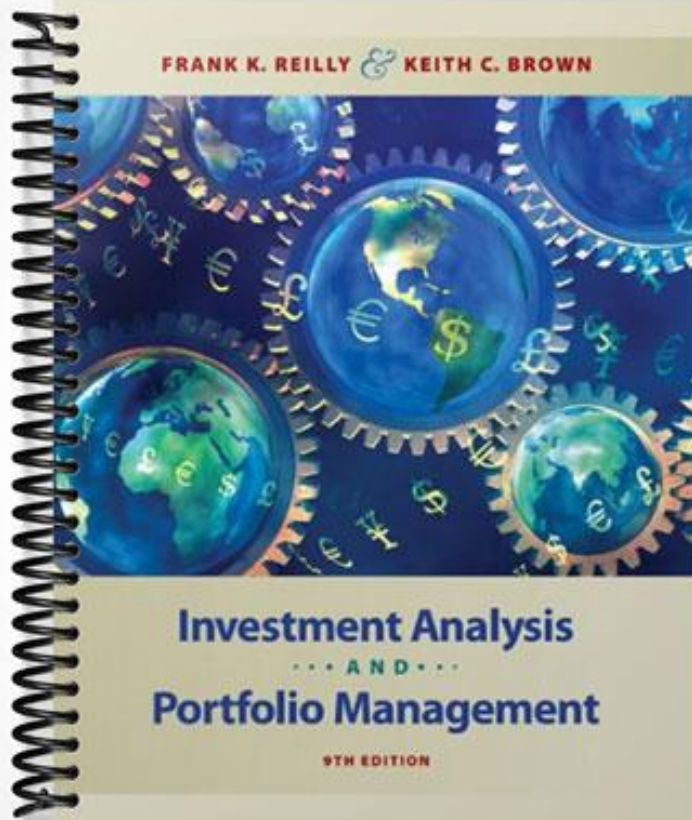


SOLUTIONS MANUAL

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Investment Analysis ... AND ... Portfolio Management

9TH EDITION

CHAPTER 2

THE ASSET ALLOCATION DECISION

Answers to Questions

1. In answering this question, one assumes that the young person has a steady job, adequate insurance coverage, and sufficient cash reserves. The young individual is in the accumulation phase of the investment life cycle. During this phase, an individual should consider moderately high-risk investments, such as common stocks, because he/she has a long investment horizon and much earnings ability over time.
2. In answering this question, one assumes that the 63-year-old individual has adequate insurance coverage and a cash reserve. Depending on her income from social security, she may need some current income from her retirement portfolio to meet living expenses. At the same time, she will need to protect herself against inflation. Removing money from her company's retirement plan and investing it in money market funds and bond funds would satisfy the investor's short-term and income needs. But some long-term investments, such as common stock mutual funds, are needed to provide the investor with needed inflation protection.
3. Typically investment strategies change during an individual's lifetime. In the accumulating phase, the individual is accumulating net worth to satisfy short-term needs (e.g., house and car purchases) and long-term goals (e.g., retirement and children's college needs). In this phase, the individual is willing to invest in moderately high-risk investments in order to achieve above-average rates of return.

In the consolidating phase, an investor has paid off many outstanding debts and typically has earnings that exceed expenses. In this phase, the investor is becoming more concerned with long-term needs of retirement or estate planning. Although the investor is willing to accept moderate portfolio risk, he/she is not willing to jeopardize the "nest egg."

In the spending phase, the typical investor is retired or semi-retired. This investor wishes to protect the nominal value of his/her savings, but at the same time must make some investments for inflation protection.

The gifting phase is often concurrent with the spending phase. The individual believes that the portfolio will provide sufficient income to meet expenses, plus a reserve for uncertainties. If an investor believes there are excess amounts available in the portfolio, he/she may decide to make "gifts" to family or friends, institute charitable trusts, or establish trusts to minimize estate taxes.

4. A policy statement is important for both the investor and the investment advisor. A policy statement assists the investor in establishing realistic investment goals, as well as providing a benchmark by which a portfolio manager's performance may be measured.

5. Student Exercise
6. The 45-year old uncle and 35-year old sister differ in terms of time horizon. However, each has some time before retirement (20 versus 30 years). Each should have a substantial proportion of his/her portfolio invested in equities, with the 35-year old sister possibly having more equity investments in small firms or international firms (i.e., can tolerate greater portfolio risk). These investors could also differ in current liquidity needs (such as children, education expenses, etc.), tax concerns, and/or other unique needs or preferences.
7. Before constructing an investment policy statement, the financial planner needs to clarify the client's investment objectives (e.g. capital preservation, capital appreciation, current income or total return) and constraints (e.g. liquidity needs, time horizon, tax factors, legal and regulatory constraints, and unique needs and preferences). Data on current investments, portfolio returns, and savings plans (future additions to the portfolio) are helpful, too.
8. Student Exercise
9. CFA Examination III (1993)
 - 9(a). At this point we know (or can reasonably infer) that Mr. Franklin is:
 - unmarried (a recent widower)
 - childless
 - 70 years of age
 - in good health
 - possessed of a large amount of (relatively) liquid wealth intending to leave his estate to a tax-exempt medical research foundation, to whom he is also giving a large current cash gift
 - free of debt (not explicitly stated, but neither is the opposite)
 - in the highest tax brackets (not explicitly stated, but apparent)
 - not skilled in the management of a large investment portfolio, but also not a complete novice since he owned significant assets of his own prior to his wife's death
 - not burdened by large or specific needs for current income
 - not in need of large or specific amounts of current liquidity

Taking this knowledge into account, his Investment Policy Statement will reflect these specifics:

Objectives:

Return Requirements: The incidental throw-off of income from Mr. Franklin's large asset pool should provide a more than sufficient flow of net spendable income. If not, such a need can easily be met by minor portfolio adjustments. Thus, an inflation-adjusted enhancement of the capital base for the benefit of the foundation will be the primary

return goal (i.e., real growth of capital). Tax minimization will be a continuing collateral goal.

Risk Tolerance: Account circumstances and the long-term return goal suggest that the portfolio can take somewhat above average risk. Mr. Franklin is acquainted with the nature of investment risk from his prior ownership of stocks and bonds, he has a still long actuarial life expectancy and is in good current health, and his heir - the foundation, thanks to his generosity - is already possessed of a large asset base.

Constraints:

Time Horizon: Even disregarding Mr. Franklin's still-long actuarial life expectancy, the horizon is long-term because the remainder of his estate, the foundation, has a virtually perpetual life span.

Liquidity Requirement: Given what we know and the expectation of an ongoing income stream of considerable size, no liquidity needs that would require specific funding appear to exist.

Taxes: Mr. Franklin is no doubt in the highest tax brackets, and investment actions should take that fact into account on a continuing basis. Appropriate tax-sheltered investment (standing on their own merits as investments) should be considered. Tax minimization will be a specific investment goal.

Legal and Regulatory: Investments, if under the supervision of an investment management firm (i.e., not managed by Mr. Franklin himself) will be governed by state law and the Prudent Person rule.

Unique Circumstances: The large asset total, the foundation as their ultimate recipient, and the great freedom of action enjoyed in this situation (i.e., freedom from confining considerations) are important in this situation, if not necessarily unique.

- 9(b). Given that stocks have provided (and are expected to continue to provide) higher risk-adjusted returns than either bonds or cash, and considering that the return goal is for long-term, inflation-protected growth of the capital base, stocks will be allotted the majority position in the portfolio. This is also consistent with Mr. Franklin's absence of either specific current income needs (the ongoing cash flow should provide an adequate level for current spending) or specific liquidity needs. It is likely that income will accumulate to some extent and, if so, will automatically build a liquid emergency fund for Mr. Franklin as time passes.

Since the inherited warehouse and the personal residence are significant (15%) real estate assets already owned by Mr. Franklin, no further allocation to this asset class is made. It should be noted that the warehouse is a source of cash flow, a diversifying asset and, probably, a modest inflation hedge. For tax reasons, Mr. Franklin may wish to consider putting some debt on this asset, freeing additional cash for alternative investment use.

Given the long-term orientation and the above-average risk tolerance in this situation, about 70% of total assets can be allocated to equities (including real estate) and about 30% to fixed income assets. International securities will be included in both areas, primarily for their diversification benefits. Municipal bonds will be included in the fixed income area to minimize income taxes. There is no need to press for yield in this situation, nor any need to deliberately downgrade the quality of the issues utilized. Venture capital investment can be considered, but any commitment to this (or other “alternative” assets) should be kept small.

The following is one example of an appropriate allocation that is consistent with the Investment Policy Statement and consistent with the historical and expected return and other characteristics of the various available asset classes:

	<u>Range (%)</u>	<u>Current Target (%)</u>
Cash/Money Market	0 - 5	0
U.S. Fixed Income	10 – 20	15
Non-U.S. Fixed Income	5 – 15	10
U.S. Stocks (Large Cap)	30 – 45	30
(Small Cap)	15 – 25	15
Non-U.S. Stocks	15 – 25	15
Real Estate	10 – 15	15*
Other	0 – 5	<u>0</u>
		100

*Includes the Franklin residence and warehouse, which together comprise the proportion of total assets shown.

CHAPTER 2

Answers to Problems

1. Most experts recommend that about 6 month's worth of living expenses be held in cash reserves. Although these funds are identified as "cash," it is recommended that they be invested in instruments that can easily be converted to cash with little chance of loss in value (e.g., money market mutual funds, etc.).

Most experts recommend that an individual should carry life insurance equal to 7-10 times an individual's annual salary but final determination needs to include the expected expenses and need's facing one's dependents over their lifetime.. An unmarried individual may not need coverage but should consider purchasing some insurance while they are "insurable." A married individual with two children should definitely have coverage (possibly 9-10 times salary as a starting point, to be refined after consider living expenses of loved ones, desire to provide for college education of children, and so on).

2. Married, filing jointly, \$20,000 taxable income:
Marginal tax rate = 15%
Taxes due = $\$1,565 + .15(\$20,000 - \$15,650)$
 $= \$1,565 + \$652.50 = \$2,217.50$
Average tax rate = $\$2,217.50/\$20,000 = 11.09\%$

Married, filing jointly, \$40,000 taxable income:
Marginal tax rate = 15%
Taxes due = $\$1,565 + .15(\$40,000 - \$15,650)$
 $= \$1,565 + \$3,652.50 = \$5,217.50$
Average tax rate = $\$5,217.50/\$40,000 = 13.04\%$

Married, filing jointly, \$60,000 taxable income:
Marginal tax rate = 15%
Taxes due = $\$1,565 + .15(\$60,000 - \$15,650)$
 $= 1,565 + \$6,652.50 = \$8,217.50$
Average tax rate = $\$8,217.50/\$60,000 = 13.70\%$

3. Single with \$20,000 taxable income:
Marginal tax rate = 15%
Taxes due = $\$782.50 + .15(\$20,000 - \$7,825)$
 $= \$782.50 + \$1,826.25 = \$2,608.75$
Average tax rate = $\$2,608.75/\$20,000 = 13.04\%$

Single with \$40,000 taxable income:
Marginal tax rate = 25%
Taxes due = $\$782.50 + .15(\$31,850 - \$7,825) + .25(\$40,000 - \$31,850)$
 $= \$782.50 + \$3,603.75 + \$2,037.50 = \$6,423.75$

$$\text{Average tax rate} = \$6,423.75/\$40,000 = 16.06\%$$

Single with \$60,000 taxable income:

Marginal tax rate = 25%

$$\begin{aligned}\text{Taxes due} &= \$782.50 + .15(\$31,850 - \$7,825) + .25(\$60,000 - \$31,850) \\ &= \$782.50 + \$3,603.75 + \$7,037.50 = \$11,423.75\end{aligned}$$

$$\text{Average tax rate} = \$11,423.75/\$60,000 = 19.04\%$$

4(a). \$10,000 invested in 9 percent tax-exempt IRA (assuming annual compounding)

$$\text{in 5 years: } \$10,000(\text{FVIF @ } 9\%) = \$10,000(1.5386) = \$15,386$$

$$\text{in 10 years: } \$10,000(\text{FVIF @ } 9\%) = \$10,000(2.3674) = \$23,674$$

$$\text{in 20 years: } \$10,000(\text{FVIF @ } 9\%) = \$10,000(5.6044) = \$56,044$$

4(b). After-tax yield = Before-tax yield (1 - Tax rate)

$$= 9\% (1 - .36)$$

$$= 5.76\%$$

\$10,000 invested at 5.76 percent (assuming annual compounding)

$$\text{in 5 years: } \$10,000(\text{FVIF @ } 5.76\%) = \$13,231$$

$$\text{in 10 years: } \$10,000(\text{FVIF @ } 5.76\%) = \$17,507$$

$$\text{in 20 years: } \$10,000(\text{FVIF @ } 5.76\%) = \$30,650$$

5(a). \$10,000 invested in 10 percent tax-exempt IRA (assuming annual compounding)

$$\text{in 5 years: } \$10,000(\text{FVIF @ } 10\%) = \$10,000(1.6105) = \$16,105$$

$$\text{in 10 years: } \$10,000(\text{FVIF @ } 10\%) = \$10,000(2.5937) = \$25,937$$

$$\text{in 20 years: } \$10,000(\text{FVIF @ } 10\%) = \$10,000(6.7275) = \$67,275$$

5(b). After-tax yield = Before-tax yield (1 - Tax rate)

$$= 10\% (1 - .15)$$

$$= 8.50\%$$

\$10,000 invested at 8.50 percent (assuming annual compounding)

$$\text{in 5 years: } \$10,000(\text{FVIF @ } 8.50\%) = \$15,037$$

$$\text{in 10 years: } \$10,000(\text{FVIF @ } 8.50\%) = \$22,610$$

$$\text{in 20 years: } \$10,000(\text{FVIF @ } 8.50\%) = \$51,120$$

6. With inflation growing at 3% annually, the above figures need to be deflated by the following factors:

$$\text{in 5 years: } (1.03)^5 = 1.1593$$

$$\text{in 10 years: } (1.03)^5 = 1.3439$$

in 20 years: $(1.03)^5 = 1.8061$

The real values of the answers from 4(a) are: \$10,000 invested in 9 percent tax-exempt IRA (assuming annual compounding)

in 5 years: $\$15,386 / 1.1593 = \$13,271.80$

in 10 years: $\$23,674 / 1.3439 = \$17,615.89$

in 20 years: $\$56,044 / 1.8061 = \$31,030.40$

The real values of the answers from 5(a) are: \$10,000 invested in 10 percent tax-exempt IRA (assuming annual compounding)

in 5 years: $\$16,105 / 1.1593 = \$13,892.00$

in 10 years: $\$25,937 / 1.3439 = \$19,299.80$

in 20 years: $\$67,275 / 1.8061 = \$37,248.77$