

- Me
- Website/Materials
- Exams: you have to follow all the lessons (live o via recordings) Dec: Written
- Lesson: from 2pm to 3:50pm Oral
- Tutor: Stefania Hosszu

Macro-Agenda:

- 1) Introduction to portfolio construction
- 2) Financial Markets Analysis
- 3) Strategic Asset Allocation
- 4) Tactical Asset Allocation
- 5) Product Selection

1) Introduction to Portfolio Construction

A portfolio is the output of a well organised process where you have to performe many stages.



HP/Risk Tol	low	medium	medium-high	high
1 yr				
3 yrs				
5 yrs				
10 yrs				
+10 yrs				

Portfolio Construction: 20 investment solutions

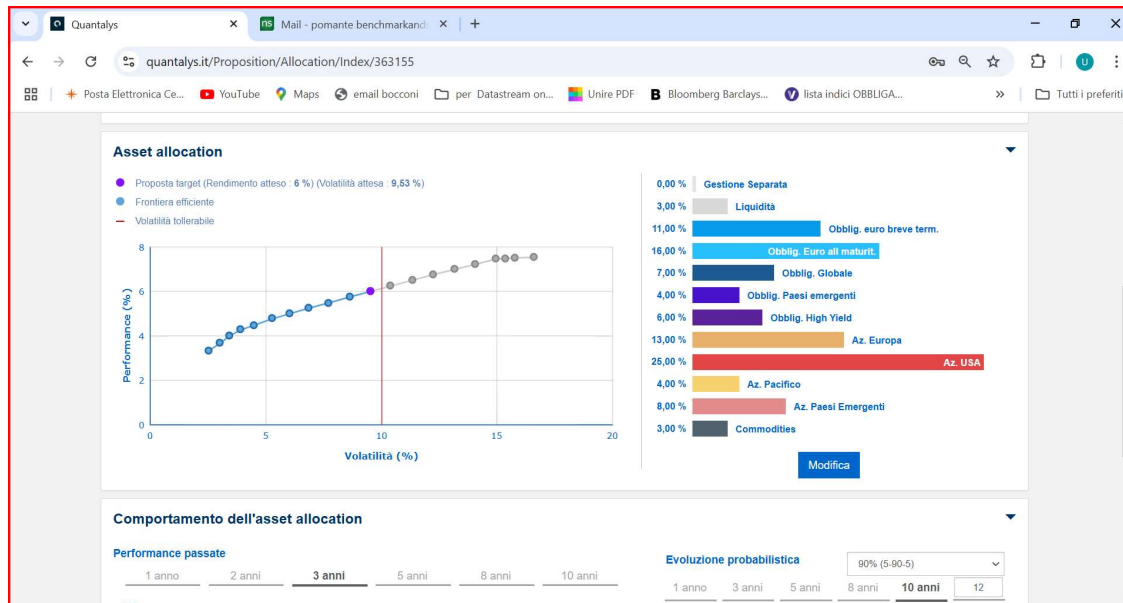
1) Strategic Asset Allocation (**SAA**)

A combination of asset classes (fin. markets) that is expected to be maintained, on average, in the long run.

Examples:

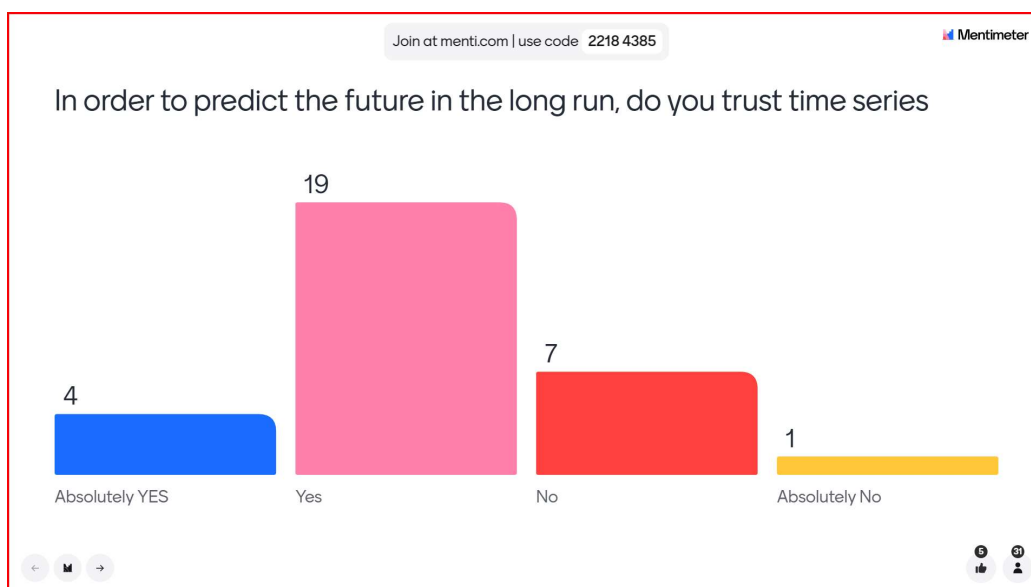
<https://www.nbim.no/>

<https://quantalys.it/> → 20 SAA



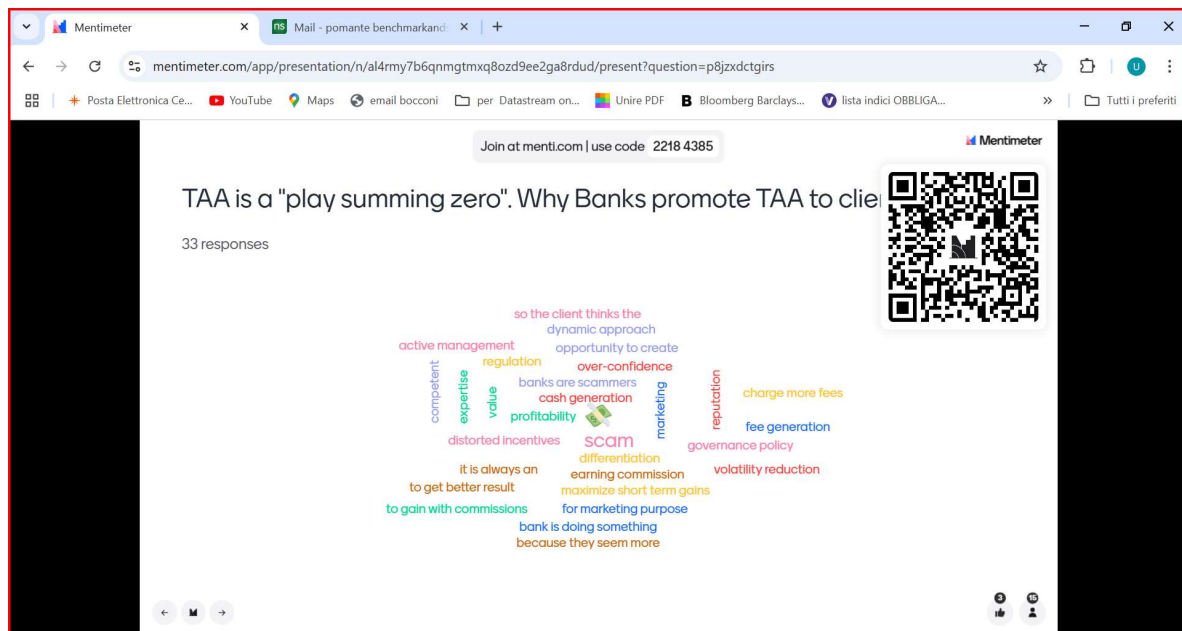
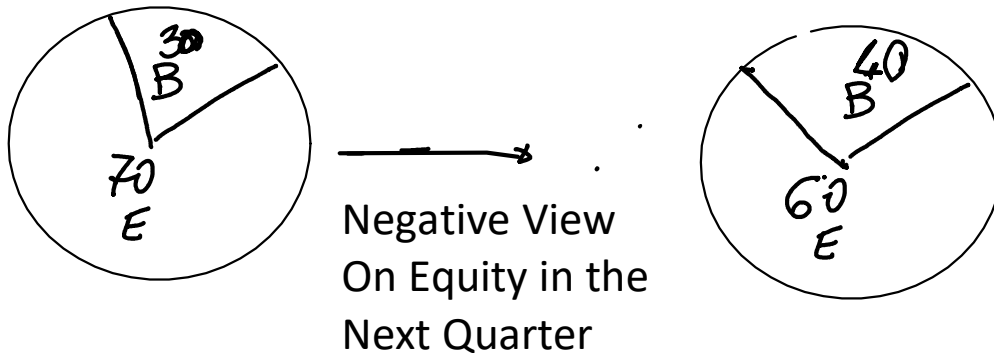
Strategic Committee: create SAAs

- Forecasts / Views Strategic (Analists)
- Optimization Model



2) Tactical Asset Allocation (TAA) - Market Timing

Short-run change of the Strategy where you overweight asset classes with a + View and underweight tactically asset classes with a - View.



3) Product Selection: you have to select product in order to "give life" to the portfolio. In order to invest in every single asset class

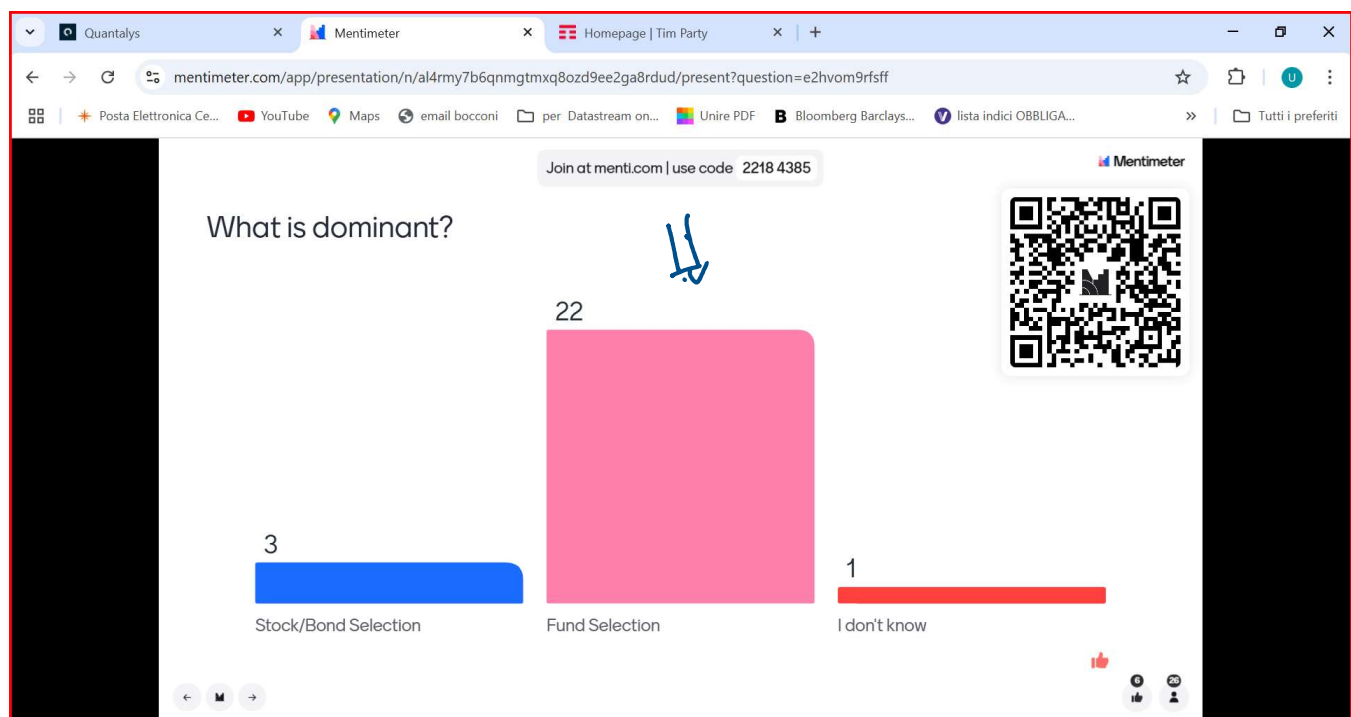
Seleziona i prodotti

KIID	Nome	Codice ISIN	Rating	Peso obiettivo	Peso coperto	Importo obiettivo	Importo coperto	Delta
	Liquidità			3,00 %	3,00 %	30.000,00 €	30.000,00 €	0,00 €
	Gestione separata 5%	QUA021104493	★★★★★		3,00 %		30.000,00 €	
	Obblig. euro breve term.			15,00 %	15,00 %	150.000,00 €	150.000,00 €	0,00 €
	BNPP Flexi III Signature EUR Priv Acc	LU0753966273	★★★★★		15,00 %		150.000,00 €	
	Obblig. Euro all maturit.			23,00 %	23,00 %	230.000,00 €	230.000,00 €	0,00 €
	N6 Euro Bond Abs Refund I EUR	IE00BFZMG962	★★★★★		8,00 %		79.999,99 €	
	GS European ABS I Cap EUR	LU1900228542	★★★★★		15,00 %		150.000,01 €	
	Obblig. Globale			9,00 %	9,00 %	90.000,00 €	90.000,00 €	0,00 €
	Vontobel Fund Credit Opportunities E USD	LU1242417589	★★★★★		9,00 %		90.000,00 €	
	Obblig. Paesi emergenti			3,00 %	3,00 %	30.000,00 €	30.000,00 €	0,00 €
	InterFd Em. Mkts Loc Currency Bd EUR A	LU0123381807	★★★★★		3,00 %		30.000,00 €	
	Obblig. High Yield			4,00 %	4,00 %	40.000,00 €	40.000,00 €	0,00 €
	Nomura Glb HY Dynamic Duration S USD Cap	IE00BN7JDW35	★★★★★		4,00 %		40.000,00 €	

2 Choices

→ Select stock/bonds

→ Select Funds



Selection of stocks/bonds → Transaction fee 0.1%

BOND 6054
1 MLN €
Co Fee 1,000 €
- 0.007

$C_0 \text{ Fee } 1,000 \text{ €}$
 $33 \text{ €} \times \text{year}$

Selection of Asset Managers (Funds)

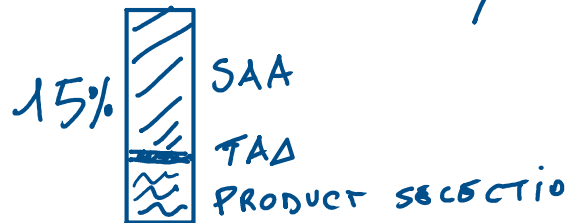
BNY Mellon Euroland Bd EUR C
 $MF = 0,5\% \rightarrow 50\% \rightarrow 0,25\%$

$\text{Fee } 2.500 \text{ €} \times \text{year}$



Ex-Post Stage: Monitoring: Return - Risk

Performance Decomposition/Attribution



2) Financial Markets Analysis

2.1) Benchmark / Market Indexes

Equity USA

Definition: Artificial basket of stocks/bonds which composition is a *good* proxy of the composition of a market

Properties:

- **Representativeness:** the composition of the index must be a good proxy of the market composition
- **Replicability:** easy to be replicated
- **Transparency/Objectivisness:**

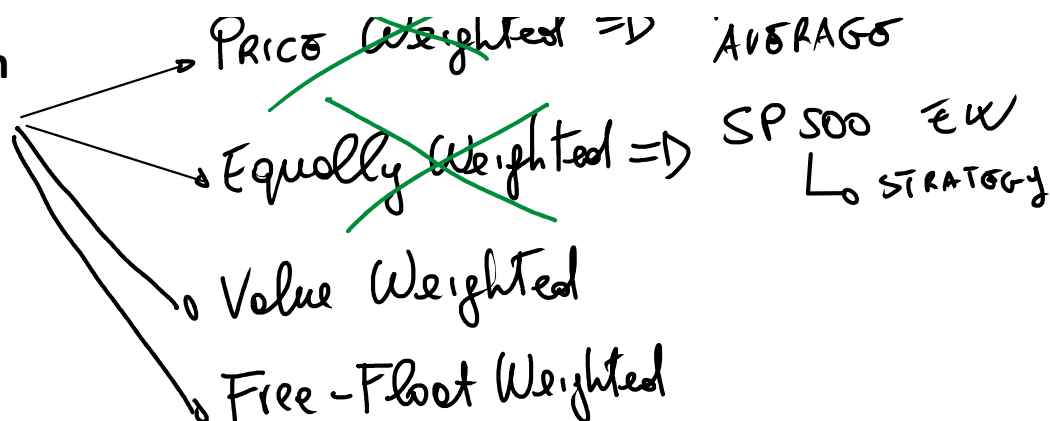
Construction

~~Price Weighted~~ \Rightarrow

DOW JONES
INDUSTRIAL
AVERAGE

Construction

- Weighting



- Cash Flow Management

<https://www.msci.com/end-of-day-data-search>

<https://www.msci.com/constituents>

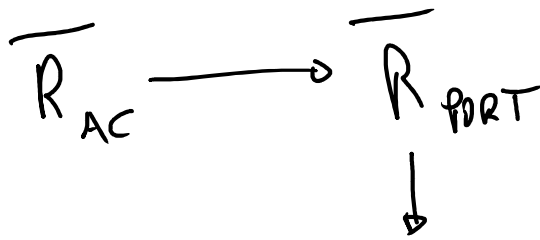
2.2) Statistical indicators in order to capture return/risk of the Financial Markets

How to capture RETURN

	Money Mkt in €	€ Bond Mkt Short Term	€ Bond Mkt	Global Bond Dev Mkts	Global Corp Bond High Yield	Em Mkts Bond Mkt	Equ. Europe	Equ. North America	Equ. Pacific	Equ. Em Mkts
IN €	ICE Bofa Euro 0-1 yr	ICE Bofa Bond Euro 1-3 Y	ICE Bofa Bond. Euro	ICE Bofa Bond. Global	ICE Bofa Global HY	ICE Bofa Bond Emerging	MSCI Europe	MSCI North America	MSCI Pacific	MSCI Emerging Markets
2000	4,32%	4,79%	8,39%	10,49%	0,57%	17,38%	-1,93%	-5,79%	-20,61%	-25,92%
2001	4,74%	5,94%	6,25%	4,75%	8,73%	6,93%	-15,26%	-7,63%	-21,15%	2,94%
2002	3,53%	6,00%	8,49%	0,31%	-16,13%	-4,97%	-30,50%	-34,11%	-22,79%	-20,24%
2003	2,54%	3,34%	3,77%	-4,92%	8,74%	1,47%	15,76%	8,26%	15,63%	30,02%
2004	2,18%	3,40%	7,56%	2,09%	4,33%	5,10%	12,65%	3,27%	10,71%	16,88%
2005	2,20%	2,05%	5,67%	7,93%	16,94%	24,11%	26,68%	23,23%	41,75%	55,04%
2006	3,02%	1,77%	-0,28%	-5,11%	1,54%	-0,19%	20,18%	3,30%	0,64%	18,60%
2007	4,42%	3,79%	0,97%	-0,86%	-7,09%	-0,53%	3,17%	-2,89%	-4,75%	26,07%
2008	5,75%	7,00%	9,97%	18,47%	-24,13%	-1,30%	-43,29%	-34,58%	-32,87%	-50,76%
2009	2,31%	4,25%	4,32%	-1,28%	56,93%	14,66%	32,55%	25,32%	20,47%	73,44%
2010	1,11%	0,90%	1,14%	14,10%	21,80%	17,28%	11,75%	24,04%	24,14%	27,48%
2011	1,59%	0,25%	2,18%	13,58%	6,06%	5,15%	-7,51%	3,92%	-10,72%	-15,44%
2012	1,19%	4,34%	11,42%	-0,66%	17,48%	10,50%	18,09%	13,79%	12,84%	16,80%
2013	0,23%	1,79%	2,15%	-9,07%	2,17%	-10,93%	20,51%	24,75%	13,31%	-6,49%
2014	0,31%	1,86%	13,50%	18,79%	6,00%	27,90%	7,40%	28,19%	11,07%	11,81%
2015	0,10%	0,74%	1,71%	8,61%	6,74%	12,89%	8,78%	11,09%	14,97%	-4,87%
2016	-0,15%	0,41%	3,13%	4,90%	18,53%	13,22%	3,22%	15,66%	7,59%	14,94%
2017	-0,32%	-0,30%	0,41%	-6,10%	-3,22%	-4,82%	10,88%	6,83%	9,76%	21,00%
2018	-0,32%	-0,12%	0,88%	4,05%	1,25%	-0,84%	-10,00%	-0,41%	-7,33%	-9,91%
2019	-0,31%	0,47%	6,94%	8,06%	15,92%	14,77%	26,88%	33,90%	21,81%	21,07%
2020	-0,47%	0,18%	3,99%	-0,06%	-0,89%	-1,16%	-2,82%	10,64%	2,98%	8,89%
2021	-0,49%	-0,51%	-2,79%	1,55%	8,47%	5,06%	25,85%	36,61%	10,70%	5,20%
2022	-0,75%	-4,97%	-18,22%	-12,27%	-7,20%	-12,22%	-8,92%	-13,83%	-7,06%	-14,47%
2023	2,80%	4,02%	7,09%	0,77%	10,40%	7,42%	16,57%	22,31%	11,68%	6,53%

$$R = (1 + R_{MKT}) (1 + \frac{S\%}{Exch\ Rate}) - 1$$

$$\bar{R} = \sum_{i=1}^n \frac{R_i}{n} \quad \begin{array}{l} = \text{MEDIA()} \\ = \text{AVERAGE()} \end{array}$$



Weighted Average Approach

$$\bar{R}_{\text{PORT}} = \sum_{i=1}^K w_i \cdot \bar{R}_i = \text{sumproduct}(\text{weights}; \text{av returns})$$

$$\bar{R}_{\text{PORT}} = [w_1, w_2, \dots, w_K] \times \begin{bmatrix} \bar{R}_1 \\ \bar{R}_2 \\ \vdots \\ \bar{R}_K \end{bmatrix}$$

$$= \text{mmult}(B30:K30; \text{transpose}(B28:K28))$$

↗ ENTER
 ↘ CTRL + ↑ + ENTER

Risk Analysis

- Standard Deviation
- Absolute mean Error
- Value at Risk
- Expected Shortfall
- Semi-standard deviation
- Tracking Error Volatility
- Downside Risk
- Modified Duration
- Beta
- Greeks
- Maximum Drawdown

3 FAMILIES
OF RISK
MEASURES

VOLATILITY

Sensitivity

POTENTIAL
LOSS

- Greeks
- Maximum Drawdown
- Rating

Standard Deviation of the calculation (σ)

- σ of a single Asset class



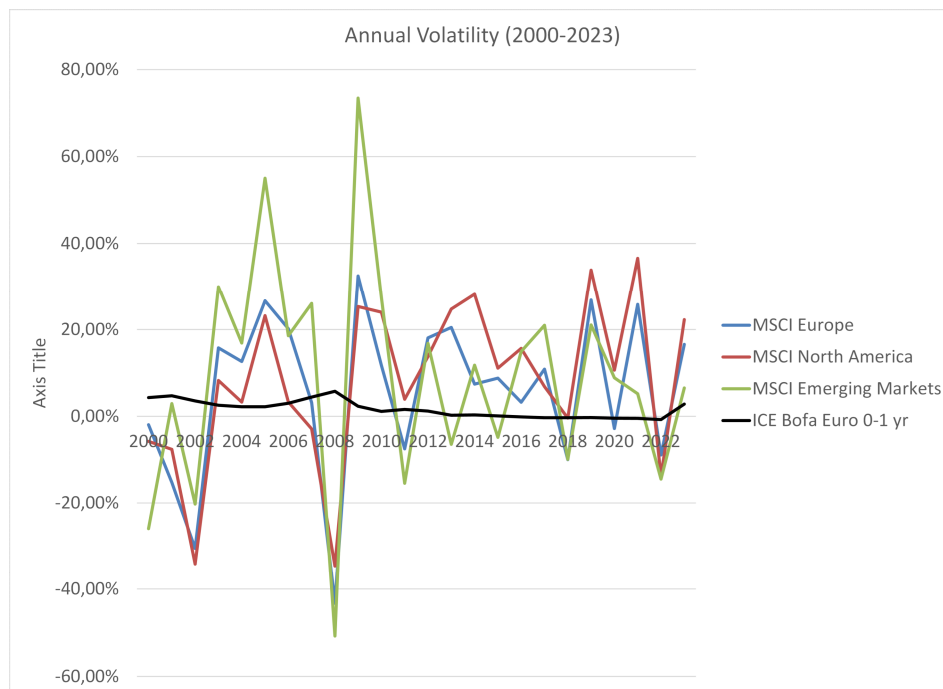
PERSPECTIVES

**The Early History of Portfolio Theory:
1600–1960**

Harry M. Markowitz

July/August 1999

Problems with Markowitz (1952). I am tempted to include a disclaimer when I send requested copies of Markowitz (1952) that warns the reader that the 1952 piece should be considered only a historical document—not a reflection of my current views about portfolio theory. There are at least four reasons for such a warning. The first two are two technical errors described in this section. A third is that, although the article noted that the same portfolios that minimize standard deviation for given E also minimize variance for given E , it failed to point out that standard deviation (rather than variance) is the intuitively meaningful measure of dispersion. For example, “Tchebychev’s inequality” says



=stdev(timeseries)

	Money Mkt in €	€ Bond Mkt Short Term	€ Bond Mkt	Global Bond Dev Mkts	Global Corp Bond High Yield	Em Mkts Bond Mkt	Equ. Europe	Equ. North America	Equ. Pacific	Equ. Em Mkts
SIGMA	1,93%	2,67%	6,14%	8,15%	15,25%	10,32%	18,50%	18,68%	17,39%	25,99%

$D = 0,5$
100% Investment
Full €

$D = 2$

$D = 7.5$

Exchange Risk

Credit Risk

Equity Risk