

## Unit 11 Cases.

### Case 1. Goals and Portfolio Selection (P.891)

Vanessa Avoletta is a very successful self-employed freelance writer of romantic novels. She has a reputation for writing rapidly and is able to complete at least four books a year, which net after expenses \$25,000 to \$50,000 per book per year. With this much income, Avoletta is concerned with both sheltering income from taxes and planning for retirement. Currently she is 40 years old, is divorced, and has a child who is entering high school. Avoletta anticipates sending the child to a quality college to pursue a degree in computer sciences.

While Avoletta is intelligent and well informed, she knows very little about finance and investments other than general background material she has used in her novels. Since she does not plan to write prolifically into the indefinite future, she has decided to obtain your help in financial planning.

At your first meeting, you suggested that Avoletta establish a tax-sheltered retirement plan and consider making a gift to her child, perhaps in the form of future royalties from a book in progress. Both of these ideas intrigued Avoletta, who thought that funds were saved, invested to accumulate over time, and then transferred to heirs after death. While Avoletta wanted to pursue both ideas, she thought approaching one at a time made more sense and decided to work on the retirement plan first. She asked you for several alternative courses of action, and you offered the following possibilities.

1. An IRA with a bank with the funds deposited in a variable-rate account.
2. A self-directed Keogh account with a major brokerage firm.
3. A Keogh account with a major mutual fund.
4. An account with a brokerage firm to accumulate common stocks with substantial growth potential but little current income.

Avoletta could not immediately grasp the implications of these alternatives and asked you to clarify several points:

1. What assets would be owned under each alternative?
2. What are the current and future tax obligations associated with each choice?
3. What amount of control would she have over the assets in the accounts?
4. How much personal supervision would be required?

How would you reply to each question? Which course(s) of action would you suggest that she pursue?

Finally how would each of the following alter your advice?

1. Avoletta has a record of poor health.
2. Avoletta would like to write less and perhaps teach creative writing at a local college.
3. Avoletta has expensive tastes and finds saving to be difficult.

Answer To Case 1:

This case ties the course together by considering how to construct a portfolio with consideration for tax implications and the required amount of supervision. The investor, Vanessa Avoletta, is a successful writer who earns \$100,000 to \$150,000 a year. She is divorced and has one child who is entering high school. Ms. Avoletta is concerned with saving for retirement and reducing the amount of income taxes she pays. She does not want to write as prolifically in the future. Thus there are at least two implied financial goals: education for the child and the need for supplemental income once she reduces her writing. Funds for the child's college will be required in approximately four years, and the funds will be needed for four years. The time dimension of the other goal is indefinite. An additional question raised in the case is who will manage the portfolio since Ms. Avoletta has limited knowledge concerning investments.

Four possible strategies are suggested (which are not mutually exclusive and do not exhaust all possible strategies) and four questions concerning each strategy are raised. The following analysis considers each strategy and the four questions individually.

1. The IRA with a commercial bank:
  - a. Ms. Avoletta would own an obligation of the bank (i.e., a variable rate CD).
  - b. There would be no current federal income tax on the interest earned on the account, and the contribution would be tax deductible. While Ms. Avoletta's income exceeds the limit for deductibility, she is not covered by a pension plan and could deduct her contributions to an IRA. The funds would be taxed as they are withdrawn from the account.
  - c. Ms. Avoletta would have control of the CD but would have no control over how the bank used her funds. The account would be safe as FDIC would insure it up to a its insurance limit, which is \$250,000 per depositor per insured bank..
  - d. Once the account was opened, it would require a minimum amount of supervision. The only supervision Ms. Avoletta would have to perform is to decide whether or not to roll

over the CD at maturity. If she were to decide not to roll over the CD, he would have to select an alternative investment for the funds.

2. The self-directed Keogh account:

a. The Keogh account, like the IRA, is a retirement plan. A self-directed plan with a brokerage firm permits the investor to acquire a variety of financial assets. While many financial assets may be inappropriate (e.g., puts and calls), the investor could accumulate a substantial portfolio of quality securities. Since the Keogh account is a retirement account, emphasis may be placed on conservative securities such as income-producing bonds or moderate growth stocks.

b. Funds deposited in the Keogh account are excluded from current federal income taxation, and any income earned by the assets is also not currently taxed. Federal income taxes are deferred until the funds are withdrawn from the account. The big differences between an IRA and a Keogh account are eligibility and the amount that may be invested annually. Keogh accounts apply only to the self-employed, and the amount that may be tax sheltered each year is larger than may be sheltered using an IRA. Since Ms. Avoletta is self-employed, she is eligible for a Keogh account. She may be able to have both an IRA and a Keogh account, but the Keogh makes more sense, as a larger amount may be tax sheltered each year.

c. If an investor sets up a self-directed Keogh account, the choice of the assets to include rests with the investor who controls the account. That individual must decide what to acquire and when to sell. While the investor may obtain advice from a variety of sources, responsibility for final decisions rests with the individual investor.

d. If the individual makes the investment decisions, this type of account will require supervision. While the brokerage firm will send the investor financial statements and yearly summaries, the individual will have to manage the account.

### 3. Keogh account with a mutual fund:

- a. With this strategy the investor owns shares in the mutual fund which, in turn, owns the specific securities. The investor could have more than one mutual fund, but each fund owns the specific securities in its portfolio.
- b. The tax implications are the same for all Keogh accounts: the investor may deduct current year contributions from taxable income, and all income and capital gains earned by the account are not taxable until the funds are withdrawn.
- c. Since the investor owns shares in the mutual fund, the investor has control over those shares but not the portfolio of the fund. If the fund performs poorly, the investor's choices are to remain with the fund and hope its performance will improve or to move the funds elsewhere. The individual investor cannot alter the fund's selections of securities.
- d. The amount of required supervision is small, since the investor is not making the security selections. The fund will send the investor timely statements which relieve the investor of most of the paperwork associated with the account. Supervision is limited to the choice of funds (e.g., the decision to sell the shares in one fund and invest the proceeds in an alternative fund).

### 4. Personal account with a brokerage firm:

- a. The investor may select from a spectrum of assets through a broker including stocks, bonds, options, municipal securities, mutual funds, and futures contracts. Unless the investor delegates the authority to the broker (i.e., gives the broker a discretionary account), the individual makes the decisions as to what to buy and when to sell. (Ms. Avoletta could use such an account to accumulate quality growth stocks.)
- b. Funds invested through a brokerage account offer some tax advantages. Currently dividend income is taxed up to 15 percent. Interest on municipal and state bonds is exempt from federal taxation. Realized capital gains would be subject to income and capital gains taxes. Long-term capital gains receive favorable tax treatment; any tax on capital gains is deferred until the gains are realized.
- c. The investor has ultimate control over the account as to what to include and when to sell. The securities may be left with the broker (i.e., registered in street name) who will facilitate trading and reduce custodial work associated with owning securities.
- d. Such an account will require supervision by the investor. However, if the investor does not actively trade the securities and purchases stocks and holds them for their long-term potential, the amount of supervision should not become burdensome.

Possible courses of action include:

Ms. Avoletta should open a retirement account to shelter current income from taxation. Since she is eligible for a Keogh account, it makes more sense to open a Keogh since more funds may be tax sheltered. Since Ms. Avoletta is not knowledgeable concerning investments, it would probably be best to establish a Keogh account with a commercial bank or a mutual fund. This will give Ms. Avoletta the tax shelter with a minimum of supervision on her part.

Ms. Avoletta should probably also open the brokerage account and acquire systematically conservative growth stocks (or invest in a growth mutual fund). While the stocks may not generate significant income, they should generate capital gains over a period of years. Stocks will also diversify the overall portfolio, which would then include the Keogh and/or the IRA and the savings accounts. The growth stocks could also help finance the child's education with will require funding in five to eight years.

The case ends with three additional considerations that may affect your advice. While these factors need not affect the basic principles on which the advice is based, they could affect the details of the portfolio.

1. Ms. Avoletta has a record of poor health. This implies a more conservative strategy is required. Ms. Avoletta will need more liquid assets to meet emergencies. Any securities acquired should be readily marketable. The need for liquidity and safety may reduce the funds available for the retirement accounts. You need to determine if Ms. Avoletta has insurance (life and major medical) to take care of her child should anything happen to her.
2. Ms. Avoletta desires to start taking life easier. This goal will reduce income and argue for securities that generate more income and less growth potential. However, if Ms. Avoletta does take a teaching position, her income may become more certain. You need to know not only how much royalty income will be generated by Ms. Avoletta's previous publications but also the volatility of that income. The more certain the future income, the less need for a conservative portfolio even if total income is reduced. (Uncertain future income requires a more conservative portfolio to hedge against the income not being received.)
3. Ms. Avoletta has expensive tastes and finds saving to be difficult. This strongly argues for removing discretionary power and reducing the decision making required of the investor. Once income is received, it is easily spent. You should explore means to divert income before it is received. For example, IRA or Keogh accounts with a commercial bank may be desirable as the bank can periodically withdraw funds from other accounts to finance the retirement account. If Ms. Avoletta buys securities such as stock (or mutual funds), you may suggest signing up for dividend reinvestment plans, which divert funds into additional shares before the funds are received by the individual. The point of this question is simple: if the individual lacks the discipline to save, then discretionary power needs to be removed. Dividend reinvestment plans, automatic withdrawals, life insurance plans that build cash value, or mortgage payments on a home are means to force saving

and should be considered as an alternative to the investor's doing his or her own saving and subsequently investing.

## **Case 2. The Bruckner's Asset Allocation (P892).**

You have new clients, Erik and Senta Bruckner. They are in their mid-30s and have two children, Stella and Chloe, ages 6 and 8. The Bruckners' primary financial objective is to provide for their children's college education. Their secondary objective is to plan for retirement. They own a home with a mortgage and have total family income of \$100,000. Senta's employer provides medical insurance and life insurance. She participates in her employer's 401(k) retirement plan and currently has \$40,000 in the plan. The funds are invested in her company's stock. Erik is self-employed and works from their home. He has not established a retirement plan. After deducting the amount of the mortgage, the family has total assets of \$200,000 available for investing in addition to the \$40,000 in the retirement account.

The Bruckners want sufficient liquid assets to cover six months' income as a precaution ( $0.5 \times \$100,000 = \$50,000$ ). At least 20 percent of the \$50,000 should be in exceedingly liquid assets, but the remaining 80 percent may be invested elsewhere provided that the assets meet the objective to provide sufficient liquidity.

The remaining assets (\$150,000) are available for other investments. These funds could be allocated in numerous ways. Since the couple is generating income, you expect the Bruckners to conclude that income-producing bonds are not a necessary component of their portfolio. That conclusion, however, is not necessarily correct. Bonds do offer potential diversification and may be included as part of any tax-deferred retirement account. The interest income will not be taxed until the proceeds are removed from the retirement account and the flow of interest income will compound over time. If Senta's employer offers a bond fund as part of the retirement plan, selecting the bond fund instead of the company's stock makes sense from an overall asset allocation perspective.

You decide to develop a sample asset allocation illustration. Once the Bruckners have grasped the concept, you can further subdivide the allocation. The starting amount is \$240,000: the \$40,000 in the retirement account, the \$50,000 needed for liquid assets, and the \$150,000 balance. You decide that the retirement account should be invested in bonds and liquid assets should be in a money market mutual fund that stresses federal government Treasury bills. The balance should be divided equally between large cap and smaller cap stocks. To illustrate the allocation and its possible results over time, prepare answers to the following questions.

1. How much is allocated to each class of assets?
2. Based on the historical returns in Exhibit 10.2 in the textbook, how much will be in each account when the girls approach college age ten years from now?

3. Since historical returns are averages, how much will be in each account assuming that the worst- and best-case scenarios based on Exhibit 10.4 in the textbook were to occur? (Be careful to select the appropriate time horizon for the comparisons.)
4. What would have been the impact on the terminal amounts in Question 3 if the allocation had been 40 percent large cap companies and 60 percent small cap companies?
5. Given the values in Question 3, what is the portfolio's asset allocation after ten years have passed? What steps should be taken?
6. If the Bruckners do not need the funds to finance their daughters' college education, how much will be in each account when they approach retirement in their mid-60s under the original allocation?
7. Based on the rate of inflation in Exhibit 10.2, goods and services costing \$100 will cost how much at their retirement? How much annual income is necessary to maintain their standard of living?
8. If their combined life expectancy is 15 years at retirement, can they maintain their standard of living if their funds as a whole earn 7 percent after they retire? What is the future rate of inflation assumed in your answer to the previous question? Is that assumption reasonable?
9. Based on the above answers, what are some suggested courses of actions the Bruckners should consider taking?

Answer to Case 2:

This case ties several topics that appear throughout the text: investment returns, diversification and asset allocation, and financial planning. The setting is built around a two-income family, one of whom (Erik) is self employed. The other (Senta) is employed outside the home and that employment covers medical insurance and a 401(k) plan.

1. The Bruckner's have investable assets of \$240,000. \$40,000 is in the 401(k), and \$50,000 must be in a safe, liquid investment. The remaining \$150,000 is available to be invested in a variety of assets.

The specified asset allocation is

Bonds	$\$40,000/\$240,000 = 17\%$
Money market mutual funds	$\$50,000/\$240,000 = 21\%$
Large cap stocks	$\$75,000/\$240,000 = 31\%$
Small cap stock	$\$75,000/\$240,000 = 31\%$

To achieve this allocation, the funds in the company stock in the 401(k) plan must be redirected to the bonds. Note it is not wise to invest in the stock of the company for which you work because if the company does not do well, you may lose both your job

and your investment. If there are incentives for you to buy company stocks, you should use the incentives but sell the company stocks as soon as you can.

2. The returns reported in Exhibit 10.2 are

large company stock	10.4%
small company stock	12.6
corporate bonds	5.9
treasury bills	3.0

If these returns are used for ten years, the funds in each account are as follows:

Large-cap stocks:  $\$75,000(1 + .104)^{10} = \$201,721$

Small-cap stocks:  $\$75,000(1 + .126)^{10} = \$245,723$

Corporate bonds:  $\$40,000(1 + .059)^{10} = \$70,961$

Treasury bills:  $\$50,000(1 + .03)^{10} = \$67,196$

As is the current asset allocation is off and adjustments should be made.

3. This question raises the issue of how much would be in the account if historical averages are not earned. You can repeat the previous question but assume the best and worse case scenarios based on the returns provided in Exhibit 10.4.

For the large cap stocks, the best ten-year time period was 20.1% and the worse ten-year period 1.4%. For small-cap stocks, the best ten-year time period was 30.4% and the worse ten-year period 3.2%. Note that there was no ten year period which produced a negative return.

The best ten year period generates the following terminal values.

Large-cap stocks:  $\$75,000(1 + .201)^{10} = \$468,265$

Small-cap stocks:  $\$75,000(1 + .304)^{10} = \$1,066,196$

The worse ten year period generates the following terminal values.

Large-cap stocks:  $\$75,000(1 + .014)^{10} = \$86,187$

Small-cap stocks:  $\$75,000(1 + .032)^{10} = \$102,768$

There is obviously a large range in the terminal values, so if the Bruckners experience a period of low returns, the amount they will have in their equity accounts will not be much larger than the initial \$75,000.

5. Given the terminal values in question (3), the portfolio is worth:

Large-cap stocks    \$201,721



Small-cap stocks	\$245,723
Corporate bonds	\$70,961
Treasury bills	\$67,196
Total assets	\$585,331

The asset allocation is

Large-cap stocks	$\$201,721/\$585,331 = 34.5\%$
Small-cap stocks	$245,723/585,331 = 42.0$
Corporate bonds	$70,961/585,331 = 12.1$
Treasury bills	$67,196/585,331 = 11.4$

If the original allocation of 31 percent in large-cap stocks and 31 percent in small-cap stocks was deemed optimal, the portfolio needs to be rebalanced. Shares in some of these securities would be sold and the funds invested in corporate debt and money market securities.

6. Using the original allocation and the historic returns, after thirty years the amounts in the accounts will be

Large-cap stocks:	$\$75,000(1 + .104)^{30} = \$1,459,262$
Small-cap stocks:	$\$75,000(1 + .126)^{30} = \$2,637,624$
Corporate bonds:	$\$40,000(1 + .059)^{30} = \$418,736$
Treasury bills:	$\$50,000(1 + .03)^{30} = \$182,045$

The total amount in all the accounts is \$4,697,667.

7. If the historical rate of inflation remains 3 percent and their annual income grows at least 3 percent, the Bruckners should be able to maintain the standard of living percent during their lifetime. However, what currently costs \$100 will cost \$243 if the rate of inflation is 3 percent for the next thirty years. Thus, the Bruckners will need \$243,000 annually to maintain their standard of living assuming inflation does not continue after they retire!

8. If they earn 7 percent on their current portfolio of \$240,000, the Bruckners will have \$1,826,941 after thirty years. This amount will permit them to receive an annuity of \$200,589 for fifteen years (using an annual return of 7%). The annuity payments are less than the estimated \$243,000 that will be required to match the purchasing power of their current income of \$100,000. This amount implies that their standard of living will fall.

Given the historical rate of inflation and the rate experienced during the mid 2000s of approximately 2 percent, the answers seem reasonable.

If they have the \$4,697,667 determined in question (6), they can receive \$515,779 annually for 15 years. However, to accumulate the \$4+ million, all the funds must be

allowed to appreciate and no assets may be withdrawn to finance Stella's and Chloe's education.

9. There are, of course, many possible courses of action. Certainly changing the composition of the 401(k) plan is desirable. Given the long-term nature of the Bruckner's financial objective, holding equities is desirable, but they do run the risk of not earning the historic returns used for the projections I questions (2) and (8). Periodically rebalancing the portfolio is desirable to maintain a desired asset allocation.