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DEBUGGING UNCERTAINTY

Lessons from the Grasshopper and the Ant on Living with Risk

CONCEPT PAPER

Introduction

Uncertainty seemed to shadow Thomas Hobbes throughout his life. His birth on April 5, 1588, coincided with a period of intense national anxiety in England, as the Spanish Armada closed in on the island nation. He later endured the English Civil War (1642–1651)—a period of profound political turmoil that ultimately led to the execution of Charles I and the rise of Oliver Cromwell's government. As a royalist, the change in government brought great danger to his life[1]. These circumstances were not lost on Hobbes, who remarked, "Fear and I were born twins together."

His lifelong exposure to fear shaped his political thought, culminating in *Leviathan* (1651), a foundational work in modern political philosophy. In it, he argued that humans naturally descend into chaos without governments and laws. This is because, in such a state, self-preservation breeds distrust, as the risk of betrayal outweighs the benefits of cooperation. Worse, uncertainty drives individuals to strike pre-emptively in defence, fuelling perpetual cycles of violence. This is why he claims that when left to our unregulated whims, life becomes "solitary, poor, nasty, brutish, and short."

Hobbes' solution is in the title of his book – a Leviathan that manages risk and preserves order. In surrendering some personal freedoms, we are given government protection and oversight in

[1] He even went into exile in Paris, where he became the tutor of England's future monarch, Charles II.

exchange. This trade-off reflects a calculated response to uncertainty—exchanging short-term liberty for long-term security. By creating a sovereign authority to mitigate chaos, societies are given the parameters of liberty required for development and progress. In essence, Hobbes' life and work underscore that managing risk and uncertainty is intrinsic within the human identity.

Risk at the Very Dawn of Civilisation: Of Grasshoppers and Ants

Andrea Matranga's *The Ant and the Grasshopper: Seasonality and the Invention of Agriculture* highlights the role of risk management in the dawn of civilisation. Analysing climatic conditions during the Neolithic Revolution (10,000–8,000 BCE), Matranga found that farming first emerged around the same time[2] in regions with high climatic seasonality, such the Fertile Crescent, China, the Andes, and North America. Facing nature's fluctuating moods in these areas – from scorching summers to bitterly cold winters – humans were compelled to hoard wild foods, gradually shifting them from nomadism to a sedentary lifestyle that made farming viable and even preferred.

However, this transition did not immediately lead to better living conditions—early farmers were shorter and suffered from joint diseases, suggesting they ate less and worked harder than hunter-gatherer ancestors.

So why did they persist? The key was uncertainty. Hunter-gatherers faced periodic starvation during harsh seasons, while farming, despite its difficulties, offered a more predictable food supply. This reveals a core human instinct: the willingness to endure short-term hardship for long-term stability. Rather than merely reacting to nature, early humans began hedging against its uncertainties, stockpiling and cultivating food to mitigate future risks, as the Ant did ahead of winter, as opposed to the idle Grasshopper who had to beg for food when winter came[3]. This fundamental drive to manage uncertainty has propelled human development, distinguishing us from other species through a distinct and highly dynamic evolutionary path.

Risk: Perception, or measurement?

The word *risk* is deeply embedded in daily life, yet it has acquired multiple meanings and resisted a singular definition, despite centuries of scrutiny. As Spiegelhalter aptly observes in *The Art of*

[2] Think about how crazy a coincidence this is.
[3] The Ant and the Grasshopper, Aesop's Fables.

Uncertainty: How to Navigate Chance, Ignorance, Risk, and Luck, “Uncertainty is all about us, but like the air we breathe, it tends to remain unexamined.”

Rather than providing a definitive interpretation, Spiegelhalter argues that defining uncertainty is inherently challenging due to its subjective, context-dependent nature. There is no simple way to illustrate situational uncertainty, as each person brings a unique perspective. Moreover, because individuals engage with uncertainty differently—shaped by their prior knowledge and experiences—it is entirely reasonable for two people to harbor varying degrees of uncertainty about the same event.

This subjectivity naturally extends to his conception of risk, which Spiegelhalter defines as the combination of an event’s probability and the severity of its consequences[4]. In everyday language, confusion often arises because risk can refer to 1) a threat or hazard (e.g., an iceberg posing a risk to a ship and its crew); or 2) the probability of an event occurring (e.g., the risk of rain tomorrow).

Spiegelhalter further distinguishes risk as feeling—driven by our emotions and biases—and risk as analysis, which relies on algorithmic statistical models. Yet the distinction is not as clear cut as it seems, as subjective biases can influence research methods. This interplay between perception and measurement highlights our tendency to presume an answer - even subconsciously – within our ways of analysis.

Furthermore, since we communicate uncertainty through language, which is shaped by historical and cultural context, interpretations of risk can vary. Take the word *likely*: A study across 25 countries found that while the median probability assigned to *likely* was 60%, individual estimates ranged from 25% to 90%. This inconsistency has led to institutional attempts at standardisation, but no consensus[5]. The ambiguity deepens with modifiers like *highly* or *extremely*, complicating risk assessment even further.

Ideas of temporality also shape how societies perceive risk. Advances in medicine have reduced the severity of diseases like measles and polio, increasing life expectancy. Yet, while the absolute risk has declined, public perception has shifted rather than disappeared. Diseases once seen as inevitable are now viewed as preventable tragedies, altering societal responses to outbreaks. A similar dynamic applies to financial markets—investors' risk perception is shaped by past

[4] Can also be thought as (an event’s probability) x (severity of its consequences)
[5] The IPCC defines *likely* as a 66%-100% probability, while the U.S. Intelligence Community sets it at 55%-80%.

experiences, cultural attitudes, and historical events. Asset managers who have endured financial crises tend to be more cautious, while others who have only known economic booms tend to take greater risks. Behavioural economists argue that financial bubbles and crashes stem partly from collective memory—or its absence—exemplified by the 2008 crisis, where systemic risk was underestimated.

Ambiguity in risk communication has led to high-stakes miscalculations. Spiegelhalter cites the Bay of Pigs invasion, where a misinterpretation of *"fair chance"* of success contributed to America's humiliation on the international stage while intensifying Cold War hostilities. In other cases, misinterpretation can also be fatal. In response to the 1945 Potsdam Declaration, Japanese Premier Kantaro Suzuki used the term *mokusatsu*[6], meaning either "to withhold comment" or "to ignore". The Allies interpreted it as defiance, 'not worthy of comment', contributing to the decision to drop atomic bombs on Hiroshima and Nagasaki.

Why Risk Matters —And How to Make Sense of It

Despite its shortcomings, we should not see these subjectivities as rendering any attempt to understand risk and uncertainty as futile. Even though uncertainty assessments are never completely correct, they still play a crucial role in guiding policy decisions, navigating tricky situations, and forecasting business trajectories. This spirit of seeking to comprehend the world around us, despite setbacks in finding objective truths, is important given the current economic and geopolitical landscape. The current rewriting of the international world order under the second Trump administration is likened to bring a new era of uncertainty, with multiple forces challenging stability. The end of US exceptionalism – driven by structural fiscal deficits, geopolitical fragmentation, and deglobalisation is reshaping global capital flows and their economic dominance. At the same time, markets may be underpricing disruptive risks, as shown from China's breakthrough with DeepSeek AI. While this breakthrough boosts competition, it also intensifies the global AI race and heightens geopolitical risk, threatening supply chains and economic alliances. As a trading nation, Malaysia risks being caught between competing superpowers. Leaders and investors must rethink risk, resilience and market mispricing in this fast-changing landscape.

[6] Mokasatsu : One Word, Two Lessons, The NSA Technical. Journal. Special Linguistics Issue II. Fall 1968, XIII(4)

Our growing interconnectedness through technology, supply chains and digital networks only amplifies the unintended consequences of external shocks, as even small changes in initial conditions can escalate rapidly. Yet, against this daunting backdrop, the organising team of KMF 2025 reassures its attendees that there is hope! Human civilisation has repeatedly overcome periods of profound distress. Furthermore, businesses have maintained resilience despite entering uncharted waters by continuously assessing risk and return through portfolio construction, risk management frameworks, benchmarking, and mitigation strategies.

When it comes to aligning business priorities, it is critical for firms to understand the risks they are dealing with before attempting to mitigate them. Here, United States Secretary of Defense Donald Rumsfeld's *Awareness-Knowledge Matrix* offers a valuable framework for distinguishing between what we know and what we do not, helping us worry less about where uncertainty lies in decision making.

Simply put, the Awareness-Knowledge Matrix consists of four main quadrants:

- **Known knowns:** These are facts we understand well with predictable outcomes.
- **Known unknowns:** These are areas where we recognise our lack of full comprehension, whether due to missing knowledge (epistemic uncertainty) or inherent randomness (aleatory uncertainty)[7].
- **Unknown knowns:** These refer to subconscious knowledge, biases, and assumptions that shape decisions. In investing, many hold unexamined beliefs about market efficiency—whether passive investing (beta) is always optimal or whether skilled active management (alpha) is consistently achievable. Quantitative models, despite their rigor, embed biases in how they define risk, often assuming market rationality when behavioural anomalies persist.
- **Unknown unknowns:** These represent deep uncertainties where outcomes are beyond our comprehension due to limited models or unprecedented developments. Predicting AI's impact in 100 years falls here—technological breakthroughs could reshape civilisation in ways we cannot yet fathom. A humbling reality is that despite advances in forecasting, some disruptions will always remain beyond our predictive reach.

[7] We urge caution when listening to those who speak super confidently about known unknowns as if they were known knowns. Some things are not really inherently possible to be fully known.

From Grasshoppers to Ants: Pivots in Uncertain Times

Now that we have mapped uncertainties along the Knowledge-Awareness matrix, the real challenge is in managing it – mitigating threats, adapting to change, and turning uncertainty into opportunity.

Against a constantly evolving macroeconomic backdrop, firms must acknowledge deep uncertainty while striving to ensure resilience. Unsurprisingly, recognising uncertainty does not always come easy to leaders. A sense of humility is required, as the more one learns, the more one realises how much remains unknown. In a *Freakonomics* podcast episode, Stephen Dubner describes the three hardest words in the English language: *I don't know.* Academics tend to start from the position of not knowing the answer to a question, hence dedicating years to a research topic. In contrast, business executives often feel compelled to project certainty, even when faced with unknowns—especially in areas where they are considered experts.

Kodak, Nokia and Fujifilm illustrate the stark contrast between firms that succumb to disruption (grasshopper) and those that adapt successfully (ant). While it invented digital photography, Kodak fell victim to a known unknown—underestimating how quickly the market would shift, clinging to its film-based model until it was too late. Nokia, despite recognising the smartphone revolution, struggled with unknown knowns—internal inefficiencies and slow decision-making that hindered its ability to execute a successful pivot. In contrast, Fujifilm embraced the risk of venturing into new sectors—leveraging its expertise in chemical compounds to pivot into healthcare, X-ray diagnostics and pharmaceuticals. By acknowledging unknown unknowns and instead investing in adaptability, Fujifilm not only survived but thrived, proving that resilience lies in reimagining core strengths against uncertain futures.

A similar dynamic is playing out today as companies navigate volatile geopolitics and macroeconomic shifts. The semiconductor industry, for instance, faces growing uncertainty due to U.S.-China trade tensions and shifting supply chains. Some firms, like TSMC, have proactively adapted—diversifying production to locations like Arizona and Japan to mitigate geopolitical risks. Others, such as Huawei, have been forced to accelerate technological self-sufficiency, investing heavily in domestic chip development after facing export restrictions. Those that acknowledge geopolitical uncertainty and build flexibility into their operations will emerge stronger, while those that cling to old models risk becoming forgotten within the waves of time.

Lead Like the Ant: Adapt and Communicate

The greatest risk organisations must manage isn't just technological change or market shifts; it's how teams communicate, make decisions, and navigate complexity. This is where cultural dynamics play a crucial role. As Erin Meyer highlights in *The Culture Map*, how organisations communicate and make decisions can either empower or inhibit risk-taking. Differences in leadership approaches across high-context (nuanced communication, relying on non-verbal cues, shared experiences, and overall context) and low-context cultures (explicit communication contained in the words used) can make or break execution.

In this context, leadership is the key driver of whether a firm leans into uncertainty with confidence or retreats into threat rigidity[8]. Firstly, a leader must acknowledge that a natural physiological response to uncertainty is to perceive it as risk or threat. Only when leaders embrace the discomfort can they move from a "know-it-all" to "learn-it-all" mindset. However, there is an inherent limit to what everyone can learn and know. One way to grow that knowledge base exponentially is to seek out diverse opinions, so that we can challenge pre-set ideas and assumptions, resulting in more robust solutions.

Finally (and we can't stress this further), deep uncertainty demands radical transparency. While people tend to catastrophise and fill a communication void with negativity when facing uncertainty, leaders must not give unfounded assurances, which is destructive for trust building. Instead, leaders must ground the team in truths—the inability to have all the facts, remove all the risk, promise zero loss or eliminate negative outcomes. Communicating these truths, wrapped in personal commitment can create a quality of team cohesion that ultimately will lead teams successfully out of seemingly impossible challenges[9].

With the highest power distance of any country in the world (104 on the Hofstede index) and a strong preference for social order, top-down leadership naturally dominates corporate Malaysia[10]. While many countries with 'tight societies'[11] values hierarchy, Malaysia remains capable of transformation. Leaders who drive innovation and manage risk must balance structure and flexibility. More importantly, as Spiegelhalter argues, being honest about the degree of certainty

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[8] Threat rigidity: A behavioural pattern where people or organisations respond to threats by relying on familiar responses, even when it might not be ideal.
[9] https://hbr.org/2021/04/6-strategies-for-leading-through-uncertainty
[10] https://hbr.org/2012/04/in-asia-power-gets-in-the-way
[11] Michele J. Gelfand, Rule Makers, Rule Breakers: How Tight and Loose Cultures Wire our World

fosters greater trust than projecting overconfidence[12]. Ultimately, how organisations communicate around uncertainty shapes their ability to embrace and indeed, love risk—much like the Ant, which thrives through adaptability and collective intelligence to weather disruption.

Cultural Clashes: Steady Ants vs Bold Grasshoppers

At the same time, cultural differences can shape perceptions of risk within the context of growth and development. In her work on Japanese business culture, Dr. Ulrike Schaede highlights that Japanese companies prioritise long-term stability over rapid expansion, influenced by government policies supporting lifetime employment. This explains Japan's measured response to crises, such as the 1990s economic bubble burst, where stability was valued over immediate GDP growth. In Japan, companies allow employees to take time off to pursue a startup with the guarantee that they can return, in response to the looming labour shortage and shift in employee preferences (talented young Japanese don't want to be mere "salarymen"). This enables steady innovation, as safety nets cushion the risks of executing ideas that might fail. Such an approach shows that, despite our inability to completely control for uncertain outcomes, guardrails can be set to ensure a more constructive approach when it comes to risk taking. Perhaps this is what set Fujifilm apart from Kodak—while Kodak clung to its legacy business out of fear, Fujifilm fostered protected experimentation, allowing it to pivot successfully into new industries.

In stark contrast, the United States prioritises rapid expansion, embracing a slash-and-burn approach where employment protection is secondary. Startup culture is seen as a 'sink-or-swim' environment, a zero-sum game in which one is either a loser or a winner, with no in-between. But this rigid view of success overlooks the reality that risk does not have to be binary—rather, it can exist on a spectrum, where setbacks can be stepping stones and uncertainty is not just a threat, but a space for innovation. By embracing this range of risk wisely and with humility, we can foster a more resilient entrepreneurial culture that values adaptability over mere survival.

[12] Competence penalty is smaller for acknowledging external uncertainty (aleatory), as compared to internal uncertainty (epistemic). https://pmc.ncbi.nlm.nih.gov/articles/PMC11134984/#section2-17470218231204350

Putting it all together – KMF 2025

After three years in the red, 2024 was a breakout year for Malaysian equities—FBM KLCI snapped its losing streak and ranked among the region's top performers. Yet, moments of strength breed the greatest risk—the delusion of success. Learning from the Ant, this is precisely when we must arm ourselves— digging deeper into the trenches of what we know, pushing to the edge of deep uncertainty and cultivating a culture that embraces risk, adapts with agility, and fosters innovation. We must navigate complexity with nuance, balance structure with flexibility, and decisiveness with openness. By doing so, we don't just tolerate risk like the Grasshopper; we leverage it as a catalyst for innovation.

In that spirit, it is timely to re-examine the role of capital in shaping economic futures—particularly that of risk capital. Like the other core components of production—land, labour, and entrepreneurship—the scarcity of capital demands that we place our bets wisely along lines of calculated risk. Yet for strategic investors like Sovereign Wealth Funds (SWFs), the responsibility goes beyond maximising returns. It includes ensuring that investments generate broader economic impact aligned with the principles of nation-building. This requires tailoring risk appetites to support strategic bets that many private investors tend to avoid—those with uncertain direct returns but critical to building market resilience amid an increasingly volatile macroeconomic landscape.

Take the example of Malaysia's venture capital ecosystem-building efforts: backing early-stage disruptors (companies and emerging fund managers) is inherently risky, but when it works, the upside is transformative. These investments fuel innovation, enhance economic complexity, and expand national productive capacity. Yet such efforts require patient, long-term capital, as the journey is rarely smooth. Many startups and fund managers may falter due to immaturity, but those who succeed are vital to Malaysia's ambition to become a regional hub for economic and technological innovation. A holistic understanding of risk, clear mitigation strategies, and careful stakeholder communication are essential — any misalignment could hinder the very ecosystems we aim to nurture. Still, despite the setbacks, these risks are worth taking, as they could be the catalyst to a more dynamic, competitive, and future-ready economy.

Since the inception of KMF, themes have been discussed ranging from a new context where uncertainty is normality to whether or not good stewardship based on the political economy of location, environment, and demographics can overcome geography as destiny; to the juxtaposition between Artificial Intelligence and Human Intelligence, to crafting Our Next Episode:

Orchestrating A New Development Bargain for Sustainable Growth, and most recently, to Pursuit of Potatoes – Paving Paths from the Probable to the Possible.

The KMF2025 theme is: Debugging Uncertainty: Lessons from the Grasshopper and the Ant on Living with Risk. In upholding KMF traditions, panel discussions will continue to be organised along four core sessions: how various markets globally are affected; what the theme means to firms, and society at large; what are the imperatives of leadership and people.

Appendix

In seeking to reduce the margin of error that accompanies the uncertainties of life, Spiegelhalter provides hope—suggesting that even in an increasingly volatile world, there remains an opportunity for existential grounding and security.

If anything, the subjective traits of humankind—our judgment and capacity for multiple perspectives—should be celebrated as strengths that allow us to adapt and maintain resilience in the face of uncertainty. Rather than seeking an unattainable absolute certainty, the goal should be to refine our understanding of risk in a way that acknowledges its inherent complexity while allowing for better decision-making. The fact that risk is a construct shaped by language, culture, and experience does not diminish its importance—on the contrary, it highlights the need for continual dialogue and adaptation in an ever-changing world.

Yet, it is important to recognise that the uncertainties within one's *Awareness-Knowledge Matrix* are dynamic. Over time, advancements in statistical analytics and technology may provide the means to answer what now seems unanswerable and imagine what currently appears unimaginable. However.*"*

Despite the anxieties that come with the limitations of human knowledge, the potential for continued learning is what makes life exciting. It is through the constant exchange of knowledge that relationships between individuals and societies are built. We all share a collective desire to seek, to learn, to share, and to grow together. This drive for understanding is not just an intellectual pursuit but a fundamental aspect of human progress—one that has shaped civilisations, guided policy decisions, and influenced scientific advancements.