

CHAPTER 1

Introduction: Life, Risk, and Uncertainty



We demand rigidly defined areas of doubt and uncertainty!

—Vroomfondel, *Hitchhiker's Guide to the Galaxy*

LIFE is uncertain. We can be certain of that. Every day, we are faced with unpredictable events. Some are large. Most are small. Uncertainty makes us uneasy, nervous about the future. Uncertainty is bad. We spend time preparing for uncertainty so we are not “blindsided” or “caught off guard.”

Humans have long tried to ease uncertainty by predicting the future. Early predictions were attempted through supernatural means. More recently, scientific methods have been used. Science has helped, but because some uncertainty always remains, supernatural means continue to be used, even though most of us know that they are not valid. Horoscopes, for instance, are still published in the newspapers and are widely consulted. We have a deep wish, a deep need to increase the predictability, the order of our lives. We continue to search for ways to reduce uncertainty—and the risk that we perceive accompanying it.

Yet, we know that risk taking is the only way to achieve success. The most profitable routes, both personally and professionally, are usually the risky ones. Heroes, whether they are soldiers, explorers, scientists, artists, or writers, are people who take advantage of those opportunities. By taking risks, great battles are won—in war, in the university, and in the marketplace. Risk taking advances our culture, our knowledge, and our wealth. Risk taking also breeds innovation and growth.

Here, we reach the paradox of risk and uncertainty. On the one hand, risk is something to be minimized—or even eliminated if possible. At the same time, taking a risk, or using uncertainty to our advantage, brings opportunity and advancement. Risk and uncertainty are synonymous, yet both can be good or bad. We fear risk and uncertainty, even as we know we need them.

Part of the problem is a perception that uncertainty and risk are synonymous. Are they? Risk is tied to the possibility of loss, like gambling. Uncertainty, on the other hand, is merely the unknown; loss is not always involved. Yet, uncertainty makes us more uneasy than when we face a situation that has known risks. This anxiety is bred into us. If you sit in a room in your own house, in the dark, you will feel uneasy. Despite the fact that you know all of the objects in the room and where they are placed, you imagine that other things are in those objects. They become vague shapes, patterns in the dark. We need to face this anxiety and accept intellectually that there is nothing to be afraid of. The uncertainty we face in the dark has no real risk, just perceived risk, because we do not know, for sure, what's out there. We desire an order, or perfect knowledge, that comes only when we turn on the lights. In the dark, there is no order. There is only the hope of order in the midst of uncertainty. In real life, of course, we are always “sitting in the dark,” trying to guess at how things would look if we could “turn on the lights.”

We try to impose this order, even if there is no proof that order exists. We need order even as we extol risk taking.

So, we are torn between these two needs: the need for order, and the need for uncertainty. The urge to bring order and safety usually wins out. Yet, we need uncertainty; without it, we become stagnant and unmotivated. Leninist Communism is one example of how too much order, too much control, took the life out of a system, which then lost its ability to innovate and adapt. The lack of competition reduced the ability of the communist economy to adapt to new conditions, and, as we all know, adaptability is the key to survivorship.

We are not only afraid of *being* in the dark, we are also suspicious of being *kept* in the dark. We often feel that the universe has a hidden order that we cannot quite comprehend. In ancient times, this order was attributed to the gods—omnipotent beings who controlled humans' fates. Greek myths in particular portrayed humans as pawns in the great games played by the gods. More recently, there are suspicions of global conspiracies. These conspiracies are cited for events that are too important to be random. We no longer describe them as "acts of God," so they must be the work of other people—people who are hiding their influence over us, covering up their involvement. They are keeping the rest of us in the dark. Among the events attributed to these people are political assassinations and UFO sightings. Examining these events in minute detail results in a long list of "coincidences" which, in the minds of the conspiracy buffs, are too numerous to be truly random. There must be a central planner who is at the hub of a sinister form of order. No one admits to the conspiracy, so there must be a cover-up. Better to think that we are all being kept in the dark by sinister forces than to admit that there is no order. Yet, as we shall see, order can erupt spontaneously, without a central planner. This spontaneous order, which evolves from complexity, is

often confused with conspiracy. The fact that this spontaneous order *needs* uncertainty makes the process even more counter-intuitive. This spontaneous order is the basis of the “invisible hand” described by Adam Smith. A free market economy is an evolving structure with no central planner, but it does have coordinated activity by the participants.

The spontaneous nature of free markets makes them innovative and resilient, but there is a cost. The cost of freedom is uncertainty. Only by living with uncertainty can a free society thrive. For this reason, many societies slide back into totalitarian rule. They cannot accept the responsibility of living with the uncertainty that is necessary to maintain a free market. It is easier for them to rely on the certainty of a central planner than to live with the uncertainty of a free society.

In spite of our diversity, we *are* all similar. We have global characteristics that define us as humans. Yet, in detail, each of us is unique. This global order, combined with local randomness, minimizes the chances that we will all be susceptible to the same disease. Because humanity is robust with respect to changes in its environment, continuity is maintained. Through diversity, we increase the uncertainty regarding our genetic code and gain protection against a virus’s invasion. Thus, uncertainty lowers our risk from virus.

As a social system, the stock market also has the need for uncertainty. The stock market exists to give investors a venue for trading. Investors want to make as much money as possible. However, the market, as an entity, does not have this goal. The market exists to provide liquidity, plain and simple. Therefore, it is in the market’s interest to make itself as complex as possible. The end result is always the rise and fall of prices and the transfer of wealth. This creates market cycles that are closely related to the business cycle. However, each market cycle has different circumstances underlying its dynamics. In one era,

technology stocks are the driving force. In another, oil prices have a similar role. Each market cycle has its own story, but the end result is always the same: rising and falling prices. Once again, we have global structure and local randomness.

Why does this structure exist? To offer opportunity to all participants, while allowing no single investor to have an advantage over the others. If the market did have a predictable structure (i.e., a “perfect” trading system exists), then someone would figure it out and accumulate all of the world’s wealth. The market would cease to exist; it would die. However, if the market were completely unpredictable, no one would have incentive to participate. Again, there would be no market.

Thus, we come to the paradox of capitalism and free markets: opportunity for everyone, but the advantage to no one. Each business cycle is different in detail; that is, the underlying cause of each cycle is different. No *one* investment approach will work all of the time, at least in the short term. Many approaches will work *some* of the time. So, the market needs uncertainty if it is to offer opportunity to all investors. It also needs uncertainty to perpetuate the flow of funds between investors and to ensure its own survival. By ensuring that no specific information set drives the market every time, the market diversifies the nature of its own participants. At its heart, the stock market needs uncertainty to exist and to continue existing. Uncertainty is the market’s main source of stability and innovation. It needs uncertainty to perpetuate the competitive nature that is its lifeblood.

The need for uncertainty is ubiquitous. Complex systems, both physical and social, require a high level of uncertainty *at the local level* for both stability and development. This means that, as much as we may hate the idea of living in an uncertain world, uncertainty is not only inevitable, *it is necessary*. This latter observation is particularly important in the social systems

that are a part of our everyday lives. Often, laws are passed or rules are made to make life more structured and less complex. What makes a social system complex is a *loose coupling* between individual participants and an increase in the number of possible paths of development. Democratic political systems and free market economies require a loose environment to ensure competition, but they also require regulations to maintain the free nature of this competition and to ensure that the common good becomes a goal of the society. Complex systems are characterized by global structure and local randomness. The global structure maintains the strength of the whole. The local randomness creates innovation and resilience. In free market economies, competition is the source of local randomness, and regulation maintains the global structure. Thus, competition requires a high level of uncertainty, which we all experience in real time. Efforts to eliminate this uncertainty would destroy the nature of a free market economy. The complexity theory used to describe this process is relatively new, but the concepts in economics go back to the nineteenth century, to the Austrian school of economics.

This book examines the relationship between the Austrian school of economics and complexity theory. In the past ten years, we have developed a better understanding of complex systems—systems that self-organize. For complexity to exist, the right conditions must be in place. A number of independent elements will then spontaneously start cooperating and will act as a single unit. Hurricanes are a common example. The weather system organizes into an entity so coherent that we give it a name, and usually assign it a personality. For the past 100 years, the Austrian school of economics has developed the theory of *subjectivism*. The Austrians believe that individuals working in their own self-interest will spontaneously self-organize when there is an overlap in goals or knowledge. There

is, in fact, a direct correspondence between many concepts developed by the Austrians and those of complexity theory. Complexity theory offers a mathematical foundation to the insights of the Austrian economists.

The integration of the two fields of study could hold important lessons about the nature of free market economies. In particular, we will see that uncertainty is necessary for free markets to exist. In fact, there is a need for uncertainty in all systems where a need for change and a need for stability co-exist. Free markets need stability so that people can have faith in the strength of the economy. At the same time, free markets need to be able to grow and adapt. The primary vehicle for change in a free market is competition, which requires uncertainty in order to exist.

At a time when many totalitarian governments are converting to free market economies, it is critical that they know the role uncertainty plays in such an economy. Uncertainty is the price we pay for the benefits and opportunities generated by free markets. Because totalitarian economies offer great certainty and little opportunity, the citizens of formerly totalitarian, state-controlled economies may not be prepared to live with the uncertainty that is required. When bad times come, they will be more likely to give up, and slide back into the comfort of a structured economy.

In developed markets, understanding the connection between uncertainty and the discovery process of competition prevents the passing of laws that inadvertently restrict competition by trying to protect the citizens from the impact of uncertainty, which is often confused with risk.

Other complex systems—for example, evolution and the creative process—also have a high need for uncertainty in order to generate innovation.

In the end, we see that uncertainty is not necessarily bad. It is not something to be avoided. It is not necessarily associated with risk. There are times when we need uncertainty. We may not like uncertainty, but facing our fear of the unknown is the only way to continue growing. Otherwise, we would sit in the dark, motionless, paralyzed by an unknown risk that may not exist.