forgotten Habit That Led to His Success [\[link\]](#)
63. Peter Fenton, Benchmark Partners, the approach of great entrepreneurs is 'learn-it-all' not 'know-it-all,' 2016 [\[link\]](#)
64. See GA-Courtenay white paper, How Far Away to Berkshire Hathaway [\[link\]](#)
65. Pershing Square Holdings currently borrows at 22% of its portfolio value, using long-term debt with no margin recourse, source: Pershing Square Holdings annual report 2022
66. SoftBank's leverage is now as low as 8% of gross assets, source: SoftBank FY 2023 results [\[link\]](#)
67. Bill Ackman's first hedge fund, Gotham Partners, had to close down in 2001 after buying a controlling stake in a money losing golf course operator and began piling debt upon it in order to acquire additional golf courses [\[link\]](#), Masayoshi Son's SoftBank nearly faced bankruptcy following the dot com bust [\[link\]](#)
68. Buffett Partnership letter, 1963 [\[link\]](#)
69. Nassim Nicholas Taleb, quoted from the Black Swan [\[link\]](#)
70. The Kelly Criterion and the Stock Market, Edward O. Thorpe, 1992 [\[link\]](#)
- 71., 72. Diagrams are GA-Courtenay research, using Kelly ratio formulas
74. Peter Fisk on Metcalfe's Law [\[link\]](#)
75. See, GA-Courtenay white paper, A Venture Framework for the Intelligent Investor [\[link\]](#)
76. Nassim Nicholas Taleb, Skin in the Game, 2018 [\[link\]](#)
77. Bill Ackman interview with David Rubenstein 2020 [\[link\]](#)
78. Diagram is GA-Courtenay research
79. John Paulson "The Risk in Risk Arbitrage" [\[link\]](#)
80. Source: GA-Courtenay research
81. Source: Bloomberg
82. Charlie Munger explains his 4 principles [\[link\]](#)
83. Comparable GA-Courtenay Buffettian approach principles, Source: GA-Courtenay research
84. Comparable GA-Courtenay Venture framework principles, Source: GA-Courtenay research
85. Sarah Tavel, Benchmark Partners, comments May 2024 [\[link\]](#)

86. Source: Bloomberg, and Buffett Partnership disclosures [\[link\]](#)
87. Kleiner Perkins, Venture Capital, and the Chairmanship of Genentech, 1976-1995 [\[link\]](#)
88. Masayoshi Son, SoftBank Q2 earnings conference call, November 2016. Source: CapitalIQ
89. The Benchmark Way: Five Partners Who Make Other VC Firms Look Outgunned And Overstaffed, Forbes [\[link\]](#)
90. Soros track record, The Alchemy of Finance, George Soros, 1994 [\[link\]](#), Druckenmiller track record under Soros, NYTimes [\[link\]](#)
91. Source: GA-Courtenay research
92. Source: GA-Courtenay research
- 93., 94. Source: GA-Courtenay research, public domain images
- 95., 96. 97. Nassim Nicholas Taleb, interview with Bloomberg, October 2017 [\[link\]](#)
98. Stanley Druckenmiller, speaking in 1984 [\[link\]](#)
99. Steinhardt first expressed doubts about the state of the stock market last March 27, 1987 [\[link\]](#)
100. Paul Tudor Jones, speaking with Financial News Network on October 19, 1987 [\[link\]](#)
101. Paul Tudor Jones, speaking to Lloyd Blankfein in 2018 [\[link\]](#)
- 102., 103. Source: GA-Courtenay research
- 104., 148. George Soros, writing in 1995, Soros on Soros [\[link\]](#)
105. Source: GA-Courtenay research
106. Source: GA-Courtenay research
107. Georges Doriot, Manufacturing Class Notes, Harvard Business School 1937-1966 [\[link\]](#)
108. Source: GA-Courtenay research, images created using ChatGPT
109. The median age of death of covid in the UK was 83 [\[link\]](#), relative to UK life expectancy at 80.6 years [\[link\]](#)
110. Age Distribution of Cases of 2009 (H1N1) Pandemic Influenza in Comparison with Seasonal Influenza [\[link\]](#)
111. Sweden, which had no lockdowns, in 2020 and 2021 had an average excess death rate of 56 per 100,000 which was half or lower of the excess death levels recorded in the UK (109), Spain (111), Germany (116), and Italy (133) [\[link\]](#)
112. The impact of the pandemic on population health and health inequalities, British Medical Association [\[link\]](#)
113. George Soros, writing in 1995, Soros on Soros [\[link\]](#)
114. First cases of coronavirus disease 2019 (COVID-19) in the WHO European Region, 24 January to 21 February 2020, National Library of Medicine [\[link\]](#)
115. London Standard, list of MPs breaching lockdown rules [\[link\]](#)
116. Graph source: NYTimes
117. Bill Ackman, Pershing Square earnings call, Q1 2020. Source: CapitalIQ transcripts
118. The Federal Reserve's Response to COVID-19: Policy Issues [\[link\]](#)
119. Federal Reserve announces extensive new measures to support the economy [\[link\]](#)
120. Bill Ackman Makes \$2.5 Billion 'Recovery Bet' Amid Coronavirus Tumble, 23 March 2020, Bloomberg [\[link\]](#)
121. Fed Chairman Powell 60 Minutes Interview [\[link\]](#)
- 122., 122. Bloomberg Global Aggregate Negative Yielding Debt Index, market value [\[link\]](#), 12-month percentage change, Consumer Price Index [\[link\]](#)
123. 2007–2008 financial crisis summary, Wikipedia [\[link\]](#)
- 124., 126. Causes and Consequences of the Oil Shock of 2007–08, Brookings Institute [\[link\]](#)
127. How The Shale Boom Turned The World Upside Down, Forbes [\[link\]](#) Chart [\[link\]](#)
- 128., 126. How the Fed Let the World Blow Up in 2008, The Atlantic [\[link\]](#)
130. Bill Ackman, Pershing Square Holdings Annual Report, 2022 [\[link\]](#)
131. Source: GA-Courtenay research
132. OPEC leader vows not to cut oil output even if price hits \$20, FT [\[link\]](#)
133. Inside OPEC room, Naimi declares price war on U.S. shale oil, Reuters [\[link\]](#)
134. An analysis of OPEC's strategic actions, US shale growth and the 2014 oil price crash, IMF [\[link\]](#)
135. Ali Al-Naimi, speaking to the Middle East Economic Survey, December 2014 [\[link\]](#)
136. Figure source: How the U.S. and OPEC Drive Oil Prices, NYTimes [\[link\]](#)
137. Source: GA-Courtenay calculation based on US CPI
138. Summer Swoon: Is There a Bear on Mr. Buffett's Farm?, NYTimes [\[link\]](#)
139. OPEC Unity Shattered as Saudi-Led Policy Leads to No Limits, Bloomberg [\[link\]](#)
140. Figure source: GA-Courtenay research, overlaid onto NYTimes graphic [\[link\]](#)
141. Paul Volker, Former Chair of the Federal Reserve, speaking in 2000
142. Source: GA-Courtenay research
- 143., 144. Dynamic Hedging: Managing Vanilla and Exotic Options, Nassim Nicholas Taleb, 1996 [\[link\]](#)
145. See, GA-Courtenay white paper, How Far Away to Berkshire Hathaway [\[link\]](#)
147. Warren Buffett, Berkshire Hathaway shareholding meeting, 1997 [\[link\]](#)
148. Paul Tudor Jones, speaking to Lloyd Blankfein in 2018, regarding the 1987 crash [\[link\]](#)

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