06/30/15
Bus 172B
F.J. Jones

John Wooden: "Failure to Prepare is Preparing to Fail."

SAN JOSE STATE UNIVERSITY
Fall 2015
Business 172B – Portfolio Analysis

Instructor: Frank J. Jones
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Class Hours: MW: 9:00-10:15
Final Exam: 12/16/15 (Wed.), 0715-0930
Class Room: BBC 021
Office Hours: M: 11:45-14:30; W: 14:15-15:15
And by appointment (in my office - BT 850D)

Required Texts:

- Winning the Loser's Game, Sixth Edition, Charles D. Ellis, 2013, McGraw Hill. Chapters 1-21 will be covered on the Mid-Semester Exam; Chapters 22-26 and Appendices A, B, and C will be covered on the Final Exam.
- If You Can, William J. Bernstein, 2014

Course Objective:

This course considers the development of overall investment portfolios composed of asset classes and securities (that is, considers which asset classes and securities are included in the portfolio and in what proportions) and the management of these portfolios to satisfy the investment requirements, preferences of investors and changes in market levels. Portfolios which are aligned with the risk tolerances of the investors are developed. The emphasis in this course is on the individual investor. BUS172B considers portfolios of securities and builds on BUS172A which considers individual securities.

Mutual funds, exchange traded funds, closed-end funds, hedge funds and other investment vehicles are considered. Retirement (tax advantaged) portfolios are considered in addition to investment (taxable) portfolios. Both traditional finance and behavioral finance methodologies are considered. The course has an applied orientation – you should be capable individual investors by the end of the course, that is engage in DIY (do it yourself) investing. Overall, the course is intended to provide life skills.

In general, the objectives for the course are to:

1. Understand the theory and techniques of portfolio management (there is a significant amount of theory);
2. Be able to apply the theory and techniques to the actual investment world - this objective is pragmatic; and

3. Be able to develop and manage your own investment portfolio

Among the sub-objectives of the course are to:

1. be able to read and understand the financial press (specifically the Wall Street Journal)
2. Not get fooled or "picked off" by those trying to separate you from your funds

An essential characteristic of good investors is humility. Although Charles Darwin was a biologist not an investor, he famously said, "Ignorance more frequently begets confidence than does knowledge." In investments, return derives from risk and risk should be addressed with humility—the only appropriate response to risk is humility.

As a "stretch objective," the course develops a degree of wisdom about the financial markets and investments. Be aware of and have respect for wisdom.

Prerequisites:

Business 172A (Security Investments) is a prerequisite for this course. Students are also expected to have a good working knowledge of algebra, statistics and accounting.

Requirements:

Students are required to:

- Understand the material covered in the class lectures.
    - An outline of these course topics is provided as follows. However, the sequence and coverage of these topics is flexible.
- Understand the materials in the class notes (which are provided on Canvas).
- Read the entire book, Winning the Loser's Game by Charles D. Ellis.
    - Chs. 1-21 will be covered on the Mid-Semester Examination. Chs. 21-26 will be covered on the Final Examination.
- Understand the material in other readings (Tidbits/Lessons), which are distributed in class.
- It will also be beneficial to selectively read The Wall Street Journal (WSJ) on a daily basis.
- Each class will be divided into three parts: "Administration," "Tidbits/Lessons", and "Lecture."

Grading:

- There will be one mid-semester examination and one final examination. The final exam is comprehensive. Both exams use a Scantron (Form NO. 882-E). Students are responsible for their own Scantrons.
- The exams will be entirely based on class lectures, which are based on material available on Canvas and distributed in class, and Tidbits/Lessons which are also distributed in class, and also the Ellis book.
- There will also be two projects. The first project, the "Optimization Project," is due the class before the Mid-semester Exam. The second project, the "Investment Policy Statement," is due on the last day of class. Descriptions of the two projects are attached.
- Practice problems and topics covered are also provided before the exams - they will neither be collected nor graded.

- The weights for the final grade are as follows:

Mid-semester Exam	25%
Optimization Project (Project 1)	10%
Investment Policy Statement (Project 2)	20%
Final Exam	45%
Total	100%

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Course Topics *

NUMBER	TOPIC
1	"Class One"
2	Risk(second moment)/Return (Variance) (first moment)/Correlations (co-variances)/Diversification
3	Skewness (third moment) and (fourth movement)
4	History
5	Security Indexes
6	Investment Taxation
7	Money Market Instruments
8	Common Stock
9	Bonds
10	Efficient Frontiers (EF); Mean/Variance Optimization (MVO) and Modern Portfolio (MPT) (Asset Allocation)
11	An Investor's Risk/Return Trade-off
12	The Combination of the Investor and the Markets
13	Risk Tolerance Tests
14	The Nature of Risk Tolerance: Quantitative and Qualitative
15	Recommended Asset Allocations
16	Extension of Efficient Frontier to Risk Free Assets: The Capital Market Line (CML)
17	The Separation Theorem
18	Background for CAPM: Risk Analysis
19	Capital Asset Pricing Model (CAPM)
20	Alpha
21	Beta
22	Synthesis of CAPM
23	Morningstar Mutual Fund Summaries (Morningstar Fund Investor) and ETF Summaries (Morningstar ETF Investor) • Morningstar "1-pagers" and Morningstar "1-liners"
24	Morningstar ETF Fund Summaries, Morningstar ETF Investor Summaries
25	Risk Tolerance Tests

26	Efficient Market Hypothesis (EMH)
27	Investment Strategies (Active/Passive)
28	Active Management
29	Davis Fund Interview
30	Investment/Retirement Vehicles (Asset Location)
31	Investment Vehicles: MF/CEF/ETF
32	Retirement Vehicles: IRA/Roth IRA/ 401 (k)/ Roth 401 (k)
33	Annuities: Fixed and Variable
34	Other Investment Vehicles: SMAs, Hedge Funds, Private Equity, Venture Capital, etc.
35	Investment Strategies II/ Investment Policy-Role of Liabilities
36	Investment Policy Statement (Charles Ellis, Ch. 13)
37	Asset Reallocation (Portfolio Rebalancing) : Tactical/Dynamic Asset Allocation
38	Portfolio Evaluation (Attribution Analysis)
39	International Investments
40	Behavioral Finance
41	Daniel Kahneman Lecture (Behavioral Finance)
42	The Sales Process: Registered Representatives and Investment Advisors
43	"Parting Shots"

* Variations in this schedule occur.

Note: The Presentation Handouts are subject to continual change-they are a "permanent work in progress."

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PROJECT 1
OPTIMIZATION PROJECT

The purposes of this project are to develop the efficient frontier (EF) and the capital market line (CML) for six asset classes over the period from 1985 to 2003; to determine the market portfolio (PM) and to specify your personal optimal portfolio; to conduct sensitivity analyses on these results; and, to make observations on the confidence you may have in the outputs.

Data:

Annual data for nineteen years (1985-2003) for thirteen asset classes (the U.S. 30- day T-bill, which is the "risk-free asset" and twelve risky asset classes) are provided. For each asset, data on Return (use "Arithmetic Mean (%)"), Risk (use "Standard Deviation (%)") and the Correlations among the assets (use "Correlation Coefficients") are provided.

Optimization:

Use the portfolio optimization program on the College of Business Website for Frank J. Jones (www.cob.sjsu.edu/jones_f). This program accepts data for six assets. Select the six assets you want to use from the list of twelve asset classes (exclude municipal bonds and the U.S. 30-day T-bill) and use a risk free rate of 3% (the return on the U.S. 30-day T-bill over this period is 5.02%, but we will use 3%).

Portfolio Decisions:

1. Using these data in the portfolio optimization program, develop the EF (efficient frontier). Also develop the CML (capital market line). Provide the equation for the CML. What is the composition of the PM (market portfolios)? Are there any negative weights? If so, what does this mean? Comment on the roles of the six assets in the overall portfolio with respect to portfolio return generation and risk reduction.

2. Select the point on the CML which is your personally optimal point? Why did you select this point? What is the composition of your personally optimal portfolio? How much borrowing/lending of the risk free asset is involved in forming this portfolio?
3. What is the Sharpe Ratio for this PM and for your personally optimal point?
4. Identify the two points **on the CML** with risks 3.0% higher and 3.0% lower than your personally optimal point. What are the compositions of these portfolios? Determine the Sharpe Ratios of these two points. Do the Sharpe Ratios of these two points influence you to reconsider your personally optimal point?
5. Using the techniques above, develop an EF and CML for only three assets (use three of the six assets in the original group of six). Compare this EF (and CML) with the EF (and CML) determined from the original six assets? Is the EF (and CML) based on three assets inferior or superior to the one based on six assets? What measure do you use to compare them?
6. In the six-asset optimization (using the six assets used above), identify the asset with the second-highest return. Then conduct the two following optimizations:
    a. Increase the input **return** on this asset (the asset with second highest return) by 2% (no other changes) and determine the composition of this new market portfolio (PM).
    b. Decrease the input **risk** on this asset by 2% (no other changes) and determine the composition of this new market portfolio (PM).
    c. Provide the PMs of these two optimizations and compare them with the PM of the original optimization. What are the Sharpe Ratios of these three PMs?
    d. Compare the sensitivities of the outcomes (for a, b and c) to changes in the return and risk.
7. Comment on the importance of forecasting in the optimization process in view of your answers to Question 6. How will this influence your use of MVO for portfolio optimization?

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PROJECT 2

INVESTMENT POLICY STATEMENT (IPS)

It is October, 2025. You have worked hard for the last ten years and have been successful. To celebrate your hard work and success, you have decided to "take a year off" and drink wine in the south of France, ski in Argentina, scuba dive in Belize, or go to any other place in the world you would like. You do not want to be bothered with managing your considerable investment portfolio immediately prior to and during this year. You have selected a financial advisor whom you believe is competent and ethical. But you do not want to give this advisor "carte blanche" with your investments. Rather, since you are an intelligent investor as a result of Bus. 172A and 172B at San Jose State University, you want to provide this advisor with explicit instructions with respect to how they should manage your investments during this period.

These specific instructions represent an IPS (Investment Policy Statement). This IPS should be based on your individual characteristics, both personal and financial, and your understanding of the financial markets and how the various asset classes relate to your investment requirements. This is a good opportunity to improve, not just maintain, your portfolio. But remember, you don't want to harm your entire portfolio during this year. The various aspects of your IPS are summarized below.

These figures provide an example, not a required submission.

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IPS Outline

Introduction:

Provide a one-page cover letter to your financial advisor describing the nature their assignment.

Investment Policy Statement

Provide the following background information on your financial and personal statements as of October 2025.

I. Individual Characteristics (as of October, 2025)

A. Financial

Provide a balance sheet (B/S) of your financial assets (both your investment and retirement financial assets), your real assets; and your liabilities. This balance sheet represents a projection of your balance sheet as of June, 2025. Be optimistic, but realistic in your projections. The allocation of assets in this IPS should apply to the investment and retirement financial assets in this B/S. To repeat, specify the amount and composition of your investment and retirement assets as of September 2024.

In addition, to help you determine the accumulation of your assets over the next ten years, provide a projected income statement (I/S). What is your overall income and what are your sources of income? What is your discretionary income? What fraction of your discretionary income do you plan to save (your savings rate)? It is these savings which will permit your portfolios to grow (in addition to the organic growth in the portfolio)

Fig. 1 provides examples of B/S and I/S.

Figs. 2, 3 and 4 provide an example of an IPS. The numbers in Fig 2 represent the percent of Total Investment and/or Retirement Assets represented by this asset type. Thus, the bottom line (total) for each of Total Investment and Retirement Account should be 100%. An example is provided in Figs. 3 and 4.

B. Personal

i. Provide your Risk Tolerance Metric from the Risk Tolerance test taken in class (from 1 to 10). Is this number consistent with your self-perception? If this number is not provided, your grade will be reduced by 1 out of 10.
ii. Comment on your personal Risk Tolerance (Emotions/Physiology/"Gut")
iii. Planning Horizon

1. Age
2. Retirement

iv. Liquidity Needs
1. College education for children
2. House purchases
3. Other

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Figure 1
Financial Statements

Balance Sheet (B/S)

A. Financial Assets
    a. Investment Account ("Non-qualified;" "Taxable") **
        i. Cash/Emergency Funds
        ii. Short Term Assets
        iii. Long Term Assets
        iv. Total Assets
    b. Retirement Account ("Qualified;" "Tax Advantaged") **
        i. 401(k)
        ii. IRA
        iii. Other (Profit Sharing/ SEPs, etc.)
        iv. Total
B. Real Assets
    a. House: Primary Residence
    b. Houses: Other
        i. Vacation
        ii. Rental
    c. Automobiles
    d. Other Toys (Boats, etc.)
C. Liabilities
    a. Loans on Assets (Collateralized Debt)
        i. Mortgage(s)
        ii. Car Loans
        iii. Loans on Other Toys
    b. Uncollateralized Debt
        i. Credit Cards
        ii. Other
D. Equity (Net Worth) (E=A-L)

** It is the total of the Investment Account and the Retirement Account which will be allocated in this Investment Policy Statement.

Figure 1, continued

Income Statement (I/S)

Gross Income (Assume all investment income is reinvested).

After-Tax Income (Use 35% Income Tax Rate)

Expenditures

Savings

Savings Rate (equals savings divided by after-tax income)

Annual Contributions to Savings Accounts

- Retirement Accounts - maximum amounts which can be invested.
  - $17,000/yr. for 401(k)
  - $5,000/yr. for IRA
- Investment Account - No limit on the amount which can be invested:
  - "Serious Money" (Large)
    - Mutual Funds/ETFs, etc.
  - Hobby Account (Small)
    - Stocks, Options, Lottery Tickets, etc.

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Investment Instructions

A. Asset Allocation
- Provide the following asset allocations for each of your Retirement
- Portfolio (Qualified) and your Investment Portfolio (Non-Qualified):
    - Macro Asset Allocation (total of Investment and Retirement Portfolios): Stocks/Bonds / Cash/ Alternative Assets (e.g. 60%/30%/10%/0%) (see Fig.2)
    - Micro Asset Allocation: Subcategories of Stocks/Bonds/Cash/Alternative Assets (see Fig. 3)
    - Other (See Fig. 4)
        - Mix of Active vs. Passive Investments
        - Alternative Assets: Hedge Funds, Private Equity, Commercial Real Estate
        - Expense ratio for each investment vehicle.
- Figs. 2, 3 and 4 provide an example of an IPS. The numbers in Fig. 2 represent the total of Investments and/or Retirement Assets represented by each asset class. Thus, the bottom line (total) for each of Total Investment and Retirement Assets should be the sum across all asset classes. More detailed examples are provided in Figs. 3 and 4.
- For Figs. 3 and 4, specific, individual investment vehicles (mutual funds and, ETFs.) must be specified. Their asset class, whether they are active or passive, and expense ratios must also be specified. Most of this information is provided in class handouts. This section is the core of the IPS.

B. General Topics
- For the asset classes above specify:
    - Use of Active vs. Passive Strategies (Active, Passive and Core/Satellite Strategies
    - Use of specific investment vehicles for each asset class.
        - Individual Securities (do not use Individual Securities)/ Mutual Funds / ETFs/ Separately Managed Accounts
    - Expense ratios

C. Changes in Asset Allocation
- Specify the conditions under which you would want your portfolio rebalanced:
    - Strategic: Change in long term macro asset allocation.
        - Tactical: Short term changes around initial policy portfolio due to market changes.

D. Comments
- Provide 2-3 sentences on why you chose each Mutual Fund and ETF.
- Provide a table with the key data for the MFs and ETFs used, as shown in Fig. 5
- Remember that for bonds:

- Municipals (also called Tax Exempts (TEs)) belong in the Investment Account.
- Taxable Bonds belong in the Retirement Account.

- Comment on the degree of "Home Country Bias," if any, in your holistic stock portfolio; provide a table. Why have you adopted this policy?
- Comment on the overall level of expenses of your portfolio (the aggregate expense ratio).

E. <u>The Big Picture</u>

- Fig. 6 provides the "big picture" of your I.P.S., that is an IPS Executive Summary; your submission should reflect this big picture

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Figure 2 (1), (2)

A. Macro Asset Allocation

	Total (Holistic) Portfolio			Investment Portfolio (80%)			Retirement Portfolio (20%)		
	Total	**Passive**	**Active**	**Total**	**Passive**	**Active**	**Total**	**Passive**	**Active**
Stocks	65%	45%	20%	63%	45%	18%	2%	0%	2%
Bonds	23%	15%	8%	10%	8%	2%	13%	7%	6%
Cash	2%	2%	0%	2%	2%	0%	0%	0%	0%
Other	10%	5%	5%	5%	5%	0%	5%	0%	5%
Total	100%	67%	33%	80%	60%	20%	20%	7%	13%

(1) The Numbers in this table are for illustration only
(2) The % are relative to the whole portfolio.

B. Overview

	Total	**Investment**	**Retirement**
Passive	**67%**	**60%**	**7%**
Active	**33%**	**20%**	**13%**
Total	**100%**	**80%**	**20%**

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Figure 3
Micro Asset Allocation *

	Total (Holistic)			Investment (4)		Retirement (5)	
	Total (1)	Passive(2)	Active(3)	Pasive	Active	Passive	Active
I. Stocks							
A. U.S.							
- Morningstar 3X3 Cell							
- Sector							
B. International							
- Developed Country							
- Emerging Market							
II. Bonds							
A. U.S							
- Investment Grade							
- High Yield Bonds							
- International							
- Tax Exempt							
B. International							
III. Cash. (Money Market Mutual Funds, T-bills, CDs, etc.)							
IV. Other							
V. Inflation Protected Assets							
- TIPS							
- Commodites							
- Other							
VI. Alternative Assets							
- Hedge Funds							
- Private Equity							

Notes:
1) Overall portfolio-do first
2) Core portfolio
3) Satellite portfolio
4) Taxable portfolio (non-qualified)
5) Tax advantaged portfolio (qualified): tax exempt or tax deferred.

- Commercial Real Estate

* This figure does not specify mutual funds or ETFs; your IPS should specify MFs and ETFs and their annual expenses as in Fig. 4.

Figure 4 (1), (2), (3), and (4)
Specific Funds

	Total (Holistic) (TP)(1)(2)			Investment (IP)			Retirement (RP)			Annual Fees (%)	Ticker Symbols
	T	P	A	T	P	A	T	P	A		
Stock	65%	45%	20%	63%	45%	18%	12%	0	2%		
U.S.	32.5%	22.5%	10%	31.5%	22.5%	9%	1%	0	1%		
Total U.S. (Index)	22.5%	22.5%	0	22.5%	22.5%	0	0	0	0		
Active LV	4.5%	0	4.5%	4.5%	0	4.5%	0	0	0		
Active SV	5.5%	0	5.5%	4.5%	0	4.5%	1%	0	1%		
Int.	32.5%	22.5%	10%	31.5%	22.5%	9%	1%	0	1%		
Total Dev. Mkt. (Index)	22.5%	22.5%	0	22.5%	22.5%	0	0	0	0		
Emer. Mkt.	4.5%	0	4.5%	4.5%	0	4.5%	0	0	0		
Active International	4.5%	0	5.5%	4.5%	0	4.5%	1%	0	1%		
Bonds	23%	15%	8%	10%	8%	2%	13%	7%	6%		
Total Bond Mkt. (Index)	7%	0	0	0	0	0	7%	7%	0		
Pimco Active Bond	6%	0	0	0	0	0	6%	0	6%		
CA Muni	10%	0	0	10%	8%	2%	0	0	0		
Cash	2%	2%	0	2%	2%	0	0	0	0		
Other	10%	5%	5%	5%	0%	5%	5%	0	5%		
TIPS	5%	0	5%	0	0	0	5%	0	5%		
Commodities	3%	0	3%	3%	0	3%	0	0	0		
Comm. R.E.	2%	0	2%	2%	0	2%	0	0	0		

Total	100%	67%	33%	80%	55%	25%	20%	7%	13%		

(1) Begin with Total (Holistic)(TP)and then disaggregate into Investment (IP) and Retirement (RP).
(2) This example assumes that the mix of IP and RP is 80%/20% as in Figure 2.
(3) The Total Portfolio is 67% passive and 33% active.
(4) The numbers in this table refer to the % of the Total Portfolio (TP). For specific MF and ETFs their ticker symbols, and expense ratios should be provided.

Figure 5
MF/ETF Data

Mutual Funds

- Name (and Ticker Symbol)
- Cell in 3x3 Matrix (e.g. LB or SV)
- Load or NL
- Expense Ratio
- Alpha
- Beta
- R^2
- Sharpe Ratio

ETFs

- Name (and Ticker Symbol)
- Cell in 3x3 Matrix
- Beta
- Expense Ratio
- Total Assets
- Daily Volume
- Inception Date

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Figure 6
IPS Executive Summary

RT Score (1-10)

Macro Asset Allocation: Stock/Bond/Other

Micro Asset Allocation

Investment Portfolio/Retirement Portfolio

Active/Passsive

Home Country Bias: U.S. Stock/International Stock