

Smart Woman Securities Lecture Series

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Investment Management in Practice

presented by

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Gibson Capital, LLC
REGISTERED INVESTMENT ADVISER

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Gibson Capital, LLC

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- Firm overview
 - Founded in 1989 by Roger C. Gibson, CFA
 - Fee-only, SEC Registered Investment Advisor
 - Nationwide clientele consisting of high net worth individuals, foundations, endowments, and retirement plans
 - Over \$1.4 billion in assets under management for approximately 140 clients
- Our work bridges the worlds of
 - Client-engaged portfolio management
 - Academic research
 - Behavioral finance



Investment Research Categories

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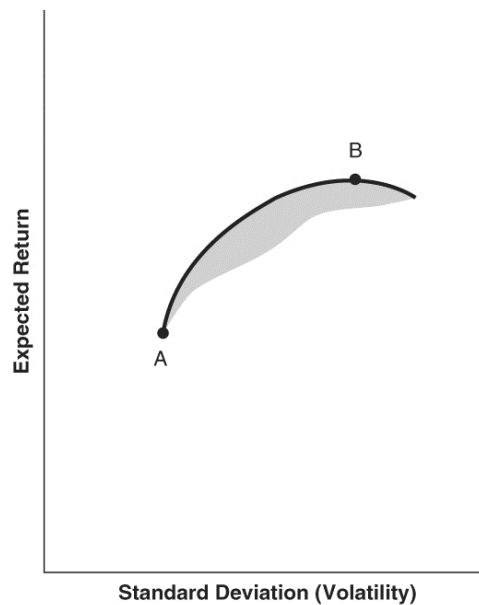
- Educational Materials
- Asset Class Research
- Implementation Research
- Manager Research
- Client-Specific Research
- Financial Planning Research
- Capital Market Assumptions

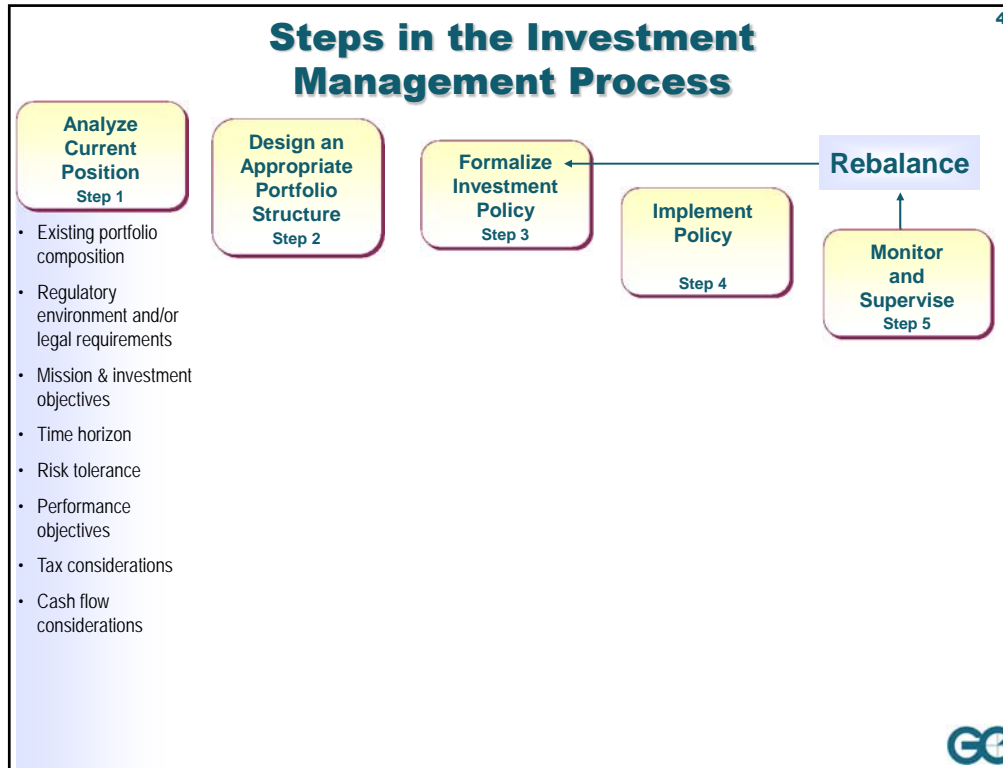
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Efficient Frontier

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Client Profile: Bob & Judy Simpson

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- Bob is an executive at a publicly-traded medical device manufacturer.
- Judy volunteers at their church.
- Both Bob and Judy are age 55.
- They have two grown children no longer in need of support.

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Source: © 2016 Gibson Capital, LLC

Client Profile: Bob and Judy Simpson

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- Existing portfolio composition
 - \$2,000,000 in a 401(k) (all stock mutual funds)
 - \$1,000,000 in a joint account (all cash)
 - \$1,000,000 in company stock (very low cost basis)
- Time horizon: Retires at age 60
- Objectives
 - Annual contribution of \$50,000* until retirement
 - Annual withdrawal of \$175,000* starting at retirement
 - Pass along \$1,000,000* total to children at death
 - Donate \$10,000* to charity annually
- Risk tolerance: ?

*Adjusted for inflation
Source: © 2016 Gibson Capital, LLC



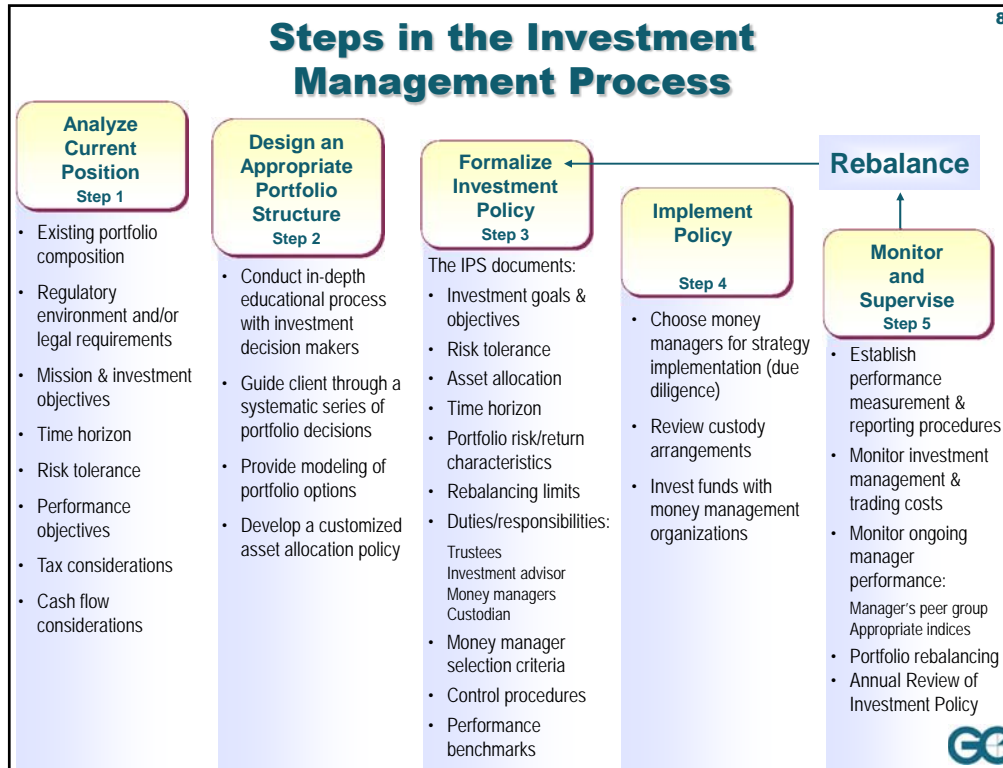
Determining Risk Tolerance

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- Risk tolerance questionnaires
- Situational profiling
- Current investment portfolio
- Collaborative portfolio decision-making process

Source: © 2016 Gibson Capital, LLC





Portfolio Design Objectives 9

- Goal: an individually-tailored, all-weather investment strategy
- The strategy should satisfy two important considerations:
 - Behavioral Issues—The strategy's pattern of returns will not cause you to abandon the strategy during the widely varying market environments that you will experience during your investment time horizon.
 - Investment Issues—The strategy should make good investment sense given your:
 - Assets
 - Cash Flows
 - Investment Time Horizon
 - Financial Goals

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Source: © 2016 Gibson Capital, LLC

Determinants of Portfolio Performance

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- **Asset Allocation**
 - Choice of asset classes and the allocation of funds across them.
 - Broader diversification reduces risk and improves returns.
 - Benefits are not skill dependent and therefore can be secured without the increased expenses associated with skill-based, active management.
 - Always seek to maximize the benefits from better asset allocation before incurring the increased expenses associated with employing skill.
- **Skill**
 - Skill can either be employed through security selection and/or market timing.
 - Superior skill is rare and difficult to conclusively identify.
 - Seeking skill-driven performance increases expenses.
 - Unbiased, disciplined due diligence is critical.
- **Asset Location**
 - Increasing the portfolio's after-tax return through proper positioning of investments in taxable vs. tax-sheltered accounts.
- **Investor Behavior**

Source: © 2016 Roger C. Gibson



The Value of Discipline 2004–2013

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Category	Average 10-Year Compound Annual Total Return	Asset-Weighted 10-Year Compound Annual Investor Return	Returns Gap
U.S. Equity Funds	8.18%	6.52%	-1.66%
International Equity Funds	8.77%	5.76%	-3.01%
Taxable Bond Funds	5.39%	3.15%	-2.24%
Municipal Bond Funds	3.53%	1.65%	-1.88%
All Funds	7.30%	4.81%	-2.49%

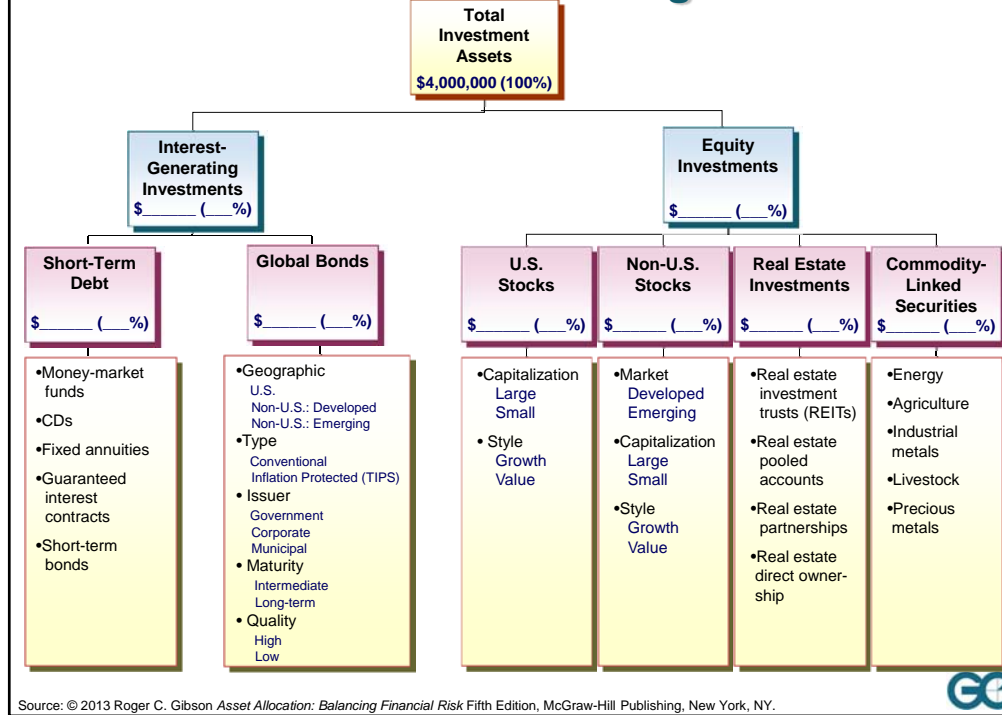
- **Future value of hypothetical \$100,000 investment in 10 years**
 - At 7.30% compound annual return \$202,301
 - At 4.81% compound annual return \$159,966

Source: © 2014 Gibson Capital, LLC. Based on information from Russel Kinnel, "Mind the Gap 2014", February 27, 2014, <http://news.morningstar.com/article.net/article.aspx?id=637022&SR=Yahoo&pt=tAD2SCT8P7>.



Investment Portfolio Design Format

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Summary Statistics of Annual Total Returns 1926–2015

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	Compound Annual Return %	Simple Average Return %	Standard Deviation (Volatility) %
Inflation	2.9	3.0	4.1
Interest-Generating Investments:			
U.S. Treasury Bills	3.4	3.5	3.1
Intermediate-Term Gov't.	5.2	5.3	5.7
Long-Term Government	5.6	6.0	10.0
Long-Term Corporate Bonds	6.0	6.3	8.4
Equity Investments:			
Large Company Stocks	10.0	12.0	20.0
Small Company Stocks	12.0	16.5	32.0

Source: © 2016 Roger C. Gibson

Two Major Risks All Investors Face

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- Inflation
 - Interest-generating investments, such as money market funds and bonds, are most susceptible.
 - Interest rates and inflation rates tend to move in tandem.
 - Even “modest” inflation is a major risk.
- Volatility
 - Equity investments, such as common stocks, are highly volatile.
 - The impact of a bad market can be felt for a very long time.
 - Not higher returns, higher **expected** returns.

Source: © 2013 Roger C. Gibson, *Asset Allocation: Balancing Financial Risk*, Fifth Edition, McGraw-Hill Publishing, New York, NY, p. 111.



Inflation Risk

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Purchasing Power of \$ 1,000

	Inflation Rate				
	2%	3%	4%	5%	6%
10 Years	\$ 820	\$ 744	\$ 676	\$ 614	\$ 558
20 Years	\$ 673	\$ 554	\$ 456	\$ 377	\$ 312
30 Years	\$ 552	\$ 412	\$ 308	\$ 231	\$ 174

Purchasing Power Loss

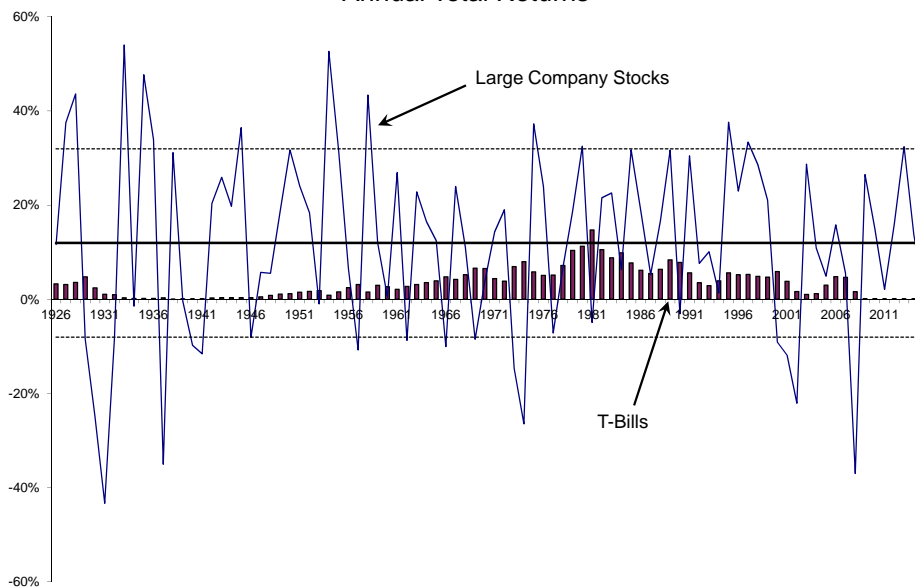
	Inflation Rate				
	2%	3%	4%	5%	6%
10 Years	18%	26%	32%	39%	44%
20 Years	33%	45%	54%	62%	69%
30 Years	45%	59%	69%	77%	83%

Source: © 2016 Roger C. Gibson



Volatility Risk 1926–2015

Annual Total Returns



Source: © 2013 Roger C. Gibson, *Asset Allocation: Balancing Financial Risk*, Fifth Edition, McGraw-Hill Publishing, New York, NY, p. 132. Data source: 2012 Ibbotson® *Stocks, Bonds, Bills and Inflation® (SBB®) Classic Yearbook*, © 2013 Morningstar. Updated by author.



Comparison of Investment Results Various Holding Periods 1926–2015

	Large Company Stocks	Long-Term Corporate Bonds	Long-Term Government Bonds	Treasury Bills	Inflation
90 One-Year Holding Periods					
Highest annual percent return	54.0%	42.6%	40.4%	14.7%	18.2%
Lowest annual percent return	-43.3%	-8.1%	-14.9%	-0.0%	-10.3%
Number of periods with negative returns	24	19	24	1	10
Number of periods with best of four returns	52	12	14	12	N/A
Percentage of periods with best of four returns	58%	13%	16%	13%	N/A
86 Five-Year Holding Periods					
Highest compound annual percent return	28.6%	22.5%	21.6%	11.1%	10.1%
Lowest compound annual percent return	-12.5%	-2.2%	-2.1%	0.0%	-5.4%
Number of periods with negative compound returns	12	3	6	0	7
Number of periods with best of four returns	59	16	7	4	N/A
Percentage of periods with best of four returns ³	69%	19%	8%	5%	N/A
81 Ten-Year Holding Periods					
Highest compound annual percent return	20.1%	16.3%	15.6%	9.2%	8.7%
Lowest compound annual percent return	-1.4% ¹	1.0%	-0.1%	0.1%	-2.6%
Number of periods with negative compound returns	4	0	1	0	6
Number of periods with best of four returns	60	10	5	6	N/A
Percentage of periods with best of four returns ³	74%	12%	6%	7%	N/A
71 Twenty-Year Holding Periods					
Highest compound annual percent return	17.9%	12.1%	12.1%	7.7%	6.4%
Lowest compound annual percent return	3.1%	1.3%	0.7%	0.4%	0.1%
Number of periods with negative compound returns	0	0	0	0	0
Number of periods with best of four returns	64	3	4 ²	0	N/A
Percentage of periods with best of four returns	90%	4%	6%	0%	N/A

¹Holding period ending with 2008.

²Holding periods ending with 2008, 2009, 2011, and 2012.

³Due to rounding, this line does not sum to 100%.

Source: © 2013 Roger C. Gibson, *Asset Allocation: Balancing Financial Risk*, Fifth Edition, McGraw-Hill Publishing, New York, NY, p.117. Calculated by Gibson Capital, LLC using data presented in 2012 Ibbotson® *Stocks, Bonds, Bills and Inflation® (SBB®) Classic Yearbook*, © 2013 Morningstar. Updated by author.



Example Portfolio Balance Choices

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	Portfolio Balance		Modeled Portfolio Performance			
	Treasury Bills	Large Company Stocks	Modeled Return*	Volatility*	Typical Range of Returns**	
					From	To
1	100%	0%	2.00%	± 0%	2.00%	2.00%
2	75%	25%	3.25%	± 5%	-1.75%	8.25%
3	50%	50%	4.50%	± 10%	-5.50%	14.50%
4	25%	75%	5.75%	± 15%	-9.25%	20.75%
5	0%	100%	7.00%	± 20%	-13.00%	27.00%

*Calculated as the weighted average of the modeled returns and volatilities of Treasury bills and large company stocks. For example, for Portfolio 4 above, which is made up of 25% Treasury bills and 75% large company stocks:

$$\text{Portfolio Modeled Return} = .25 (2\%) + .75 (7\%) = 5.75\%$$

$$\text{Portfolio Volatility} = .25 (0\%) + .75 (20\%) = 15\%$$

** The odds are approximately two out of three that a single year's total return will be in a range defined by the modeled return plus or minus the volatility.

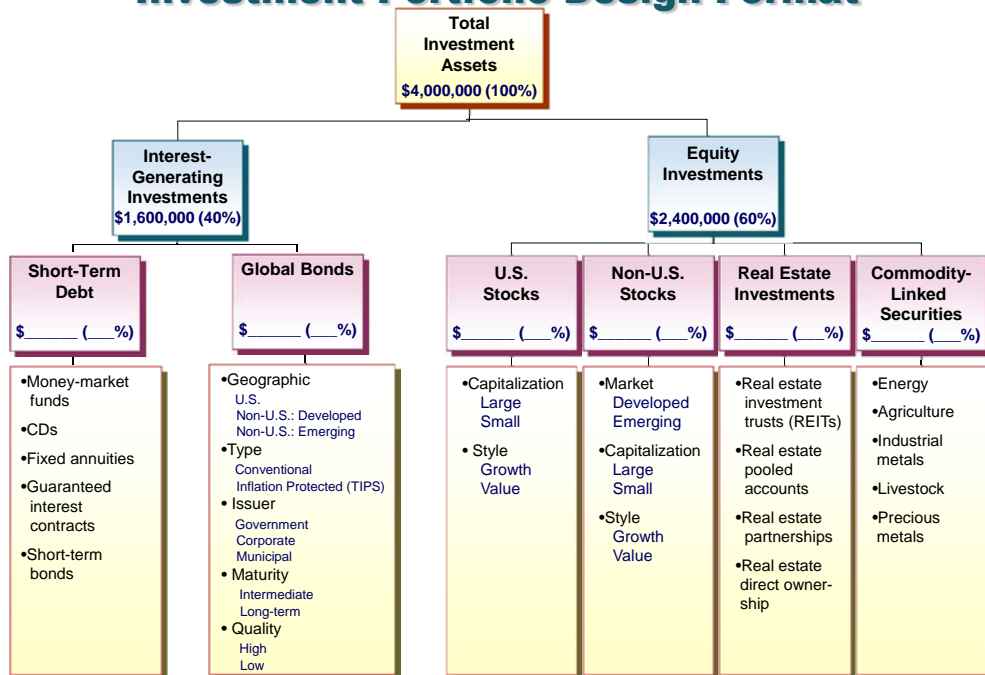
Note: As the percentage allocated to large company stocks increases, the portfolio volatility increases much more rapidly than the incremental increase in modeled return. The longer the time horizon, the more worthwhile it is to bear higher levels of short-run volatility. In deciding how they would divide their investment funds between Treasury bills and large company stocks, investors are forced to acknowledge and deal with the volatility/return trade-off issue.

Source: © 2013 Roger C. Gibson, *Asset Allocation: Balancing Financial Risk*, Fifth Edition, McGraw-Hill Publishing, New York, NY, p. 137. Updated by author.



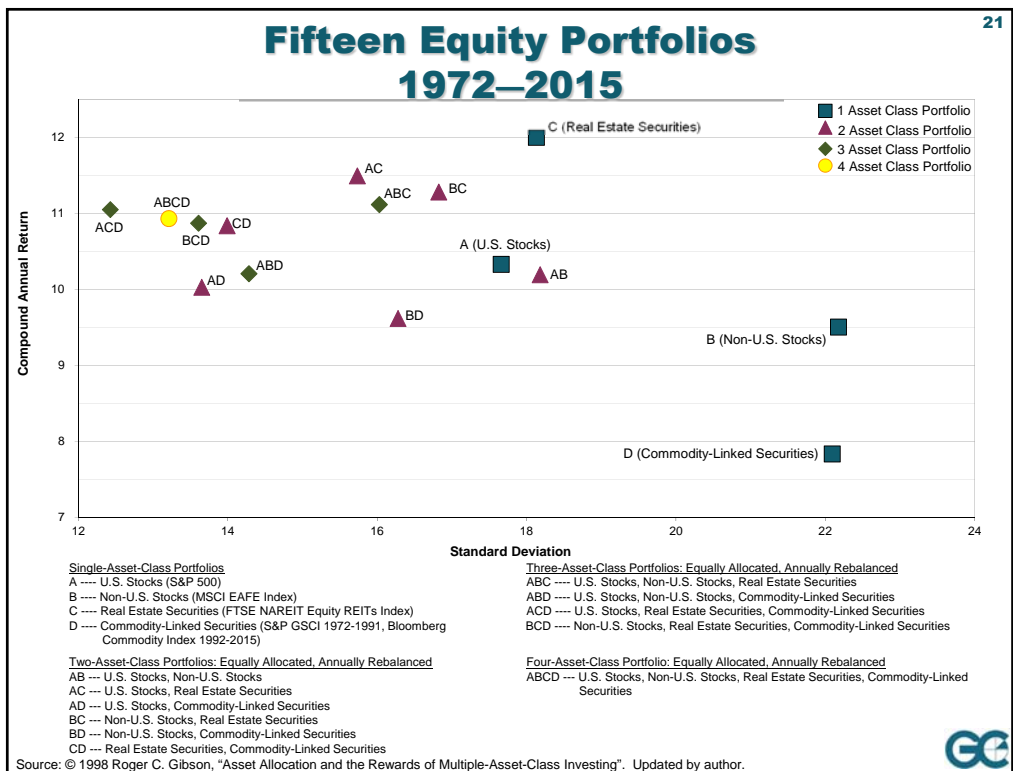
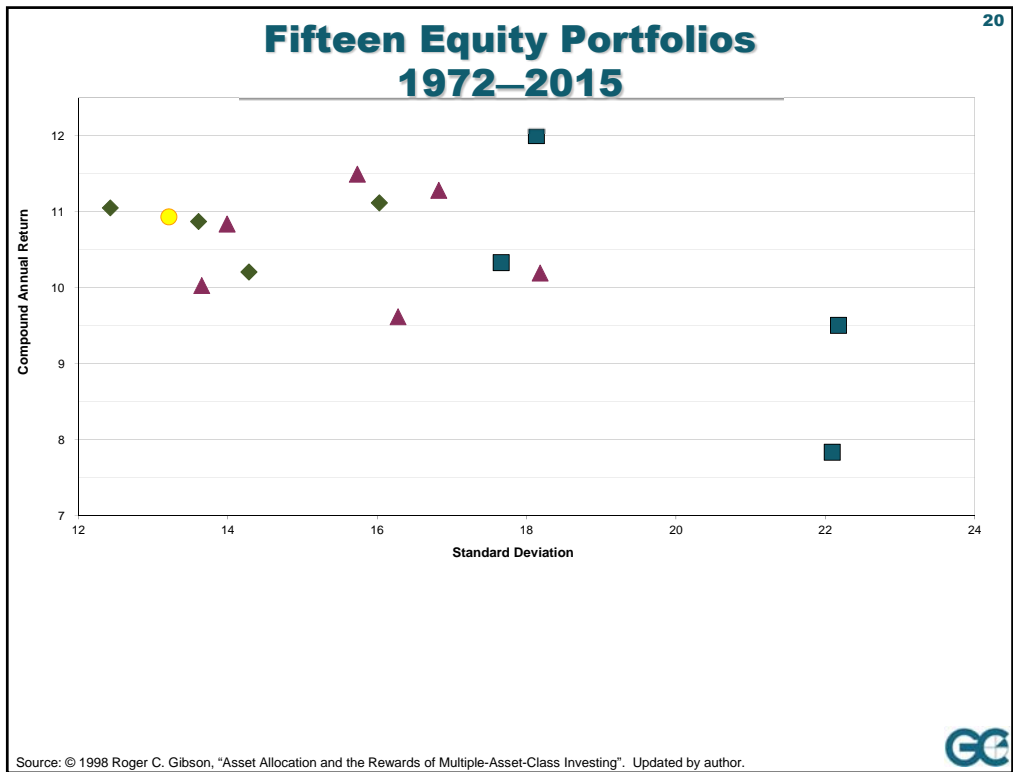
Investment Portfolio Design Format

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Source: © 2013 Roger C. Gibson *Asset Allocation: Balancing Financial Risk* Fifth Edition, McGraw-Hill Publishing, New York, NY.





How can we determine the likelihood of the Simpsons meeting their objectives?



Monte Carlo Simulation (MCS)

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- MCS is a statistical tool that uses random sampling to create models.
- User-defined variables
 - Client demographic variables
 - Cash flows
 - Target or minimum terminal portfolio value
 - Asset values
 - Asset allocation
 - Capital market assumptions
- From these variables, MCS software generates a portfolio return distribution and a mortality distribution.
- For each “trial”, MCS software randomly selects annual returns from the return distribution and randomly selects client mortality from the mortality distribution.
- MCS software generates hundreds or thousands of individual trials (representing client lifetimes) from which the user can compute a “probability of success”.



Monte Carlo Simulation (continued)

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- Monte Carlo Simulation analyzes the impact of various risks
 - Investment risk—portfolio rate of return volatility
 - Timing risk—the risk posed by the sequence of annual returns
 - Mortality risk—uncertainty with respect to investor mortality

Source: © 2016 Roger C. Gibson



Monte Carlo Simulation Example

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- Clients: Bob and Judy Simpson
- Bob and Judy's age: 55
- Initial portfolio value: \$4,000,000
- Bob and Judy's financial objectives
 - Annual contribution of \$50,000* until retirement
 - Annual withdrawal of \$175,000* starting at retirement
 - Pass along \$1,000,000* total to children at death
 - Donate \$10,000* to charity annually
- Assumptions
 - Portfolio asset allocation: 40% interest-generating investments / 60% equity investments
 - Inflation rate: 3%
 - Mortality method: random

*Adjusted for inflation
Source: © 2016 Gibson Capital, LLC



Monte Carlo Simulation Example

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- Bob and Judy's financial objectives
 - Annual contribution of \$50,000* until retirement
 - Annual withdrawal of \$175,000* starting at retirement
 - Pass along \$1,000,000* total to children at death
 - Donate \$10,000* to charity annually

Important: The projections or other information generated by WCM regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results. This table shows percentile ending values for user-selected ranks and time periods as well as the minimum successful trial which is represented in bold.

	<u>YEAR 5</u>	<u>YEAR 10</u>	<u>YEAR 15</u>	<u>YEAR 20</u>	<u>YEAR 30</u>	<u>AT DEATH</u>
0th	\$9,851,832	\$15,014,870	\$19,552,549	\$21,515,491	\$47,066,457	\$92,811,843
5th	\$7,214,788	\$8,279,254	\$9,361,749	\$11,059,964	\$14,265,183	\$17,737,524
25th	\$5,637,479	\$6,027,421	\$5,953,372	\$6,015,785	\$5,863,284	\$5,675,403
50th	\$4,789,332	\$4,441,175	\$4,098,098	\$3,741,258	\$2,785,881	\$2,114,049
60th	\$3,772,857	\$4,211,995	\$4,454,616	\$3,096,496	\$1,001,489	\$1,001,489
75th	\$4,074,148	\$3,382,043	\$2,763,311	\$2,124,979	\$539,965	-\$709,591
95th	\$3,225,911	\$2,316,561	\$1,435,547	\$683,392	-\$1,164,706	-\$3,743,780
100th	\$2,474,891	\$1,175,258	-\$49,221	-\$987,807	-\$3,158,740	-\$8,697,425
Over Target	100%	100%	98%	91%	69%	60%

*Adjusted for inflation

Source: Monte Carlo simulation illustration used by permission of Wealthcare Capital Management LLC, calculated using Wealthcare's Financeware wealth management application (www.financeware.com).



What can we recommend to improve their probability of success?



Monte Carlo Simulation Example

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- Bob and Judy's financial objectives
 - Annual contribution of \$50,000* until retirement
 - Annual withdrawal of \$150,000* starting at retirement
 - Pass along \$500,000* total to children at death
 - Donate \$10,000* to charity annually

Important: The projections or other information generated by WCM regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results. This table shows percentile ending values for user-selected ranks and time periods as well as the minimum successful trial which is represented in bold.

	<u>YEAR 5</u>	<u>YEAR 10</u>	<u>YEAR 15</u>	<u>YEAR 20</u>	<u>YEAR 30</u>	<u>AT DEATH</u>
0th	\$9,851,832	\$16,017,072	\$21,418,700	\$24,827,700	\$55,997,050	\$108,681,678
5th	\$7,214,788	\$9,203,344	\$10,847,971	\$13,110,170	\$18,428,280	\$23,179,397
25th	\$5,637,479	\$6,805,920	\$7,115,085	\$7,639,960	\$8,151,412	\$8,762,855
50th	\$4,789,332	\$5,242,676	\$5,132,459	\$5,065,204	\$4,654,432	\$4,493,016
75th	\$4,074,148	\$4,135,183	\$3,694,321	\$3,243,559	\$2,115,180	\$1,384,866
83th	\$4,527,819	\$3,903,147	\$3,872,367	\$4,650,930	\$3,297,586	\$501,624
95th	\$3,225,911	\$3,022,321	\$2,202,331	\$1,611,618	\$197,570	-\$1,619,880
100th	\$2,474,891	\$1,782,681	\$543,592	-\$142,317	-\$1,868,900	-\$5,655,013
Over Target	100%	100%	100%	100%	93%	83%

*Adjusted for inflation

Source: Monte Carlo simulation illustration used by permission of Wealthcare Capital Management LLC, calculated using Wealthcare's Financeware wealth management application (www.financeware.com).



**How might we address
Bob's appreciated stock position?**

