

How to Invest

Part 1

June 2009



Rocket Science Capital Advisors, LLC
Registered Investment Advisor

Disclaimers

- Ⓢ All investing is risky (i.e., outcomes can be worse than you expect or desire)
- Ⓢ Past performance does not guarantee future performance
- Ⓢ Bonds have risks
 - Credit (default) risk
 - Interest rate risk
 - Inflation risk
 - Ratings risk
- Ⓢ Diversification
 - Does not ensure a profit
 - Does not certainly avoid loss
- Ⓢ There are no buy/sell recommendations in this briefing



Natural Investment Goals

- 🌐 Gain from Black Swan Events
- 🌐 Grow Capital (Higher risk, higher return)
- 🌐 Preserve Capital (liquidity, safety of principal and income)
- 🌐 Hedge Inflation
- 🌐 Hedge Deflation
- 🌐 Working & Emergency Capital
- 🌐 Disaster Stash



Investing Requires an Intellectual Framework

- ④ Investment knowledge
- ④ Thinking about the process structurally as if you were a scientist
 - Use an explanatory model of why investments behaved previously and/or as you think they will.
 - Back-testing the past helps but is useless if “regime” changed
 - Must not be a “just so” story



Required Levels of Knowledge for Successful Investing

- ④ Technical investment knowledge
- ④ Market wisdom and experience
- ④ Trading mechanics
- ④ Micro-economic
 - How firms plan, operate, compete
- ④ Macro-economic
 - Effects of economy, fiscal and monetary policies, events



A Common Limited Investing Mindset

- ④ Believing “investing, like life, is one damn thing after another.”
- ④ Belief manifests itself in either of two ways to pick securities
 - believe that winning securities can be identified in advance through intuition or cursory attention (very doubtful)
 - pick securities that parade as winners
 - believe that all investing is a gamble
 - fail to take proper care of their financial assets.



Think Structurally

- ④ Pay greater attention to the portfolio as a whole than to its individual components.
- ④ Compensate for some of the regular and irrational errors that researchers in behavioral finance have observed being consistently committed by investors.
- ④ John Maynard Keynes famously wrote that “Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.”
 - Investors who fail to think systematically about what they do are usually the slaves, too, of some talking head.



Unavoidable Issue: Nowhere to hide:

④ What fears do you prefer?

- Loss of Principal?
- Deflation (Loss of Income Potential?)
 - Insufficient amount of money even without inflation
- Inflation (Loss of Purchasing power?)
 - Devaluation of money

④ Investing requires discipline to profit in the face of these realities



Key Types of Risk

Type of Risk	Sources of Risk	Example Outcome
Black Swan Event (BSE)	<ul style="list-style-type: none"> •Human consciousness and imagination are limited. •You don't know what you don't know •Thus, events occur that could not have been conceptualized in advance. •Affects everything 	<ul style="list-style-type: none"> •9/11 •Collapse of banking system
Institutional and Political Risk in Financial System	<ul style="list-style-type: none"> •Dysfunctional laws, regulations and oversight, or failures to execute correctly •Dysfunctional monetary or fiscal policies 	<ul style="list-style-type: none"> •Inflation •Deflation •Bank failures •Bad Regulation, moral hazard •Nationalization
Market Risk	<ul style="list-style-type: none"> •Economy-wide factors that cannot be avoided if you participate in the market •Market Risk cannot be reduced by diversification. •Since you cannot avoid this risk, you can get a reward for taking it. 	<ul style="list-style-type: none"> •Interest rate levels •Extreme fear or greed •Recession
Specific Risk	<ul style="list-style-type: none"> •Operations of the specific firm. •Specific Risk of a firm is independent of Market Risk. •Market trades do not affect this risk. 	<ul style="list-style-type: none"> •How much oil in an unexplored tract? •Will a new chip manufacturing process perform as expected? •Mismanagement •Fraud



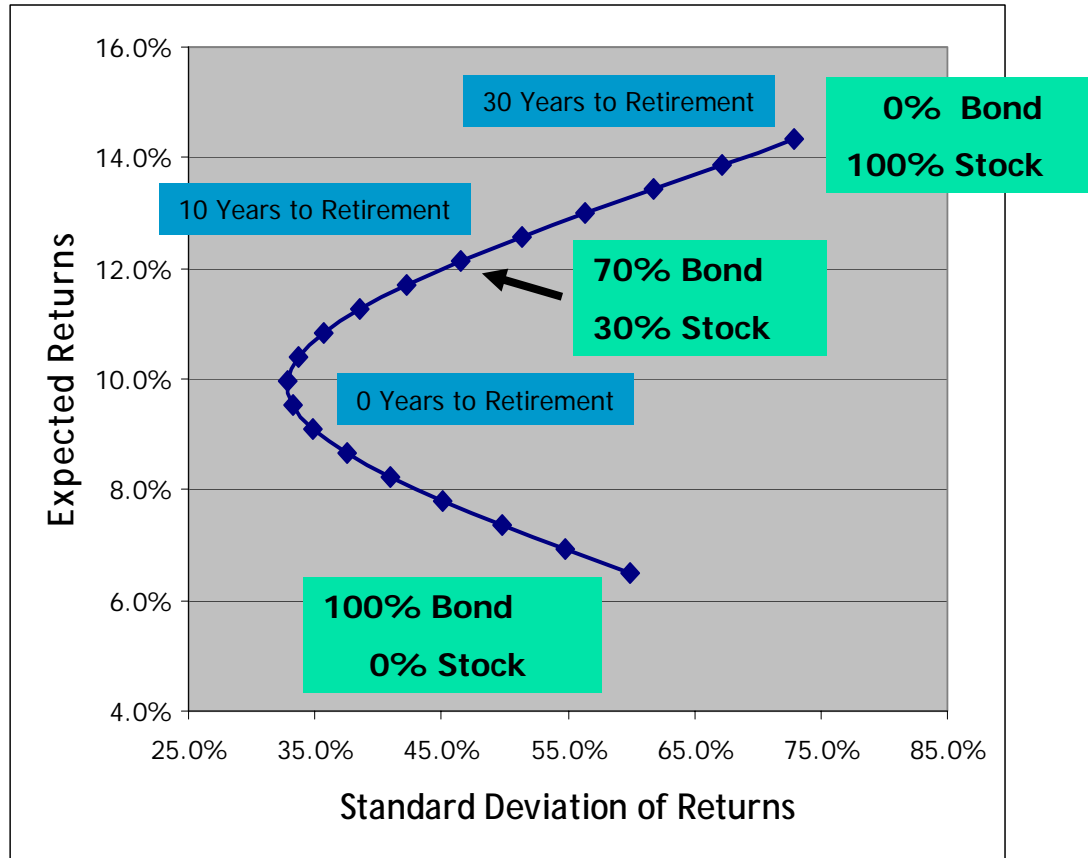
Mitigating Risk

Type of Risk	Risk Mitigation Principles	Example Mitigation Securities
Black Swan Event (BSE)	Expanding imagination and awareness of possibilities will reduce the space of BSEs, but can never eliminate them.	Puts and Calls on S&P 500 index
Institutional and Political Risk in Financial System	<ul style="list-style-type: none"> •Use foreign Institutions to diversify when possible •Make targeted investments •Proper due diligence 	<ul style="list-style-type: none"> •Equities on traded institutions when available •Foreign equity markets •Currency markets <ul style="list-style-type: none"> •<i>Inflation</i> •TIPS •ETFs that track T-Bill interest rates •Fixed payment borrowings •Own hard assets; gold <ul style="list-style-type: none"> •<i>Deflation</i> •Fixed income investments •Treasuries
Market Risk	<ul style="list-style-type: none"> •Cannot diversify this risk of being in the market 	<ul style="list-style-type: none"> •Avoid the market •Make targeted investments
Specific Risk	<ul style="list-style-type: none"> •Specific Risk of a firm can be reduced by diversification in the market •Proper due diligence 	Ensure diversified portfolio (uncorrelated securities)



Best Returns Require Most Risk

- ④ "Made up" example
- ④ Generic relationships



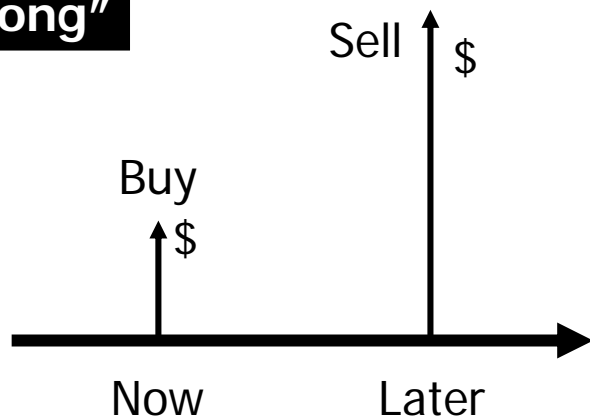
Choosing Assets Under Macro-Economic States

Asset Class	Examples	Deflation	Inflation
Equities		Long Tech	Long Tech
	Stock	Firm specific	Firm specific
	Stock ETF (Sectors, indexes)	Sector specific	Sector specific
	Preferred stock	Firm specific	Firm specific
Fixed Income		Buy (Lend)	Sell (Borrow)
	Cash		
	CD		
	Money Markets		
	T-bills/notes/bonds		
	TIPS; Inflation ETF		
	Corp Bonds; Bond Funds		
	Bond ETF		
Various option positions		Directional decisions	Directional decisions
	Covered; straddles; spreads; strangles;		
Alternate Investments		Directional decisions	Directional decisions
	Hedge Funds		
	Inverse ETF		
	Leveraged ETF		
	Managed Futures		
Commodities		Timing decisions	Timing decisions
	Gold	Short	Long
	Oil	Short	Long
Illiquid Assets		Timing decisions	Timing decisions
	Real Estate	Rent	Own
	Private Businesses	Firm specific	Firm specific

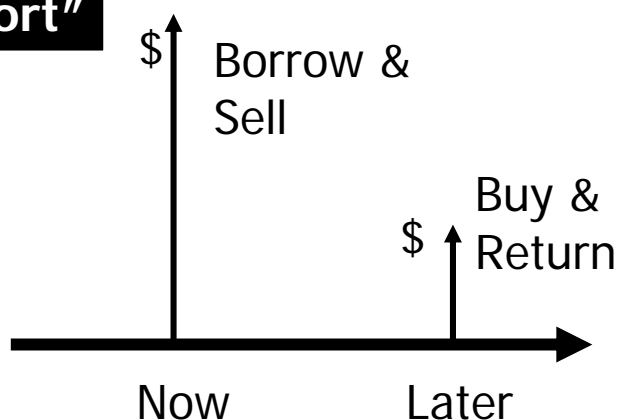


(1) "Buy low, sell high"

"Long"



"Short"



(2) Pay Attention!

- ④ Stay aware of costs and control them as feasible
- ④ Avoid strategies with excessive leverage (borrowing, margin)
- ④ Install risk controls (stops, alerts)
- ④ Implement skill-based strategies
 - Don't buy and hold blindly
- ④ Diversify if you are not a domain expert



(2) Commit to a Strategic Allocation

"Rules" for
Successful
Investing

- ④ The fraction of each security category in the portfolio
- ④ Rebalance to keep constant at regular intervals
- ④ Have courage to stick to your strategy as long as conditions/assumptions hold



(3) Know When to Not Diversify

"Rules" for
Successful
Investing

- ④ Diversification protects against ignorance
- ④ If you are an expert in a certain situation, Concentrate, don't diversify!



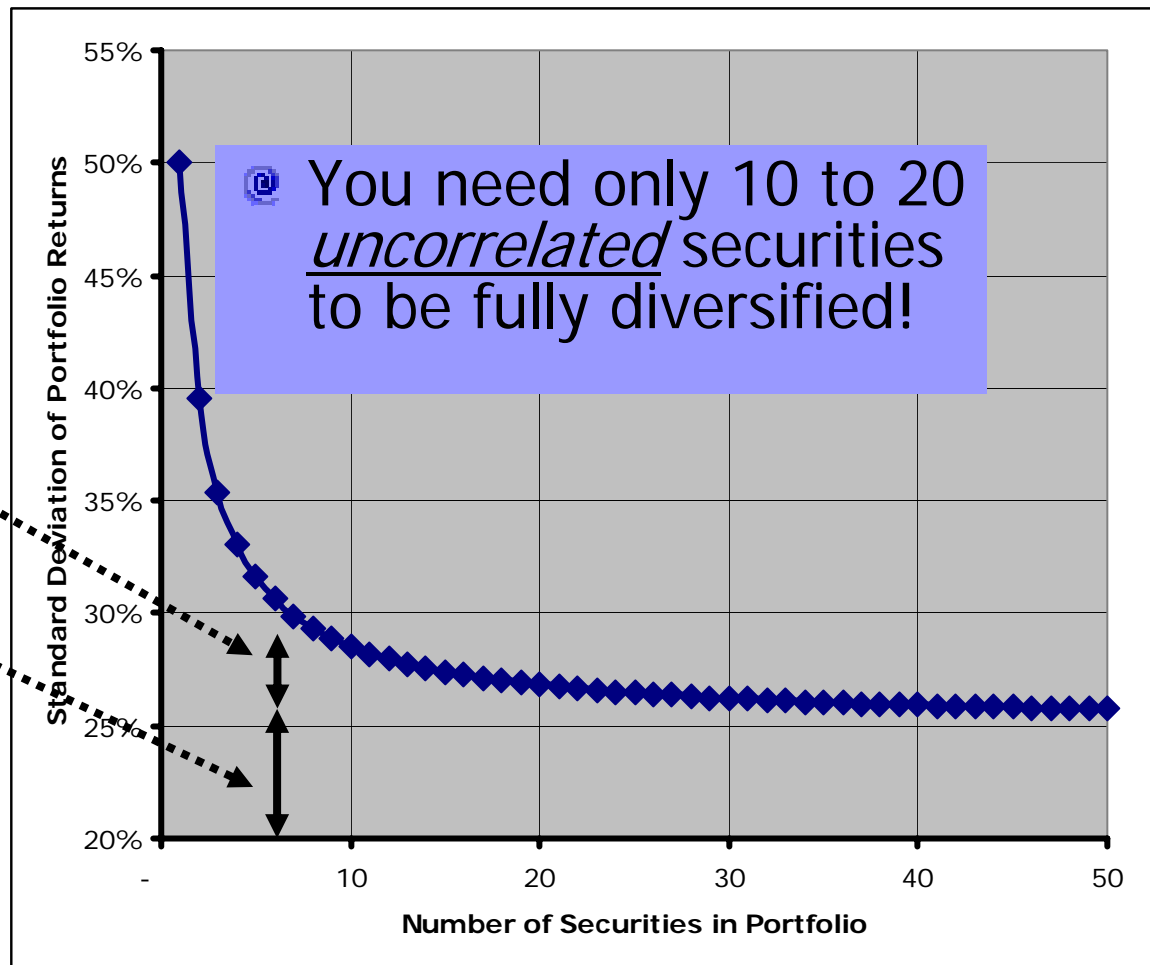
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The Only Free Lunch for Investors: Diversification

"Rules" for Successful Investing

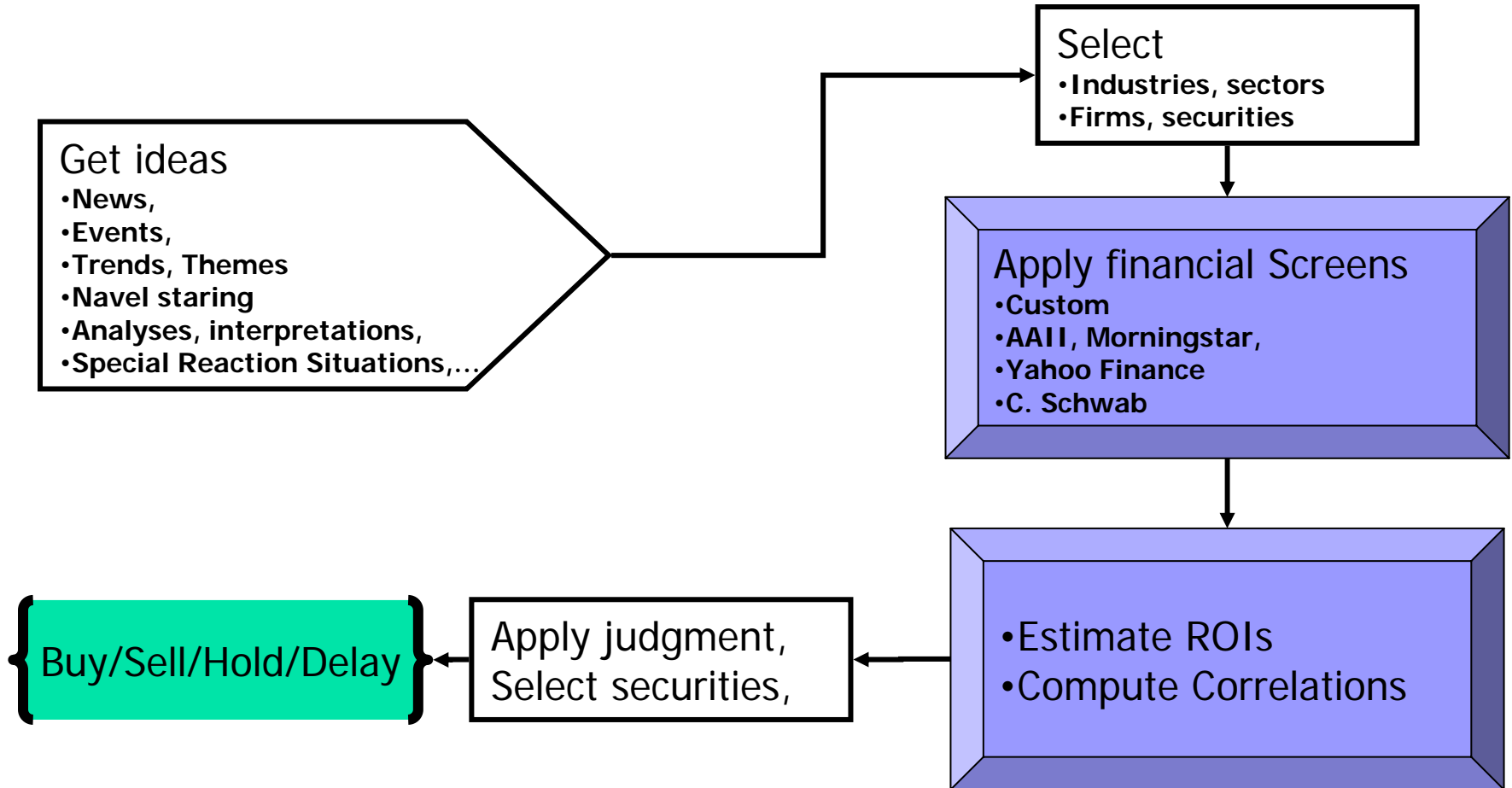
- ② Reduce Risk without Reducing ROI
- ② Diversified portfolio has several *uncorrelated* securities
- ② Unique Risk of a given firm
 - Diversifiable with other investments
- ② Market (Systemic) Risk
 - The risk you take just being in the market
 - Not diversifiable



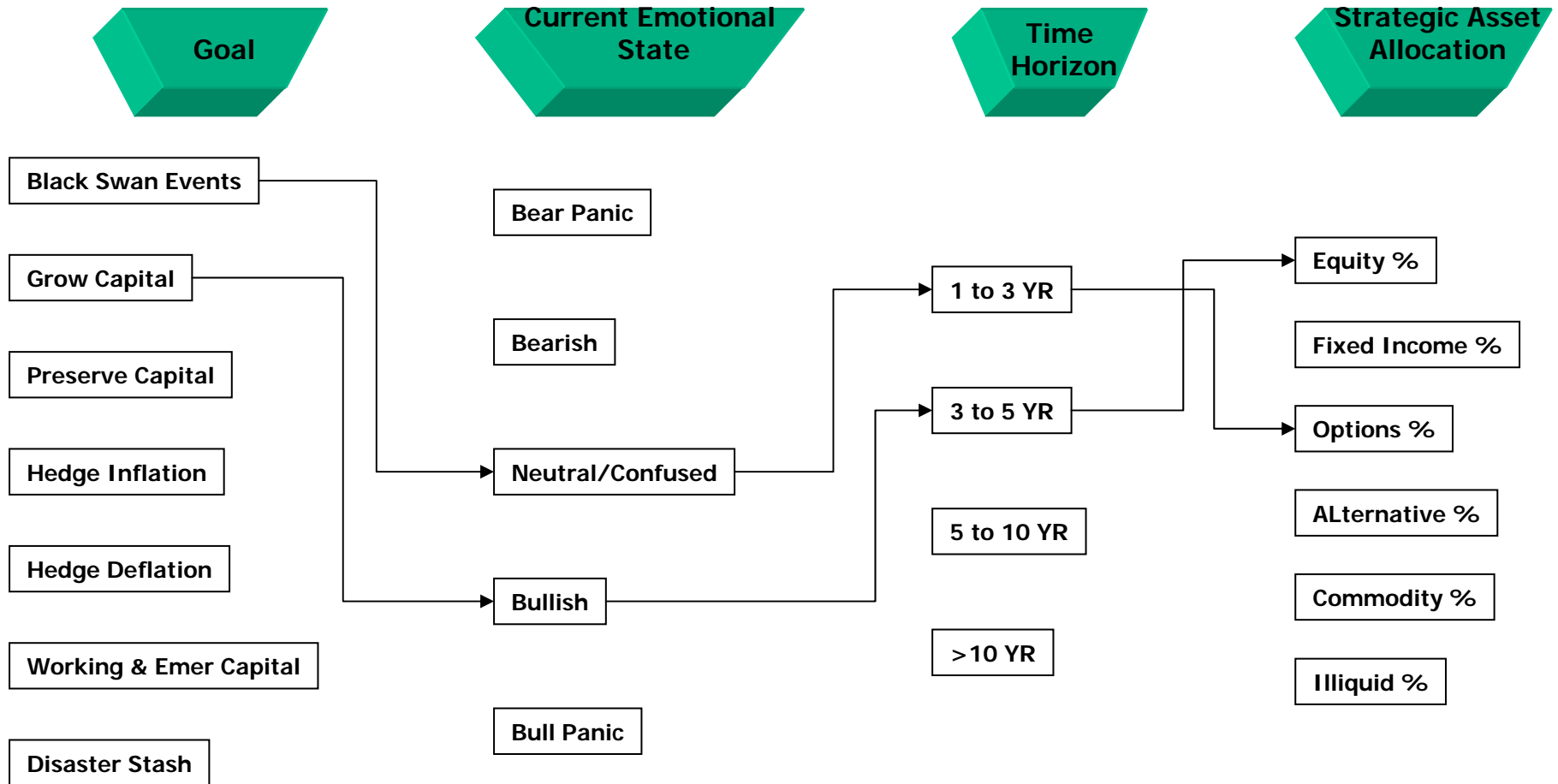
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Formal Investment Selection Process



Operational Process (1)



Operational Process (2)

- ④ For each goal, recognize your Emotional State and keep aware as you make further decisions.
- ④ Match spending goals to Investment Horizons
- ④ Form an initial set of allocations of securities
- ④ Add securities to the portfolio that ensure diversification
 - have low or negative correlation to existing securities
 - are not highly correlated with one another
 - Increase the total number of securities to 10 to 20
- ④ Follow the “Rules” for successful investing



Portfolio Diversification X-Ray

- ④ PDX is the fraction of your portfolio which meets the definition of “uncorrelated”
- ④ PDX is ideally 100% (total diversification)
- ④ $PDX=0\%$ =no diversification (equivalent to a single security)



Become Aware of Your Risk Preferences

📧 Here are some questions to stimulate your awareness



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What is Investment “Risk”?

- Ⓢ Analytical tools require certain special definitions
- Ⓢ These definitions formalize the intuitive one we used above
- Ⓢ Examples of Risk definitions
 - Risk_1 = Fraction of time in a year the portfolio loses value
 - Risk_2 = [Maximum amount of drawdown in a given year] * Prob{max drawdown}
 - Risk_3 = Standard Deviation of Returns to investments
 - Risk_4 = Prob{Portfolio Value falls below goal value at end of the year}
- Ⓢ Risk_3 preferred for theory building
- Ⓢ Risk_3 is the common measure of variation around a mean



Risk Assessment Test (1)

- ④ You're on vacation in a foreign country and are considering flying the national airline to see a special island you have always wondered about.
- ④ If you don't take the trip, it is extremely unlikely you'll revisit this part of the world again.
- ④ Safety statistics in this country
 - If you flew this airline once a year, there would be one crash every 1,000 years on average.
- ④ Would you take the flight?



Risk Assessment Test (2)

- ④ Same situation as previous case
- ④ Safety statistics in this country
 - An average of 1 in 1,000 flights on this airline crashes.
- ④ Would you take the flight?



What is Your Risk Preference?

Results from 38 year period, ended 12/31/08

Ref: Prof. C. L. Israelson, "Seeking Stability", Financial Planning, APR 2008

- ④ Pure cash is safe.
- ④ Stock alone can cause nausea!
- ④ What is best Medicine?
- ④ Diversify!

	Average Annual ROI	Standard Deviation of Returns	Worst 1-Year ROI
Cash: 3-Month T-Bills	6.3%	3.1%	1.1%
Stock: S&P 500 Index	11.3%	16.6%	-26.5%



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Test Your Understanding of Risk and Return

Given:

- Portfolio 1: 10 randomly selected stocks
- Portfolio 2: 50 randomly selected stocks

Which portfolio is riskier?

Which Portfolio has larger expected return?

Which Portfolio costs more to create?

Answers:

- Portfolio 1 is riskier since it must be less diversified (i.e., has more Specific Risk)
- Expected Returns are equal since they both have identical Market Risk (i.e., they both are entirely stocks)
- Portfolio 2 costs more due to more transaction fees

