

The Retired Investor

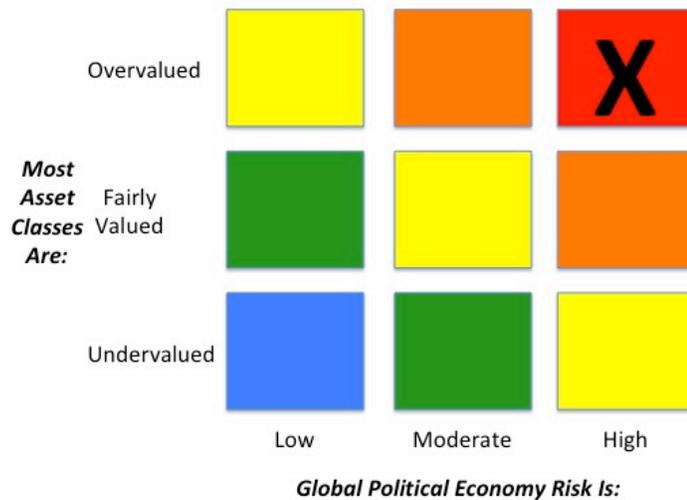
Invest Wisely...Get an Informed Second Opinion

June 2021

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Current Macro Forecast

June 2021



This Month's Global Macro Regime Forecasts

Growing fears of higher inflation have been on most investors' minds this past month. The balance of opinion seems to be that recent increases in the US Consumer Price Index (CPI) have been driven by a combination of fiscal stimulus (and spending of savings built up over the past year) and supply shortages that are mostly transitory (e.g., the run-up in lumber prices that has already reversed).

Let's do a Pre-Mortem to pressure test this conventional wisdom. We'll start by assuming it is three years from now and high inflation has continued, and ask what caused this outcome. We'll then check to see

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how much evidence there is today to support these hypothesized causes.

One of the advantages of age is that you were around when important historical events happened. I sat in gas lines in 1973 after the first oil price shock, and was working as a banker in New York when the trailing 12-month inflation rate peaked at 14.6% in March and April 1980. I also lived in Argentina where surviving high inflation is one of the national pastimes.

In my experience, you need three factors (or a wildcard) to sustain and accelerate an increase in inflation:

- First, there is almost always a significant supply shock that persists.
- Second, the initial price increase triggered by the supply shock isn't offset by a fall in demand.
- Third, for a wage-price spiral, labor has to have significant bargaining power.
- The wildcard factor is usually a collapse in the exchange rate, triggered by a rush for the exits due to a fear of some impending or worsening government action (e.g., increasing deficit spending financed by an increase in the money supply, a threat to seize domestic pension fund assets, or to convert foreign currency denominated domestic government debt into local currency, etc.).

So, let's look back from the high inflation world of 2024 and explain how we got here.

Significant Supply Shocks

- New SARS-CoV-2 variants caused widespread COVID infections in Taiwan, which prolonged the semiconductor supply shock, which, because of the lead time needed to construct new fabs (and find

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the talent needed to run them) was already projected to last longer than many had expected. This caused sustained price rises in significant areas of the economy, including consumer electronics and automobiles.

- When governments set a goal of reaching net zero emissions by 2050, fossil fuel producers cut back investment. When various net-zero policy initiatives and implementation plans fell behind schedule, economic demand drove oil prices above \$100/barrel and kept them there.
- Due to delays in expanding the supply of strategic minerals needed to achieve net zero goals (e.g., due to environmental litigation), their prices also experienced a sustained rise.
- The rapid regulatory-driven shift to increased use of renewable sources of power generation led to a sustained increase in electricity prices.

Sustained Demand

- Senate Democrats ended the filibuster rule, and President Biden's unprecedented fiscal stimulus package was enacted.
- Increasing tensions between the US and China, along with new legislation and regulation, led to an increase in private sector investment to speed up the reshoring of supply chains.
- The Biden Administration secured passage of a carbon tax, the proceeds from which were initially rebated to the public in the form of a "carbon dividend".

Strengthened Labor Bargaining Power

- Resistance to vaccination and the continuing emergence of new SARS-CoV-2 variants that reduced the effectiveness of current vaccines led to continuing COVID outbreaks that kept many people from returning to the workforce. Employers were forced to

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offer higher pay and expanded benefits to induce critical employees (e.g., mothers with school aged children) to return to work.

- The poor performance of the US education and reskilling systems led to continuing shortages of workers with critical skills, causing increases in their wages equal to or greater than the rate of inflation. To maintain employee morale and productivity, many employers were forced to increase other workers wages as well.

Wildcards

- When the US and China went to war over Taiwan, global trade collapsed. Widespread and extended supply shortages led to a sharp and sustained increase in many prices.
- As solar activity neared the maximum point in its eleven year cycle, a major coronal mass ejection caused unprecedented geomagnetic storm on Earth which knocked out power grids and many pieces of electronic equipment, leading to sustained supply shortages and price rises in many industries.

This Pre-Mortem analysis makes it clear that a sustained increase in inflation – a return to the High Inflation Regime – *could* happen. But how likely is it?

Where are the weaknesses in the Pre-Mortem?

- Historically, a sustained increase in energy prices tends to weaken demand, which in turn causes energy prices to decline.
- Experts like former Treasury Secretary Larry Summers have warned that the Biden Administration's proposed fiscal stimulus package is too aggressive. The recent rise in inflation lends support to his argument. For this and other reasons, the actual

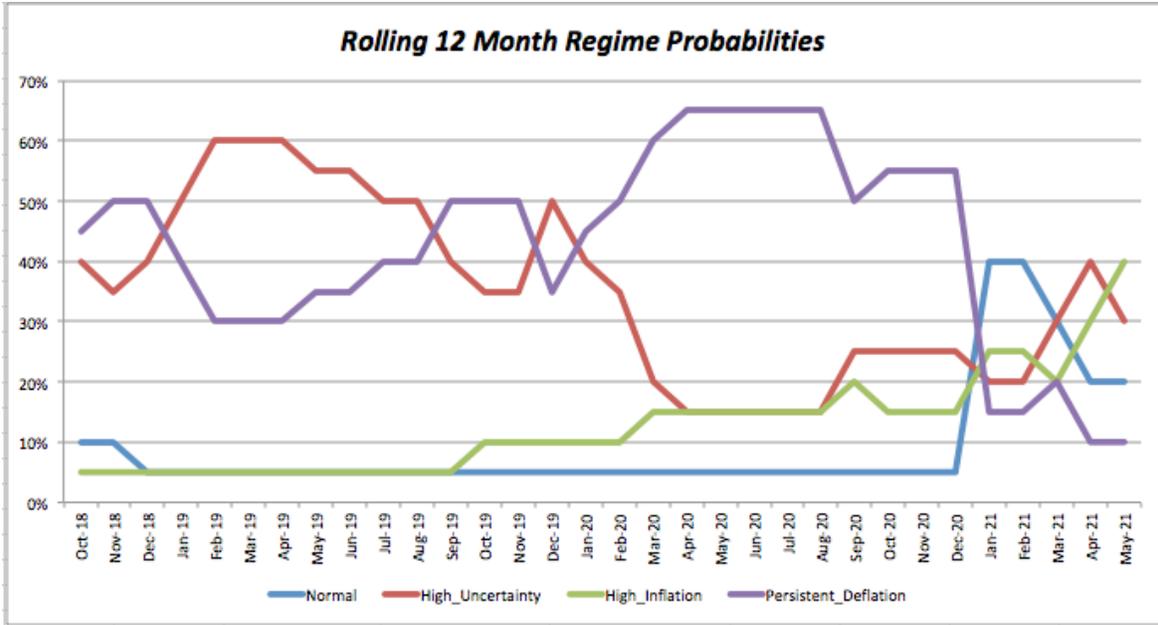
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amount of fiscal stimulus that is enacted by Congress will likely be significantly smaller than Biden's original request.

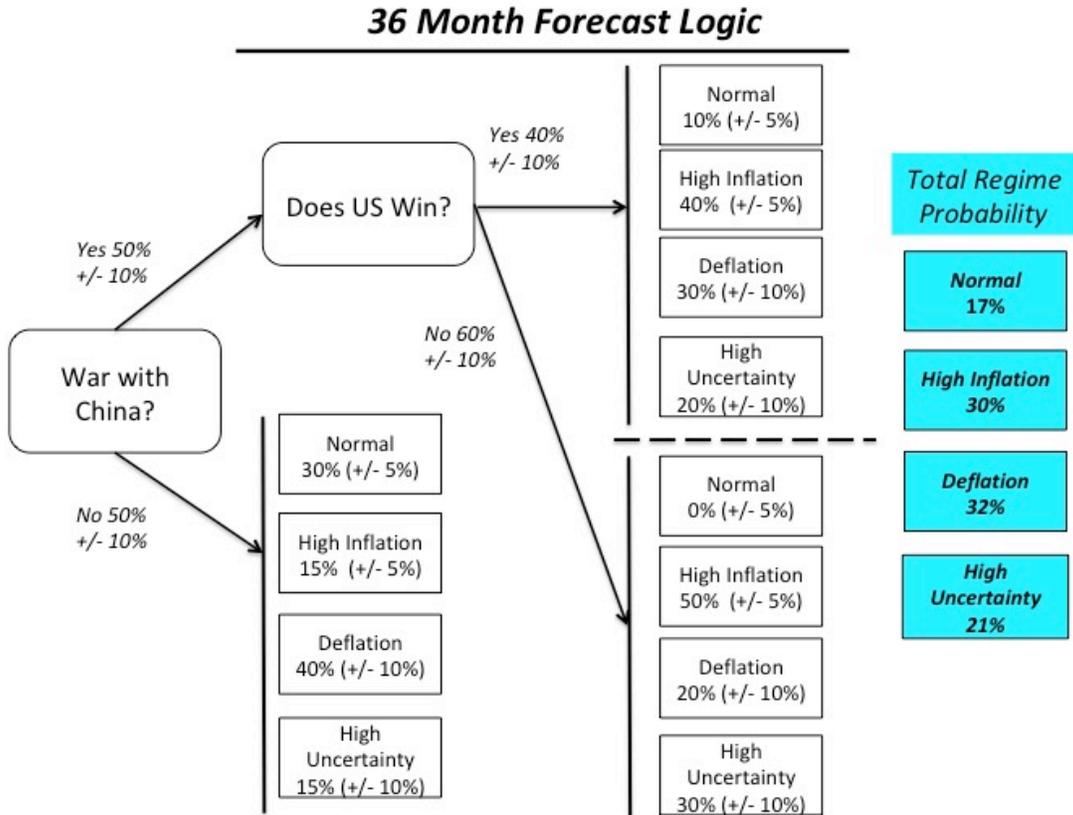
- Kearney's latest Reshoring Index shows that few manufacturing jobs have been reshored to the US in recent years. However, in a separate survey, manufacturing executives "found that many intend to reshore at least some manufacturing operations over the next three years."
- Inequality and high existing debt levels remains very strong dampers on demand growth driven by increases in personal consumption spending.
- The financialization of the US economy has led many investors to press companies for higher debt buybacks, which reduces their investment spending.
- Proposals for a carbon tax are opposed by Progressives, who claim it is unfair to poor people (in France, the gilet jaunes protests were sparked by higher taxes on fuels).
- As technologies to automate physical and cognitive processes improve, they will undermine workers' bargaining power.

Based on our assessment of the inflation-related evidence, our updated 12-month forecast is Normal Regime, 20% probability; High Uncertainty 30% (down 10%); High Inflation 40% (up 10%), and Deflation 10%.

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Our 36-month forecast logic and results are shown below:



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We reiterate that uncertainty in the global macro system and asset class valuations are both very high today. Under these conditions, people rely more heavily on social learning and copying what others are doing than they do on their own private information and views.

This not only slows the diffusion of new information throughout social systems like economies and financial markets, but also causes these systems to coalesce around a small number of narratives. However, as tension increases on various fault lines in the global macro system, the dominant narrative grows increasingly fragile.

Under these conditions, rapid, non-linear changes are very likely to occur that are out of proportion to the apparent trigger that sets them off.

Recent Quantitative Indicators

Implications of the Most Recent Three Month Asset Class Returns

Our forecasting methodology also includes quantitative analyses of asset class valuations, market stress indicators, and the level and change in three-month returns, over the most recent and previous three-month periods, for those asset classes, which should perform best under different regimes (in this sense, our regimes can be regarded as macro factors).

We assume that that the rolling three month returns reflect investors' views regarding the relative probability that a given macro regime will develop in the future.

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Regime Indicators 31May21	3 Mos to May21	3 Mos to Feb21
Normal		
* High Yld Bonds (HYG)	1.89%	1.32%
* US Equity (VTI)	9.34%	7.59%
* For Dev MKT Equity (VEA)	9.67%	7.40%
* Emg Mkt Equity (VWO)	2.78%	11.00%
-- Average	5.92%	6.82%
High Uncertainty		
* Short Term Gvt Bond (SHY)	0.06%	0.01%
* For Govt Bond (BWX)	-0.12%	-1.58%
* Gold (GLD)	10.24%	-2.92%
* Swiss Franc (FXF)	0.82%	-0.33%
-- Average	2.75%	-1.20%
High Inflation		
* Real Return Bonds (TIP)	2.19%	-0.34%
* Dom Comm Prop (VNQ)	14.27%	6.20%
* Gold (GLD)	10.24%	-2.92%
* Timber (WY)	12.58%	17.22%
-- Average	9.82%	5.04%
Persistent Deflation		
* Long Term Govt Bonds (TLT)	-2.88%	-10.25%
* Invest Grade Credit (LQD)	0.16%	-3.89%
* Foreign Govt Bonds (BWX)	-0.12%	-1.58%
* Consumer Staples (VDC)	12.12%	-2.82%
-- Average	2.32%	-4.63%

While we agree with the relative probability of the higher Inflation Regime over the next 12 months, we disagree that the probability for the Normal Regime is higher than the High Uncertainty Regime.

On a 36-month horizon, our views diverge even more with recent market returns.

Asset Class Valuation and Momentum Indicators (@31May21)

Note: The language we use to describe our estimated likelihood of asset class over or undervaluation is based on [US Intelligence Community Directive 203 on Analytic Standards](#), which includes the following table:

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almost no chance	very unlikely	unlikely	roughly even chance	likely	very likely	almost certain(ly)
remote	highly improbable	improbable (improbably)	roughly even odds	probable (probably)	highly probable	nearly certain
01-05%	05-20%	20-45%	45-55%	55-80%	80-95%	95-99%

Asset Class	Valuation	1 Month Return (ETF)	Conclusion
US Real Return Govt Bond	Likely Overpriced*	1.02% TIP	Increasing Overvaluation
US Nominal Return Govt Bond	Fairly Priced *	0.19% GOVT	Fairly Valued
US Investment Grade Credit	Top of Fairly Priced Range*	0.62% LQD	Fairly Valued
US High Yield Credit	Almost Certainly Overpriced*	0.04% HYG	Increasing Overvaluation
US Commercial Property	Likely Overpriced*	0.81% VNQ	Increasing Overvaluation
US Equity	Almost Certainly Overpriced*	0.46% VTI	Increasing Overvaluation
Foreign Developed Mkt Equity	Likely Overpriced*	3.58% VEA	Increasing Overvaluation
Emerging Markets Equity	Almost Certainly Overpriced*	1.70% VWO	Increasing Overvaluation
Timber	Fairly Priced*	(2.09%) WY	Fairly Valued

- *See detailed current valuation analysis online for our methodologies*

Market Stress Indicators (31May21)

<u>Market Stress Indicator</u>	<u>This Month (Last Month)</u>
Asset Class Returns Autocorrelation (this month versus last month). Higher autocorrelation is an indicator of more tightly coupled and fragile markets.	.02 versus .39 the previous month. This indicates a decreasing level of market stress.
Economic Policy Uncertainty Index (how many days over the last 30 was index in top quartile of values since 1985?)	On 14 days last month the index was in the top quartile of daily values since 1985 (the 81 st percentile of all rolling 30-day periods), a substantial decrease from 9 days the month before, indicating rising market stress.
AAA-10 Year Treasury Spread (month end). High/rising spread indicates concern over market liquidity.	1.32% (52nd percentile since 1983), essentially unchanged from 1.29% last month.
BB Spread over 10 Yr Treasury (month end). High/rising spread indicate increasing credit risk.	2.42% (22nd percentile), up slightly from 2.37%, last month, indicating a low level of stress. Given our Regime forecast, this is almost certainly inadequate compensation for the current risk of BB rated bonds.
USD Gold Price/oz (month end). Rising gold prices and "disaster premium" = more stress.	\$1,892 versus \$1,768, up 7.0% from the previous month. At the end of 2017, we estimated the "disaster premium" in the gold price was 47% (see our methodology in the Appendix). At the end of last month it was 93%, up from 83% the previous month. Given our forecast, this is likely too low.

Portfolio Allocation Implications of Our Forecast

We take two approaches to deriving the tactical asset allocation implications from our analyses (i.e., deviations from our “neutral” or base case model portfolio).

The first takes a systematic approach, and is based on relative asset class valuations. Our starting point is our “neutral” model portfolio, which is equally weighted across nine broad asset classes, and also includes 5% allocations to two alpha strategies (equity market neutral and global macro) that are designed to have a low correlation to returns on broad asset classes.

Based on asset class valuations, we systematically vary the asset class weights (but not the active strategy weight), increasing from 10% to 15% when an asset class is likely undervalued, and 15% when it is very likely undervalued. In the case of overvaluations, we go to 5% and then into cash, if there are no undervalued asset classes with room for an increase. In effect, this replicates the systematic rebalancing strategy we used for 15 years in our previous model portfolios.

The second tactical approach is based on our subjective view not only of current asset class valuations, but also of the implications of the broader macro trends and uncertainties that we analyze each month. Importantly, this subjective view reflects our primary goal of avoiding large downside losses, rather than seeking large upside gains.

Three final notes: First, with respect to US fixed income, we include credit products (investment grade and high yield) in the same broad asset class as government debt, and will shift into the former when credit spreads become attractive.

Second, we regard gold not as a separate asset class to be held long-term, but rather as a complement to cash, into which we shift in periods of substantial overvaluation across multiple asset classes.

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Third, we continue to be deeply concerned by the distortion in asset class valuations that have been created by negative real interest rates on sovereign bonds, which are the foundation of most asset pricing models. In August, we decided to address this distortion by using in our asset class valuation models our estimate of the economically logical real yield on inflation protected US government bonds (TIPs). This brings our quantitative valuation conclusions much closer to those based on our qualitative analysis.

Asset Class	ETF	Neutral Weight	Systematic Weight	Subjective Weight	Comments on Subjective Weighting
Real Return Bonds	TIP	10%	5%	5%	Likely Overpriced, but offers both inflation & deflation protection
Government Bonds	GOVT	10%	0%	0%	In fairly priced range; hedges equity crash
IG Credit Spread	LQD	0%	10%	10%	At top of fairly priced range.
HY Credit Spread	HYG	0%	0%	0%	Almost Certainly Overpriced; Credit spread doesn't reflect risk
Foreign Govt Bonds	BWX	10%	0%	0%	Still very likely overpriced; also EU sov debt crisis risk
Domestic Property	VNQ	10%	0%	5%	Likely Overpriced as inflation fears rise
Foreign Property	VNQI	10%	10%	15%	Fairly priced; traditional European hedge against uncertainty
US Equity	VTI	10%	0%	0%	Almost certainly overpriced
For Dev Mkt Equity	VEA	10%	5%	0%	Likely overpriced
Emg Mkt Equity	VWO	10%	0%	0%	Almost certainly overpriced; worst of COVID is likely yet to come
Timber	WY	10%	10%	15%	Fairly Priced
Uncorrel Alpha Strategies*		10%	10%	10%	These allocations stay constant
* Equity Mkt Neutral and Global Macro					
Cash	SHY	0%	25%	20%	High uncertainty about further mkt declines; deflation hedge
Gold	GLD	0%	25%	20%	Hedge against inflation and political instability
		100%	100%	100%	
			From Last Month		
At 31 May 2021		Increase		Decrease	

Forecast Pre-Mortem Analysis

One of the most important forecasting disciplines is to ask yourself why any forecast you make could be wrong. Dr. Gary Klein's research has shown that a very powerful and insightful way to do this is via a "pre-mortem analysis." This method asks you to assume that it is a point in the future, and your forecast has been proven wrong (or your strategy or company has failed). You are then asked to look backward from this imagined point in the future, to explain why you failed, what you missed, and what you could have done differently to avoid your fate.

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The pre-mortem method takes advantage of the fact that humans reason much more concretely and in more detail when explaining the past than they do when trying to forecast the future.

So let us assume that it is one year from now, and our current forecast has turned out to be wrong.

How did this happen? What developments did we fail to anticipate?

- Following the election of Joe Biden, the removal from office Xi Jinping could (but would not necessarily) lead to a reduction in the dangerously growing conflict between the US and China. The impact of this surprise seems uncertain. To the extent that reduced external threat reduces the perceived urgency of implementing structural reforms in the US, it would increase the probability of the High Inflation Regime. Yet at the same time, it could accelerate economic and political reforms in China, which would increase economic growth there, creating a more dangerous medium term situation for the United States.
- A supply side shock of some type, beyond the disruption of global supply chains caused by COVID-19, could produce a sudden shift to the High Inflation Regime. The most likely scenario is a reduction in oil supplies due to a prolonged kinetic conflict between Iran and Israel and the US to prevent production of a nuclear weapon by Iran. An unlikely but dangerous scenario could be major crop failures associated with the next solar cycle and/or accelerating climate change. McKinsey recently concluded that the probability of such a failure has increased due to changes in the environment, and now stands at about 10% over the next five years (*"Will the World's Breadbaskets Become Less Reliable?"*).

Combining this Forecast with Others and Extremizing Should Increase Your Predictive Accuracy

Research has found that three steps can improve forecast accuracy. The first is seeking forecasts based on different forecasting methodologies, or prepared by forecasters with significantly different backgrounds (as a proxy for different mental models and information). The second is combining those forecasts (using a simple average if few are included, or the median if many are). The final step, which significantly improved the performance of the Good Judgment Project team in the IARPA forecasting tournament, is to “extremize” the average (mean) or median forecast by moving it closer to 0% or 100%.

Forecasts for binary events (e.g., the probability an event will or will not happen within a given time frame) are most useful to decision makers when they are closer to 0% or 100% rather than the uninformative “coin toss” 50%. As described by Baron et al in *“Two Reasons to Make Aggregated Probability Forecasts More Extreme”*, forecasters will often shrink their probability estimates towards 50% to take into account their subjective belief about the extent of potentially useful information that they are missing.

When you average multiple forecasters’ estimates, you are including more information, which should increase forecast confidence and push the mean estimate closer to 0% or 100%. However, this doesn’t happen when you use simple averaging. For this reason, forecast accuracy is increased when you employ a structured “extremizing” technique to move the mean estimate closer to 0% or 100%.

You can [download an extremizing model from our website to use when combining the forecasts you use in your decision process.](#)

The extremizing factors in our model are those that the Good Judgment Project found maximized the accuracy of combined forecasts. Note that the extremizing factor is lower when average forecaster expertise is higher. This is based on the assumption that a group of expert

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forecasters will incorporate more of the full amount of potentially useful information than will novice forecasters.

If you have any questions about anything we have written in this issue, please don't hesitate to get in touch, at contact@indexinvestor.com.

Feature Article: Thoughts for New Graduates: The Impact of System Factors, Skill, and Luck on Your Future

Like history, your future will emerge from the interaction of three causes: The nature of the system, the skill of human agents, and luck. In the years ahead, it will serve you well to keep some important points about each of these in mind.

The Nature of Many Real World Systems

If you're like most students, during your years in school you probably heard a lot about systems dominated by linear cause/effect processes and negative (dampening) feedback loops that kept them in or close to equilibrium. You also probably used the familiar normal/Bell Curve/Gaussian distribution to statistically describe the results these systems produced.

Unfortunately, that is not how many large and very important real world systems work.

Instead, in complex systems many effects have multiple causes. A significant number of these cause/effect relationships are non-linear, and/or time delayed. In addition to negative feedback loops, complex systems also have strong positive (accelerating) feedback loops. Consequently these systems often operate far from equilibrium.

The results complex systems produce are often best described by power laws. Statistically, the variance of the distribution of these results is therefore not well defined. This means that it is very hard to use statistics to understand the range of possible outcomes complex systems can produce. The emergence of so-called "Black Swan" events is one of their common features.

Many complex systems are also "adaptive", as they contain reasoning agents who adapt their strategies over time to achieve goals, which themselves may also evolve.

In Complex Systems, What Does It Mean to Be Skilled?

My favorite quote about the relative importance of systems and skills comes from Warren Buffett: "When a management [team] with a reputation for brilliance tackles a business [system] with a reputation for bad economics, it is the reputation of the business that remains intact." That often comes as a surprise to people who have been marinating in meritocracy throughout their years of schooling.

The truth is, when people are immersed in complex adaptive systems, most struggle to achieve their goals. In a recent paper, Anne Marie Grisogono (a complex adaptive systems expert who recently retired from Australia's Defence Science and Technology Organization) summed up the research on why this happens:

"Low ambiguity tolerance was found to be a significant factor in precipitating the behavior of prematurely jumping to conclusions about the problem and what was to be done about it, when faced with situational uncertainty, ambiguity and pressure to achieve high-level goals. The chosen (usually ineffective) course of action was then defended and persevered with through a combination of confirmation bias, commitment bias, and loss aversion, in spite of available contradictory evidence.

"The unfolding disaster was compounded by a number of other reasoning shortcomings such as difficulties in steering processes with long latencies and in projecting cumulative and non-linear processes. Overall they had poor situation understanding, were likely to focus on symptoms rather than causal factors, were prone to a number of dysfunctional behavior patterns, and attributed their failures to external causes rather than learning from them and taking responsibility for the outcomes they produced."

Grisogono also summed up what is different about those who manage to achieve their goals:

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"They developed a [necessarily incomplete] conceptual model of the situation, and took actions based on causal factors, seeking to learn from unexpected outcomes. They constantly challenged their own thinking and views. Most importantly, they displayed a higher degree of ambiguity tolerance than the unsuccessful majority" (from Grisogono's paper, "How Could Future AI Help Tackle Global Complex Problems?")

Elsewhere, research conducted by Britten Coyne Partners, an affiliate of The Index Investor, has found that not considering time dynamics is another important source of failure in complex environments.

Here's a simple example. In an investment context, consider an investor with \$100,000 who wants to accumulate \$133,000 after three years. Seeking high returns, they invest all their funds in the equity market, overlooking the fact that the variability of equity returns is higher than in other asset classes. In the first year their equity investment loses 20%, and is worth \$80,000. To return to breakeven by the end of year two, it must earn a return of not 20%, but 25%. And 33% will be required in year three to achieve the investor's goal.

When taking actions that have uncertain outcomes to achieve multi-period goals, significant setbacks reduce the probability of success by more than most people realize. That's why smart risk management is critical in complex adaptive systems. By all means take risks – achieving ambitious goals is impossible if you don't. But when taking those risks, try to find ways to limit your downside, such as creating robust plans (that will achieve your goals under a range of scenarios), building resilient processes (to cushion the blow when robustness fails), and cultivating an adaptive mindset.

Another reason that risk management is critical is that because of their complex causal relationships, time delays, non-linearities, and continuous evolution, forecasting future outcomes produced by complex adaptive systems is extremely difficult, even over relatively short periods. The challenge grows exponentially harder as the time horizon lengthens.

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To be sure, there are some promising quantitative methods on the horizon for forecasting outcomes produced by complex adaptive systems (e.g., combinations of agent based modeling and artificial intelligence methods like reservoir computing). But we're still probably quite a few years away from those methods being perfected, much less widely diffused and deployed.

That means we're left with qualitative approaches to forecasting and decision making in complex adaptive systems, such as those used by the Good Judgment Project (described in the book "*Superforecasting*" by Tetlock and Gardner) or Marvin Cohen's *Recognition/Metacognition* model (as described in his paper, "*Metarecognition in Time-Stressed Decision Making: Recognizing, Critiquing, and Correcting*").

The former can be summed up as follows (I was on the GJP team for all four years):

- Start by looking for a base rate for the outcome you're trying to forecast (e.g., for many business outcomes, Mike Mauboussin's "*The Base Rate Book*" is an excellent source). It usually won't be a perfect match, but it is a critical starting point.
- Then consider factors specific to the forecasting question at hand. What are the key elements in the situation? How are they related (look for non-linear relationships)? How could the interaction of these elements cause the situation to evolve, either on their own or in response to actions you or others might take? The more similar the forecasting question is to the one behind the base rate you used, the more cautious you should be about moving your situation specific forecast away from the base rate.
- Keep adjusting your forecast as you receive two types of new information. High value evidence is more likely to be observed (or not observed) if just one of your hypotheses is true. Information that triggers a feeling of surprise is a warning that your mental/forecasting model is incomplete and needs to be updated.

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- After you make a forecast, always do a Pre-Mortem. Assume that it is some point in the future and it has turned out to be wrong (or your plan has failed). Write down (a) why this happened; (b) what signals you missed; and (c) what you could have done differently to avoid failure. This method works because we are much more detailed in our thinking when we seek to explain the past than when we try to anticipate the future. Use the result of your Pre-Mortem (which works even better when done in a group) to rethink your forecasting model, collect new information, and/or modify your plan.
- Last but not least, improve your predictive accuracy by combining your forecast with others, ideally ones that are based on different information and/or a different methodology.

Another aspect of what it means to be skilled in the context of complex adaptive systems is being aware of some critical aspects of human nature that make it easier to forecast the behavior of people, groups, and organizations and sometimes even larger aggregations (e.g., investor behavior).

In our experience, some of the most important include:

- To explain, predict, and remember, human beings have used stories and narratives from the earliest times. The emotions they trigger make them powerful – but also resistant to change. Hence the conventional wisdom is often lags behind the real state of affairs.
- We are naturally overoptimistic, and motivated reasoning (i.e., supporting our existing beliefs or preferred outcomes) drives our attention and often leads to overconfidence.
- When uncertainty increases, we rely more on social learning/copying and the most popular narrative, and less on the public and private information we possess. That is why as uncertainty increases (e.g., as asset class valuations approach or

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surpass historic highs), a limited number of narratives often grow stronger, even as they are becoming more fragile.

- Rising uncertainty also leads human beings to become more conformist, either to the views of a group or those of a strong leader. That was very adaptive deep in our evolutionary past, but is much less so today.
- In today's world of hyperconnectivity and ubiquitous social media, and the increased complexity and uncertainty it creates, these evolutionary instincts have become supercharged.
- When an individual knows the result of a decision will be private, they tend to be risk averse. But when they know it will be public, the reverse happens (as both the decision outcome and social status will be at stake).
- When organizations are small, errors of omission (missed alarms) are often seen as more important than errors of commission (false alarms). But as organization grows, the demand for increased consistency and predictability lead to just the opposite. Hence the larger the organization, the more prone it is to being surprised.

Some Thoughts on Luck

In a society dominated by a belief in meritocracy, we tend to focus on skill as the key determinant of outcomes, and devalue the roles of system factors and luck. Except when things don't go our way. Then it's due to bad luck.

This is a shame, because a deeper examination of system factors and luck provides a much more complete – and healthier – understanding of the complex root causes of many of life's outcomes.

Here's one example. Consider a thousand people who at 21 are given \$10,000 in initial capital. For each of the following twenty 29 years,

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each person's capital is increased by a random draw from the same distribution of annual returns. When they turn fifty, a few people will be very rich. The majority will not. In fact, most will be below the average level of wealth. And some will have no capital left.

That is the nature of luck. To be sure, in life we draw from multiple distributions, whose draws are imperfectly correlated to varying degrees. That helps to balance out outcomes (e.g., I know some very rich people who are far below average in some other important areas of life). But it is still important to recognize the nature of what we call luck (or randomness) when it comes to accumulated advantages that are created by multiplicative processes (i.e., the "Matthew Effect").

This is even more so the case when social influence or network effects drive those advantages (e.g., see Salganik, Dodds, and Watts' famous paper, *"Experimental Study of Inequality and Unpredictability in an Artificial Cultural Market"*).

This has let researchers to conclude that there are clear limits to our ability to predict the outcomes of complex adaptive systems with high degrees of social interaction (e.g., *"Exploring Limits to Prediction in Complex Social Systems"*, by Martin et al). Another research project also concluded that, despite the availability today of massive amounts of data on individuals, we still cannot predict their life outcomes (*"Measuring The Predictability Of Life Outcomes With A Scientific Mass Collaboration"*, by Salganik et al).

To be sure, there are other kinds of luck, both good and bad, over which we have little or no control that can have both small and large consequences. A famous example occurred on December 13, 1931 when Winston Churchill looked the wrong way when crossing Fifth Avenue in New York City and was hit by a car. While injured, he survived. If he had not, the course of world history would very likely have been different. The same is undoubtedly true in the case of people who died too young.

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A paradoxical thing about this kind of luck is that in some cases its impact on outcomes becomes more important as intense competition makes the level of skill among competitors more equal over time. This happens in some professional sports (e.g., hockey), and arguably active investment management. See Mike Mauboussin's book, "*The Success Equation*".

Is there anything you can do to increase your chances that both forms of luck – accumulated advantage and randomness – will work to your advantage and not your detriment?

Seven Questions to Ask Yourself

To put what follows in perspective, I graduated from college in the 1970s. In the years since, I've asked my friends from around the world (whose lives have taken a wide variety of paths, both intended and unintended), what questions they wish they had asked themselves when they were younger.

I make no claim that group sample is in any way representative of any population. Rather, they are a very diverse group who have experienced a wide range of ups and downs across their careers, and who have spent a lot of time reflecting upon their (often colorful) experiences. Here is my distillation of their collected wisdom:

- What activities do I most enjoy/am I relatively best at? They are usually but not always the same.
- What issues/problems/challenges most interest me? In which of these do I often find myself so immersed in that I lose track of time?
- What are the characteristics of the organizational culture in which I thrive (especially the type of boss I report to and the teammates with whom I work)?
- What kind of relationship/family do I want to have?

The Retired Investor

- Where do I want to live, and why?
- How much money do I/we need to make to have the kind of lifestyle I/we want to have over the next five years?
- What are the most important regrets I don't want to have at the end of my life?

Inevitably there will be tradeoffs between these questions. Most people can't have it all, or at least have it all at once. But by asking them when you're young, you substantially increase the chances that you'll have a sense of purpose and meaning in your life – and as a result will be a much better partner, parent, teammate, and leader.

You'll also raise the odds building cumulative advantage, and being better able to exploit good luck and bounce back from bad luck.

Too many people don't spend enough time thinking about these tradeoffs, and end up making them unconsciously. Trust me, you don't want to wait to consciously confront them until a painful life event forces you to do so.

So, to sum up: You are going to live your adult life in a world of complex adaptive systems for which your education probably didn't prepare you too well. It is easy to feel overwhelmed, and tempting to turn to popular narratives to make sense of it.

Resist that temptation. There are knowledge and skills you can learn that will enable you to thrive despite, and in some cases because of that complexity.

Above all, it helps immensely to know who you are and what you're looking for in life. That is the path to finding purpose, meaning, and peace in our complex, hyperconnected, uncertain, and anxious world.

Good luck!