

Exhibit 5 Sample Investment Policy Statement**Investment Policy Statement Prepared for David and Amelia King****Background and Investment Objectives**

This Investment Policy Statement (IPS) is designed to assist David and Amelia in meeting their financial objectives. It contains a summation of their objectives and expectations, sets forth an investment structure for attaining these objectives, and outlines ongoing responsibilities.

The purpose of this portfolio is to support the continuation of David and Amelia's current lifestyle, provide for their family's needs, and fund their philanthropic objectives. Maintenance of their current lifestyle is their primary objective, followed by support for family members and charitable aspirations, in that order. To meet these objectives, they anticipate needing approximately \$350,000 per year in inflation-adjusted portfolio distributions. In addition, they intend to purchase a second residence within the next two years. They expect the purchase price for the second residence to be approximately \$1.5 million. David and Amelia have not articulated a specific dollar amount that they intend to leave to their children, nor a specific dollar amount that they wish to leave to charity at their death. The wealth manager will continue to work with them to quantify these objectives.

In establishing their asset allocation, David and Amelia have considered their current assets and expected cash needs. They are seeking to achieve a higher long-term rate of return and are willing to assume the associated portfolio volatility.

Portfolio Accounts

Taxable joint account for David and Amelia

Tax-deferred account for David

Tax-deferred account for Amelia

Current Combined Market Value

\$12,250,000

Investment Parameters**Risk Tolerance**

The wealth manager has determined that David and Amelia are able and willing to withstand short- and intermediate-term portfolio volatility. They recognize and acknowledge the anticipated level of portfolio volatility associated with their asset allocation (as illustrated in the Modeled Portfolio Behavior section of the Appendix).

Investment Time Horizon

David and Amelia have an investment time horizon that exceeds 15 years.

Asset Class Preferences

The Kings and their wealth manager have selected the following asset classes:

- Short-term debt investments
- Intermediate-term bonds
- US stocks

(continued)

Exhibit 5 (Continued)

- Non-US stocks
- Global real estate securities

Other Investment Preferences

The Kings wish to maintain their positions in Acme Manufacturing, Inc., which Amelia received through inheritance, and Artful Publishing, Ltd., which is her former employer. Neither position represents significant concentration risk in the context of their broader portfolio.

David has an interest in a private real estate limited partnership that invests primarily in office buildings throughout Asia. The wealth manager has taken this exposure into consideration in designing the broader asset allocation.

Liquidity Preferences

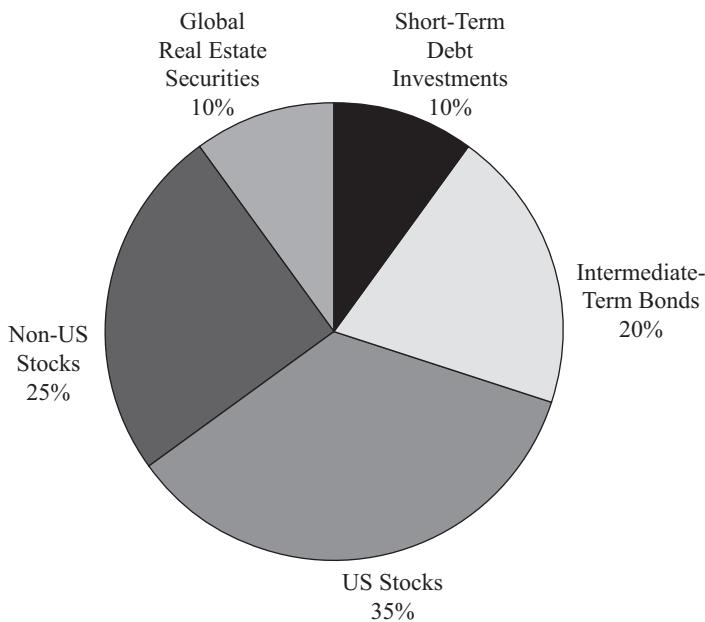
David and Amelia wish to maintain within their portfolio a minimum cash balance of \$50,000. They typically maintain a more sizable cash balance at their primary bank.

Constraints

Amelia's position in Artful Publishing, Ltd., has significant embedded capital gains.

Portfolio Asset Allocation

	Lower Rebalancing Limit	Strategic Allocation	Upper Rebalancing Limit
Short-term debt investments	8%	10%	12%
Intermediate-term bonds	16%	20%	24%
US stocks	30%	35%	40%
Non-US stocks	20%	25%	30%
Global real estate securities	8%	10%	12%



Portfolio Management

Discretionary Authority

The wealth manager will implement discretionary portfolio changes related to rebalancing the portfolio, investing new deposits, and generating liquidity to meet withdrawal requests.

The wealth manager will review with the client, prior to implementation, the addition of new positions or the elimination of existing positions.

Rebalancing

The wealth manager will review the portfolio on at least a monthly basis. Rebalancing will be determined by the lower and upper asset class limits set forth in the Portfolio Asset Allocation section of the IPS.

Implementation

To implement the investment strategy, the wealth manager will utilize third-party money managers via mutual funds, exchange-traded funds (ETFs), and separate accounts of individual securities. The wealth manager conducts a quarterly due diligence process to evaluate recommended managers as well as the universe of other available managers. This process involves quantitative risk and return comparisons to appropriate indexes and peer groups, as well as qualitative assessments of other factors that may impact a manager's ability to perform in the future. More information about this process is available at the client's request.

Duties and Responsibilities

Wealth Manager Responsibilities

The wealth manager is responsible for the following:

- Developing an appropriate asset allocation
- Selecting investment options
- Implementing the agreed-upon strategy
- Monitoring the asset allocation and rebalancing when necessary
- Monitoring the costs associated with implementing the investment strategy
- Monitoring the activities of other service vendors (e.g., custodians)

- Drafting and maintaining the IPS
- Performance reporting
- Tax and financial accounting reporting
- Proxy voting

IPS Review

The client will review this IPS at least annually to determine whether the investment objectives are still accurate. The wealth manager will review this IPS at least annually to evaluate the continued feasibility of achieving the client's investment objectives.

IPS Appendix

Modeled Portfolio Behavior⁵

Modeled Compound Return: 6.23%

Modeled Distribution of Returns

Year	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile
1	-10.45	-2.89	6.23	16.21	26.01
3	-3.75	0.86	6.23	11.88	17.24
5	-1.58	2.05	6.23	10.58	14.66
10	0.64	3.25	6.23	9.29	12.12
15	1.65	3.79	6.23	8.72	11.02
25	2.66	4.34	6.23	8.15	9.92

Portfolio downside risk, 1-year horizon:

- 25% likelihood of a return less than -2.89%
- 10% likelihood of a return less than -10.45%

Portfolio downside risk, 15-year horizon:

- 25% likelihood of a compound annual return less than 3.79%
- 10% likelihood of a compound annual return less than 1.65%

Capital Market Assumptions

Modeled Portfolio Statistics

	Expected Return (%)	Standard Deviation (%)	Modeled Compound Return (%)
Short-term debt investments	2.5	2.0	2.5
Intermediate-term bonds	3.5	8.0	3.2

⁵ The modeled returns and risk projections are based on forward-looking estimates and not on the past performance of specific funds or indexes. Modeled returns are before taxes and do not reflect investment management fees.

(Continued)

	Expected Return (%)	Standard Deviation (%)	Modeled Compound Return (%)
US stocks	8.5	22.0	6.1
Non-US stocks	10.0	26.0	6.6
Global real estate securities	7.5	23.0	4.9

Modeled Correlations

	(1)	(2)	(3)	(4)	(5)
1 Short-term debt investments	1.00				
2 Intermediate-term bonds	0.79	1.00			
3 US stocks	-0.08	-0.03	1.00		
4 Non-US stocks	-0.29	-0.27	0.76	1.00	
5 Global real estate securities	-0.15	0.08	0.42	0.39	1.00

PORTRFOLIO CONSTRUCTION AND MONITORING**6**

The practice of private wealth management involves aligning the unique attributes of the individual investor with the most appropriate investment plan and strategy. In prior sections, we discussed how wealth managers gather, synthesize, and analyze client information and goals/objectives. We now discuss the next phases of constructing the client's portfolio, monitoring the client's investment program, and reporting the portfolio to the client.

6.1 Portfolio Allocation and Investments for Private Wealth Clients

Once the client's IPS is developed, the next step is to implement the IPS through actionable investment advice. Portfolio construction, including asset and investment allocation, is a key aspect of this process. We first discuss two approaches to constructing a private client's portfolio—a traditional approach and a goals-based investing approach.

6.1.1 Portfolio Construction—Traditional Approach

Constructing portfolios for private clients involves several key steps:

- *Identify asset classes.* The wealth manager identifies the asset classes that may be appropriate for the client's portfolio. The identification of asset classes may vary by wealth manager. For instance, one wealth manager may designate "UK Equities" as an asset class, whereas another wealth manager may designate "UK Large-Capitalization Equities" and "UK Small-Capitalization Equities" as separate asset classes.

Questions 7 through 9 relate to individual investor Elizabeth Yeo. A total of 47 minutes is allocated to these questions. Candidates should answer these questions in the order presented.

QUESTION 7 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 25 MINUTES.

Elizabeth Yeo, aged 55, will retire one year from now as managing director of Sawit Palm Oil Industries, a Malaysia-based palm oil plantation company. At retirement, Yeo will receive a MYR450,000 taxable lump sum cash payment from Sawit and a MYR500,000 tax-exempt lump sum cash payment from the Employees' Provident Fund, the country's retirement savings plan. Upon retirement, Yeo will also receive MYR8.5 million as proceeds from the sale of her stock in Sawit. Her original investment in the Sawit stock was MYR1.5 million.

Yeo is widowed and has a son, Jonathan Lok, who will be attending a foreign university. She intends to pay all expenses associated with his four-year undergraduate education. She estimates the first year's expenses will be MYR150,000 payable one year from now, and that these expenses will increase approximately 6 percent annually as a result of inflation in educational costs.

Yeo maintains a money market fund currently valued at MYR1.2 million and earning 2.5 percent annually. To honor her late husband, she plans to make a non-tax deductible fixed donation of MYR100,000 annually, beginning one year from now, to a Malaysian charity. Yeo's current after-tax salary is equal to her current living expenses of MYR250,000 annually. Both she and Lok currently reside in the family home, which has a current value of MYR1.4 million. She intends to give the house to Lok as part of her estate upon her death. She has expressed a desire to maintain the real value of her investable assets.

Yeo is taxed at 28 percent on salary, benefits, and investment income. Capital gains are not taxable under Malaysian tax law. Her living expenses are expected to grow at an annual inflation rate of 3 percent throughout her retirement period, which is expected to be 25 years given her family's mortality history.

Yeo is working with Ismail Hamid, her financial advisor, to prepare an investment policy statement for her retirement period.

- A. **Formulate** the return objective in Yeo's investment policy statement. **Calculate** the *after-tax* nominal rate of return that is required to achieve this objective for her first year of retirement. **Show** your calculations.

(10 minutes)

In an interview with Hamid, Yeo admits to having little knowledge about investing, as evidenced by her preference to maintain all excess cash reserves in the money market fund. She tells Hamid that she also views the money market fund as a way to safeguard the wealth she has "worked so hard for." She adds that regardless of her wealth situation, she is habitually conservative in all decisions except where she believes she has control. Citing a case in point, Yeo told Hamid about her aggressive leveraging of Sawit to expand capacity in order to

guarantee a customer's purchase order. In contrast she describes two different occasions where she did not take advantage of potentially attractive personal investment opportunities because she could not be certain of the outcomes.

B. **Characterize** Yeo as below average, average, or above average with respect to *each* of the three components of the risk objective in her investment policy statement:

- i. Ability to take risk
- ii. Willingness to take risk
- iii. Overall risk tolerance

Justify *each* of your responses with *one* reason based on Yeo's specific circumstances and/or her interview with Hamid.

Answer Question 7-B in the Template provided on page 46.

(9 minutes)

C. **Formulate** *each* of the following constraints in Yeo's investment policy statement:

- i. Time horizon
- ii. Tax concerns

Justify *each* of your responses with *one* reason based on Yeo's specific circumstances and/or her interview with Hamid.

Answer Question 7-C in the Template provided on page 47.

(6 minutes)

Answer Question 7 on This Page

Template for Question 7-B

Component	Characterize Yeo as below average, average, or above average with respect to <i>each</i> of the three components of the risk objective in her investment policy statement (circle one)	Justify <i>each</i> of your responses with <i>one</i> reason based on Yeo's specific circumstances and/or her interview with Hamid
i. Ability to take risk	Below average Average Above average	
ii. Willingness to take risk	Below average Average Above average	
iii. Overall risk tolerance	Below average Average Above average	

Answer Question 7 on This Page

Template for Question 7-C

Constraint	Formulate <i>each</i> of the following constraints in Yeo's investment policy statement	Justify <i>each</i> of your responses with <i>one</i> reason based on Yeo's specific circumstances and/or her interview with Hamid
i. Time horizon		
ii. Tax concerns		

This case study explores some of the risk management issues for a married couple living in a hypothetical country in the Eurozone. The case spans several decades and follows the couple through different stages of life from their early career phase, when they are in their late twenties, all the way to retirement. We will show how risk management methods need to change as the family's circumstances evolve. Particularly important prior readings related to this case are the Level III readings "Risk Management for Individuals" and "Overview of Private Wealth Management."

The assumptions used are drawn from what is typical for many countries in Europe. The circumstances and risks that this married couple face are influenced by the environment in which they find themselves. Despite the differences between Europe and other parts of the world, however, their goals, the risks they face, and the assessment of their circumstances, as well as the suggested methods, are by no means unique to the region. The risk analysis methodology and its application would therefore be valid in a much broader context.

For simplicity, we assume that economic conditions and tax rates remain unchanged throughout the four decades that this case study spans. The terms "adviser" and "wealth manager" are used interchangeably throughout this case study. The amounts that appear in exhibits throughout the case study are rounded.

The case is divided into six major sections. Section 2 provides background information about the hypothetical country in which the Schmitt family resides. Section 3 provides initial case facts relating to the family's early career stage and risk management analysis, as well as solutions relevant to that stage. In Section 4, we revisit the couple in their career development stage when they are 45 years old. In Sections 5 and 6, we examine their lives at age 55, in peak accumulation phase, and age 64, when they are preparing to retire. The final section provides a summary of the case.

2

BACKGROUND OF EUROLANDIA

This section provides background information about the social security system, healthcare, education and tax rates in the hypothetical country of Eurolandia. The case study assumes that the local social security system and regulatory conditions remain unchanged throughout the period under consideration. Economic conditions are assumed to be stable, with low but stable growth, inflation at 1%, and the risk-free rate (the yield-to-maturity of 30-year government bonds) at 3%. Unless stated otherwise, the amounts of the state pension and social security benefits are expected to increase by 1% annually in real terms.

2.1 Government Pension Plan

All Eurolandia residents who are employed are enrolled in the mandatory government pension plan. The plan is expected to provide retirement income for participants who have been enrolled for most of their working lives (35 years at a minimum in most cases) to cover at least basic living expenses upon retirement. This pay-as-you-go scheme fulfills that role at present, but its long-term viability is not necessarily guaranteed. Those who have paid the contributions for most of their working lives can expect to receive about a €13,500 annual pension from the government system. Those who have worked for the government (civil servants) enjoy a higher level of benefits and can expect to receive the higher of €20,000 per year, or 55% of their final salary. The foregoing amounts are what is currently paid to retirees. Unlike the arrangements in many other European countries, in Eurolandia the entitlement to civil servants' pension ends when the retiree dies, and surviving family members are not entitled to

further payments. The foregoing amounts are expected to increase by 2% per year in nominal terms, more than offsetting the 1% inflation rate. Eurolandia's mean annual salary is €35,000.

2.2 Health System

Basic health insurance is compulsory for Eurolandia residents, and contributions to the scheme are normally deducted from salary along with the government pension plan contributions. The health insurance offers comprehensive coverage of the vast majority of health care expenses and is considered adequate. It requires those seeking treatment to make small co-payments for a particular service. Supplemental health insurance is available through private companies. It covers optional treatments and offers shorter waiting times as well as access to a selection of privately run facilities that provide a high degree of comfort and that are not covered by the basic health insurance. The government provides basic long-term care.

2.3 Unemployment Insurance

Unemployment insurance is compulsory in Eurolandia, and premiums are paid in the form of social security contributions. Unemployment benefits are capped at a low amount, however, far below what a successful professional would earn. Although the modest benefits (€800 per month) run for a limited amount of time, those in long-term unemployment still receive a form of means-tested income support and a range of means-tested benefits, such as housing benefit. Means testing involves assessment of the person's financial resources to determine the need for state benefit support. Those dependent on the social security system would qualify for up to €12,000 per adult per year.

2.4 Disability Insurance

As with unemployment insurance, the compulsory social security contributions provide basic disability insurance. This insurance provides benefits in the form of regular income if one is unable to work because of serious illness or disability. As with unemployment insurance, the level of benefits, however, is capped at what is considered to be a low amount of €1,500 per month (€18,000 per year), far below what a successful professional would earn. Government employees, including those working for state schools, qualify for a higher level of coverage after 10 years of service, providing benefits in the form of income replacement of €1,800 per month (€21,600 per year).

2.5 Education

Education for children aged six and older is provided and funded by the government. University education up to the first degree level is also funded by the government and is almost free to residents of the European Economic Area (EEA), a free trade zone that, among others, includes European Union countries. Government funding extends to master's-level degrees that are also made accessible through a public subsidy. Government-funded schools and universities enjoy very good reputations.

2.6 Social Security Contributions and Tax Rates

To be entitled to the aforementioned social security benefits, employees pay 9% social security contributions on the portion of gross salaries that exceed €15,000 per year. The contributions are deductible from taxable income at source and are capped to

a maximum of €10,000 per family per year. The marginal income tax rates for individuals are listed in Exhibit 1. Unemployment and disability benefits are not subject to income tax.

Exhibit 1 Marginal Tax Rates

Yearly Taxable Income (€)	Marginal Tax Rate
0 to 15,000	0%
15,000 to 50,000	30%
Above 50,000	40%

Note: The €15,000 and €50,000 thresholds and the €10,000 cap are annually adjusted for inflation. Mortgage interest is not tax deductible.

The government encourages residents to save for retirement. There are tax incentives for voluntary contributions to government-regulated defined contribution (DC) occupational (employer-sponsored) and private pension savings plans. The government adds 25% to the amount of a member's contribution, meaning that for every €100 a member contributes to the scheme, the amount added becomes €125 thanks to €25 that comes from the government. Members of such schemes can, within certain limits, decide on the asset allocation. There is no tax on investment returns within regulated pension savings plans. Normal retirement age for both men and women is 65 and is expected to remain unchanged. Tax-free lump sum withdrawals from private pension savings plans, amounting to a maximum 25% of the fund, are allowed from age 55. Realized net capital gains on investments held outside regulated pension schemes (including rental property investments) are subject to capital gains taxes of 30% on amounts of gains exceeding €25,000 per person per year. No distinction is made between short-term and long-term holding periods, and the €25,000 level is expected to remain unchanged in the future.

3

THE SCHMITT FAMILY IN THEIR EARLY CAREER STAGE

The following section provides initial facts as they apply to the Schmitt family. The subsequent sections then explain the risks the Schmitts face as well as the methods for addressing those risks.

3.1 Initial Case Facts

Paul and Jessica Schmitt, both 28 years old, recently got married. They are in their early career phase. Both graduated three years ago with master's degrees in, respectively, mathematics and computer science. Upon graduation, Paul found the teaching job to which he aspired, and he has been teaching mathematics at a local school ever since, earning a gross yearly salary of €45,600. After social security and tax deductions, his take-home pay is €33,670. Jessica, a born entrepreneur, joined an IT startup after graduating. Her gross yearly salary is now €24,000, which translates into €20,490 after taxes and social security contributions. Her salary has potential for a significant increase from the current relatively low level. She is also entitled to receive a discretionary bonus if her company becomes profitable. A bonus would potentially

constitute a significant portion of her compensation. She could earn a far better fixed salary elsewhere, but she prefers the upside potential that her current position could offer, and she really believes that her company will succeed.

Paul and Jessica have combined savings of €15,000. They have no other financial assets, except for their participation in the government pension plan, to which they have been contributing since they started working three years ago. Their only other notable asset is their old car. The Schmitts have no debt, because their living expenses while they were students were covered by their parents and by government funding. Tuition costs at the state university they attended were negligible. Their monthly expenses are €2,900, including rent of €1,000. Exhibit 2 summarizes the Schmitts' circumstances.

Exhibit 2 Summary of the Schmitts' Circumstances

	Jessica	Paul	Combined
Annual gross income (€)	24,000	45,600	69,600
Annual net income (€)	20,490	33,670	54,160
Source of income	Information technology start up	Teaching job at state school	
Annual Living expenses (€)			34,800
Financial assets (€)			15,000
Debt (€)			0
Car (€)			7,000

The Schmitts would like to ensure long-term financial security for the family that they are hoping to start soon. They would also like to buy a house in an area that is very popular with young couples and has seen substantial appreciation of property values. The Schmitts would welcome competent and unbiased financial advice, but they are unsure where to get it. They mention their wish to a relative, Mr. Muller, CFA. He is a retired financial advisor and is happy to help them.

3.2 Identification and Analysis of Risk Exposures of the Schmitt Family in the Early Career Stage

Muller follows the four key steps in the risk management process for individuals:

- 1 Specify the objective.
- 2 Identify risks.
- 3 Evaluate risks and select appropriate methods to manage the risks.
- 4 Monitor outcomes and risk exposures and make appropriate adjustments in methods.

3.2.1 Specify the Schmitts' financial objectives

Muller discusses the couple's financial objectives with Paul and Jessica. They describe those objectives as a house purchase in the very near future and hopefully starting a family. They wish to ensure long-term financial security and, looking ahead, a comfortable retirement. Muller acknowledges that most couples of their age usually do not pay much attention to the distant future. Although the Schmitts have almost their entire working career ahead of them, he confirms to them that it is essential to start planning for this long-term objective as early as possible. Moreover, there are

likely to be tax advantages to be reaped by optimizing retirement savings, although there may be limited financial resources available to devote to that objective in the Schmitts' current stage of life—the early career stage.

Muller questions the couple about their current circumstances, including employment, and inquires further about the proposed house purchase. The Schmitts are keen to purchase a condominium they like very much at a cost of €270,000. If fully funded by a 25-year repayment mortgage at an initial interest rate of 3.6% per year fixed for 5 years, the monthly mortgage cost would come to approximately €1,360, compared with the €1,000 monthly rent that they are currently paying.

3.2.2 Identification of risk exposures

To better understand the young couple's financial health and to identify and analyze risks the Schmitts face, Muller lists the couple's assets, liabilities, and financial objectives and assesses the characteristics of human capital as components of the Schmitts' total wealth. He observes that they are richly endowed with human capital:

- They are highly trained in fields that are, and are expected to remain, in high demand.
- They are young, in the career development phase, with many working years ahead of them.
- They have been employed for nearly three years, accruing valuable working experience.
- As citizens of an EU country, they are geographically mobile and legally entitled to work in other countries in the region.

Muller describes Paul's human capital, if he continues in his chosen career as a teacher, as very much bond-like. He has the status of a civil servant, a term used to describe someone who works in the state sector. His income is expected to increase with seniority, but has very modest upside potential. Paul benefits from excellent job security, limiting earnings risk from unemployment. Although Paul is entitled to work in many countries, the portability of his human capital as a teacher is limited because the required qualifications to obtain a teaching position vary significantly from country to country. Moreover, the privileges and accrued seniority related to his civil servant status are not easily transferable when moving to another country.

Jessica's human capital, if she remains in the same or a similar role, is very much equity-like. She faces significant uncertainties in her future cash flows from employment, but she can also benefit from substantial rewards if she meets her job objectives and her company does well. Muller and Jessica agree that she faces significant earnings risk, much more so than her husband. This is because she works for a startup that offers no coverage for loss of income resulting from disability or premature death. Only the coverage provided by the country's social insurance system would be available. Unemployment is also much more of a concern for her because, unlike her husband, she does not enjoy the job security of a civil servant. There can also be ambiguity in what triggers her bonus payments and her participation in the company profits. If she becomes a shareholder, following the award of stock options, the resulting asset will have some of the characteristics of a business asset. Jessica's human capital, driven by her globally applicable IT skill set, is portable across countries.

Muller notes that from a financial point of view, the Schmitts' marriage results in human capital diversification, with Paul's human capital being bond-like and Jessica's human capital being equity-like, subject to far more risk and upside than that of her husband.

Exhibits 3 and 4 show the assumptions and the economic balance sheet as summarized by Muller. He repeatedly stresses that any calculations are subject to substantial uncertainty, especially in the early career stage, but such exercise provides a

good starting point for the risk analysis that needs to be performed. The asset side at this stage features the rather limited liquid financial assets, the vested state pension benefits (the mortality-weighted net present value [NPV] of the accrued benefit amount), and human capital. Human capital, reflecting the present value (PV) at a wage-risk adjusted discount rate, of the expected stream of income from employment, is calculated using the formula

$$HC_0 = \sum_{t=1}^{t=N} \frac{p(s_t) w_{t-1} (1 + g_t)}{(1 + r_f + y)^t} \quad (1)$$

where

HC_0 = human capital

$p(s_t)$ = the probability of surviving to a given year (or age)

w_t = the income from employment in period t

g_t = the annual wage growth rate

r_f = the nominal risk-free rate

y = the risk adjustment based on occupational income volatility

N = the length of working life in years

The human capital values, shown in Exhibit 4, are calculated using the formula in Equation 1 and are based on the assumptions in Exhibit 3.

Exhibit 3 Assumptions for the Calculation of Human Capital at Age 28

	Jessica	Paul
Starting salary (net)	€20,490	€33,666
Assumed nominal salary growth rate	6%	3%
Discount rate (nominal risk-free)	3%	3%
Risk adjustment based on occupational income volatility	3%	0%
Remaining length of working life assuming retirement at age 65	37	37

Note: The probability of surviving to a given age is based on mortality tables (not shown here) used in Eurolandia.

The liability side shows financial objectives that can be modeled as liabilities. The €1.87 million present value of lifetime consumption needs is based on an assumed initial €2,900 monthly expenditure (€34,800 per year). Because the Schmitts do not know when they are likely to have children and when they will be incurring higher expenditures, Muller assumes that their expenses will rise by 6% (5% above inflation and assuming they will have a growing family) in each of the next 10 years and increase in line with 1% inflation from then on. Assuming life expectancy of 90 years, the PV of lifetime consumption calculation would cover 62 years in total.

Exhibit 4 The Schmitts' Economic Balance Sheet at the Age of 28

Assets (€)	Liabilities (€)	
Savings account	15,000	Debt
Accrued entitlement to state retirement benefits (Paul)	21,000	0

(continued)

Exhibit 4 (Continued)

Assets (€)	Liabilities (€)		
Accrued DB government retirement plan (Jessica)	11,800		
Paul's human capital	1,174,800	PV of lifetime consumption	1,868,000
Jessica's human capital	694,700		
Total assets	1,917,300	Total liabilities	1,868,000
		Net wealth	49,300

Note: Figures are rounded. Because we take a holistic view of assets and liabilities, we include the participation in the country's compulsory retirement program as an asset. The Schmitts' ownership of an old car is disregarded for the purposes of the economic balance sheet.

Miller notes at the outset that both Paul and Jessica are in the early career stage, and they are rich in human capital but have very limited financial assets. They face the financial challenges of starting a family, with the possible purchase of a property. Given their very modest level of financial assets and the fact that their liabilities are very limited, the risk analysis at this stage of life focuses on human capital. The estimation of its present value depends on a range of assumptions and is subject to uncertainty. But liabilities need to be met, especially if the couple has children. For this reason, a careful analysis of any gaps in the current insurance coverage must be conducted. Such analysis will lead to recommendations for risk management in order to preserve and optimize human capital, the most valuable asset that the Schmitts own, and also to meet lifestyle goals. Following systematic examination of their circumstances, Muller identifies the following risks that the Schmitts face and that he will need to evaluate:

- earnings risk resulting from loss of employment
- earnings risk resulting from health and disability
- premature death risk leading to costs imposed on the surviving partner
- car accident and repair costs
- liability risk (e.g., the risk of bodily injury or property damage caused when driving)

In addition to these risks, Muller wants to consider the effect of the proposed house purchase on the Schmitts' financial circumstances.

3.2.3 Analysis of identified risk

Having identified the key risks facing the Schmitts, Mr. Muller, CFA, proceeds to evaluate those risks one by one, considering any existing coverage provided by the employer or the government social security system.

Earnings risk Earnings risk resulting from loss of employment is particularly relevant for Jessica because of the nature of her employer's business. The likelihood of loss of employment is difficult to estimate but is higher than the probability of Paul's loss of employment. Because of her limited number of years of service, the amount of any statutory redundancy payments (required by law and related to the number of years of service) due from the employer would be limited. Because they have both been paying social security contributions, they would at least initially be entitled to €800 per month of unemployment benefit, representing just under half of Jessica's net salary and just under a third of Paul' monthly net pay.

Earnings risk resulting from health or disability is highly relevant despite the fact that both Paul and Jessica are young and in good health. If Jessica or Paul were unable to work because of illness or disability, both events more likely than premature death, the benefits from the state social security system would amount to approximately €1,500 per month, replacing most of Jessica's initial €1,708 monthly after-tax income but only just over half of Paul's monthly after-tax income of €2,806. In Jessica's case, one needs to consider that her salary is expected to show healthy growth, as reflected in her human capital estimates, and social security benefits are, over time, set to replace decreasing proportion of her income from employment. Jessica's employment package does not include any disability coverage, while Paul's enhanced coverage resulting from his government employee status would apply only after another seven years of employment.

Premature death risk In the case of an unlikely scenario of premature death, the risk to the remaining spouse is at this stage of life twofold. First, one-off costs such as the funeral would have to be paid and an emergency fund would have to be established, because the surviving spouse would have no partner to help deal with emergencies. Second, his or her lifestyle would be affected by the fact that the monthly household costs that they currently cover jointly, including rent, would become the remaining spouse's sole responsibility.

Car accident and repair costs The Schmitts use an old car and have a compulsory third-party insurance policy in place, protecting them in case they need to pay other parties' repair costs or compensation. Given the basic nature of the policy, they are not protected from costs that would arise should they need to have their own car repaired or replaced, exposing them to risk. During their discussions with Muller, however, Paul and Jessica explain that they do not use their car very often.

Liability risk Muller considers the bulk of liability risk arising from car accidents or from injuries sustained by those who visit one's property. The existing compulsory car policy is basic but does provide liability coverage. Because the Schmitts' property liability (as well as buildings and contents) is insured as part of their rental agreement, he does not consider any other liability risks significant given the local culture.

House purchase In addition to the aforementioned risks that they already face, the proposed house purchase would increase the couple's vulnerability to unexpected short-term expenditures. The Schmitts already have significant mismatch between financial assets and the sum of liabilities and financial objectives. Human capital is illiquid and represents future cash flows from earnings. The Schmitts' objective of purchasing a property requires a substantial amount of cash for the deposit (down payment), legal/notary's fees, additional transaction costs, and moving expenses. Significant sudden cash needs may arise if, for example, they need to replace their old car. To some extent, such cash needs, except for the house down payment, can be met through borrowing. The interest rates for consumer finance, however, are quite high and typically linked to a floating reference rate, thereby exposing the Schmitts to interest rate risk. Their ability to meet even small, short-term bills and cope with any unexpected expenditures would be limited if they decide to buy a property and use their limited savings to cover the transaction costs.

Muller explains that the house purchase decision itself should be weighed against continuing to rent. Paul and Jessica argue that their monthly spend on rent of €1,000 is not that different from the likely monthly mortgage payment of €1,360, so the house purchase should make little difference to their monthly budget that currently stands at €2,900. Muller points out, however, that the difference that does exist should not be disregarded and that property-related service charges and maintenance costs should

be taken into consideration. At an annual 1% of property value (annual cost of €2,700 or €225 per month), the additional cost would dent the Schmitts' ability to build up any savings buffer.

3.2.4 Recommendations for managing risks

Having assessed the risks that the Schmitts face, Muller provides the following recommendations to the young couple:

Earnings risk Earnings risk arising from loss of employment cannot be easily insured. Muller's recommendation is for the Schmitts to build up a savings "buffer" amounting to at least six months' worth of normal expenditures (buffer of €17,400 based on €2,900 monthly spend). That way they could effectively self-insure over time to be able to cope with circumstances during which they would rely on the unemployment benefits provided by the social security system.

Earnings risk resulting from serious illness or disability, exposing the couple to a shortfall in income if they were to rely on state benefits if one was to fall seriously ill or become disabled, can be addressed by taking out disability insurance. Consequently, Muller recommends that each of them take out a disability insurance policy that would replace their current income over and above the disability benefits insurance that the state provides, to maintain their living standards. As their salaries are expected to increase, in Jessica's case substantially from a low starting level, he recommends they go for a policy that guarantees the option to purchase additional coverage without underwriting. The amount of disability income coverage required to replace earnings and supplement the state social security disability benefit is calculated in Exhibit 5. The difference between the amount of recommended coverage for each person reflects the fact that Paul's salary is notably higher than what the disability benefits from the social security system would replace. Muller recommends they buy policies that would provide benefit of €80,000 and €490,000 for Jessica and Paul, respectively. Muller states that the cost of such policy should be in line with fair value and emphasizes the need to carefully compare costs among different providers (*note: the analysis of the cost is beyond the scope of this case study*). He further adds that the policy purchase decision potentially has long term implications, hence the need for in-depth analysis.

Exhibit 5 Disability Insurance Coverage Calculation

	Jessica	Paul
Annual salary income (net) to be replaced	€20,490	€33,670
Amount of annual disability coverage provided by the social security system	€18,000	€18,000
Shortfall	€2,490	€15,670
Benefit period (until retirement age)	37 years	37 years
Assumed annual benefit adjustment (nominal)	2%	2%
Discount rate	3%	3%
PV of future earnings replacement required (calculated as PV of annuity due)	€77,700	€489,000

Note: Disability insurance benefits can take the form of a lump sum or a stream of payments over time. Using calculator keystrokes for an annuity due with level payment, the growth of payments can be incorporated by adjusting the discount rate to account for the growth rate. The adjusted rate can be calculated as follows, as long as the discount rate is larger than the growth rate: $(1 + \text{Discount rate})/(1 + \text{Growth rate}) - 1$, or $(1.03/1.02) - 1 = 0.98\%$. Set the calculator for beginning-of-period payments; $n = 37$, payment = €2,490, and $i = 0.98\%$. Then calculate PV.

Premature death risk Although the couple has no children or mortgage to pay at present, the financial difficulties faced by the surviving spouse in the event of one person's death should be covered using a life insurance policy. Exhibit 6 illustrates how one could establish the level of life insurance coverage required.

Exhibit 6 Calculating the Amount of Life Insurance Coverage

Muller explains that the amount of coverage that the life insurance policy should provide can be calculated using two methods. One is based on the value of human capital (the *human life value* method), which estimates the amount of future earnings that must be replaced. The other is the *needs analysis* method, based on estimating the amount needed to cover survivor's living expenses. He adds that both methods rely on a number of assumptions that may turn out to be inaccurate.

Muller suggests focusing on the needs analysis method at this stage of the Schmitts' careers. He explains that in the absence of debts to be repaid and absence of children whose upbringing would need to be funded, the calculation is relatively simple and involves estimating only two main items:

- Cash needs required upon death of the insured person, including funeral and burial costs, any taxes or debt to be repaid, and establishment of an emergency fund. They agree on a figure of €30,000.
- The surviving spouse's ability to cope with ongoing costs. They currently spend €34,800 per year, of which about half is spent jointly on rent and general expenditures that will remain broadly unchanged in the future. They estimate that the surviving spouse would require at least €25,000 annually for ongoing costs and that those costs would, under such circumstances, grow at 2% in nominal terms. The present value of such annual flow for the rest of the person's life is then compared with the present value of the survivor's earnings.

	Paul	Jessica
Cash needs		
Funeral and burial costs plus taxes	15,000	15,000
Emergency fund	15,000	15,000
Debts to be repaid	0	0
Total cash needs	30,000	30,000
Capital needs		
PV of surviving spouse's €25,000 annual living expenses (growing at 2% until death at age 90, discounted at 3%, annuity due)	1,169,000	1,169,000
Less PV of survivor's income until retirement at 65 (annuity due, assuming 3% growth and 3% discount rate for Paul and 6% growth and 3% discount rate plus 3% risk adjustment for Jessica)	758,000	1,246,000
Total capital needs	411,000	-77,000
Total financial needs	441,000	-47,000
Capital available:		
Cash, savings, investments	15,000	15,000

(continued)

Exhibit 6 (Continued)

	Paul	Jessica
PV of vested retirement accounts (attributable to surviving spouse)	11,800	21,000
Existing life insurance coverage	0	0
Total capital available	27,000	36,000
Additional life insurance needs	414,000	-83,000

Note: Rounding used throughout.

Having analyzed the needs from the surviving partner's point of view, Muller recommends that the couple purchase a life insurance policy on Paul's life. He points out that although life and disability insurance is relevant already, if the Schmitts have children, the level of coverage would need to be reviewed and potentially increased significantly. For now, Paul and Jessica decide on a policy covering Paul's life, providing benefit coverage of €400,000.

Car accident and repair costs The existing car insurance coverage protects other parties but not the Schmitts. Having considered the cost of taking out more comprehensive coverage and taking into account their sparse use of the car, Muller advises the Schmitts not to spend resources on better coverage but self-insure instead with an adequate savings buffer.

Risks to lifestyle arising from the proposed house purchase Muller advises the couple against the house purchase at this time. Despite recognizing numerous long-term benefits of home ownership, he argues that delaying the house purchase would lower their risk exposures. Muller also points out that a house cannot be considered fully as an investment asset but rather as a "mixed" asset, with elements of a personal asset (consumer item) as well as an investment asset. In addition, he sees risk to mortgage costs from increasing interest rates (once any fixed-rate period comes to an end). Instead of the house purchase, he suggests the Schmitts draw up a savings plan to build their savings and financial assets, because they risk being left virtually without financial assets if they were to purchase their home in the near future. The Schmitts' total yearly after-tax income of slightly more than €54,000 means that they do have the ability to save, as a simple cash budget in Exhibit 7 shows. The costs of paying the recommended insurance premiums (including the existing car insurance) that Muller estimates could roughly be in the region of €2,500 per year would easily be accommodated by the family budget.

Exhibit 7 Summary Annual Budget of the Schmitt Family at Age 28

Combined yearly gross pay	69,600
Less taxes and Social Security contributions	(15,440)
Net pay	54,160
Living costs (including rent)	(34,800)
Net cash available	19,360

Note: Rounded amounts used.

Muller suggests that a comfortable savings buffer, amounting to at least six months of living expenses (i.e., €17,400), should be set aside and be available on demand (e.g., in an easy-access bank account or equivalent). An investment plan should be drawn up once savings in excess of the buffer become available. He recommends that the Schmitts draw up a contingency plan for the critical first year after the home purchase if indeed they go ahead with their intention to buy, in case a sudden liquidity need arises. After the first year, accumulated savings should provide such liquidity buffer. The contingency plan should identify the cheapest way of borrowing, most probably against the house equity.

Other risks Property insurance will be required if the Schmitts do decide to purchase a home. It is required as a condition for obtaining the mortgage, although Muller suggests that the amount of coverage equals the purchase cost of the property, not just the amount of mortgage debt. This consideration is particularly relevant as the Schmitts would be required to invest almost all of their liquid assets in their new home if the purchase goes ahead.

After a review of the basic health insurance coverage provided by mandatory social security contributions, Muller recommends not to enter into any additional private medical insurance at this time.

3.2.5 Monitoring outcomes and risk exposures

Muller adds that no risk management strategy is complete without regular monitoring and reviewing of outcomes and risk exposures. He explains that adjustments to the risk management solutions must be made as circumstances change.

3.3 The Schmitts Purchase Their Home

Contrary to Muller's recommendation, the Schmitts purchase their home in a sought-after area close to Jessica's workplace. The total purchase costs amount to €285,000, including all transaction costs, financed as follows:

- 1 Personal loan from Jessica's parents amounting to €80,000. The loan is not secured against the property. A secured loan would make obtaining a mortgage from the bank much more challenging, because the bank would not be the sole holder of a lien on the house if Jessica's parents held a secured loan.
- 2 Personal funds in the amount of €5,000. They reserve the rest of their assets to pay for moving expenses and furniture and to have a minimal liquidity buffer.
- 3 A 25-year mortgage of €200,000 at 3.6% fixed for five years, resulting in monthly payments of €1,012 consisting of both interest and capital repayment.

A condition of the mortgage is that the property is insured to at least the amount of the mortgage outstanding. The Schmitts take out property insurance with a coverage of €200,000, matching the mortgage amount, but less than what was suggested by Muller.

3.4 Review of risk Management Arrangements Following the House Purchase

Following the decision to purchase the newly built property, the Schmitts ask Muller to review and update the family's risk management arrangements. They discuss how the risks have changed and how risk management solutions should be modified.

Some risks identified earlier have changed, and new ones have appeared. Earnings risk from unemployment, disability or premature death has not changed, but the level of life coverage needs to be reevaluated because the couple now faces a liability in the form of a mortgage that would, in line with local customs, be expected to be repaid in full if Jessica or Paul died. The same would apply to the loan from Jessica's parents.

EXAMPLE 1

Calculation of Life Insurance Required

Using the needs analysis method (Exhibit 6), recalculate the amount of life insurance coverage the Schmitts require.

Assume that the surviving spouse continues to live in the newly purchased house, and also assume the following:

- The emergency fund would need to be increased to €30,000 because of the near-zero liquid cash resources available following the house purchase.
- The mortgage (€200,000) and loan from Jessica's parents (€80,000) are to be fully repaid, in line with local customs in the country.
- The survivor's annual costs fall to only €19,000 because of the fact that mortgage repayment costs drop out and are only partly offset by maintenance and service charges. Assuming such costs are to be paid for the rest of the survivor's life (a further 62 years), and assuming a discount rate of 3% and an annual living cost increase of 2%, the PV of such future costs is about €888,000.
- The PV of the survivor's income from after-tax salary is €758,000 for Jessica and €1,246,000 for Paul, as per Exhibit 6.
- Capital available is now only €12,000 and €22,000, represented by the PV of vested retirement savings accounts for Jessica and Paul, respectively.

Solution:

	Paul	Jessica
Cash needs		
Funeral and burial costs plus taxes	15,000	15,000
Mortgage retirement	200,000	200,000
Other debt (Jessica's parents' loan)	80,000	80,000
Emergency fund	30,000	30,000
 Total cash needs	 325,000	 325,000
 Capital needs		
PV of surviving spouse's living expenses (until death assumed at 90)	888,000	888,000
Less PV of survivor's income until retirement at 65 (annuity due, assuming 3% growth and 3% discount rate for Paul and 6% growth and 3% discount rate plus 3% risk adjustment for Jessica)	758,000	1,246,000
 Total capital needs	 130,000	 -358,000
 Total financial needs	 455,000	 -33,000

	Paul	Jessica
Capital available:		
Cash, savings, investments	0	0
PV of vested retirement accounts (attributable to surviving spouse)	12,000	21,000
Total capital available (excluding existing insurance coverage)	12,000	21,000
Insurance coverage required	443,000	-54,000

Given that the couple already has policy coverage of €400,000 (Paul's life), they should consider raising the amount of coverage of Paul's life.

The Schmitts' advisor explains that they also face property risk and related liability risk. Their existing coverage, arranged to satisfy the mortgage lender, covers the outstanding loan amount of €200,000. Muller recommends that they increase the homeowner's coverage to the full amount of what the property is worth, currently €280,000. The policy, if the cost is reasonable, should also cover the building contents and should provide coverage of legal liability arising from the property.

Muller also points out that the transaction has left the Schmitts with very limited resources. They should aim to build up a cash cushion in the form of instant-access savings. Because they have chosen to borrow at a fixed rate, the Schmitts do not face any near-term risk from rising interest rates.

EXAMPLE 2

Review and Reassessment of Methods

Identify possible upcoming events that should require a reassessment of the family's risk management methods.

Guideline answer:

Paul and Jessica are buying their first property, and they hope to start a family. The property purchase and the resulting changes to the risk management solutions have been completed. Preparing for the birth of a child would be the point at which a reassessment of risk management methods becomes highly desirable. This is mainly because a loss of earnings of either Paul or Jessica would seriously impair the Schmitts' ability to pay for the child's upbringing.

THE SCHMITTS IN THEIR CAREER DEVELOPMENT STAGE

4

The Schmitts decide to approach Ms. Stein, CFA, a private wealth management practitioner and a partner in the same firm as Mr. Muller, CFA, who has since passed away. To identify and analyze the Schmitts' risk exposures Stein makes a full inquiry into their financial circumstances. She subsequently discusses their goals and proceeds to identify risks.

4.1 Case Facts: The Schmitts Are 45

In the last 17 years, the Schmitts have made significant progress in their careers and remain in good health. Their incomes and assets have increased, particularly Jessica's salary, which has risen substantially. They have been able to repay most of their mortgage and build up a portfolio of shares of 10 local IT companies whose business they believe they know. The couple is also considering making a speculative investment into residential property (similar in size to their existing property) located in the area where the IT industry is based and where Jessica works. They have repaid the loan from Jessica's parents. They continue to put money aside into an instant-access savings account, building up almost an €80,000 liquidity "buffer." Jessica's employer now offers a defined contribution (DC) company pension scheme into which Jessica and her employer make combined annual contributions of €3,000 (includes the top-up from government). Paul, having spent a number of years working as a teacher in the state education sector, is now entitled to life insurance coverage at three times his salary as part of his employment package. Because he has spent more than 10 years in the teaching role, he is now also entitled to a higher €2,520 monthly benefit in case of disability. This amount is the original €1,800 per month to which tenured state employees were entitled when Paul was 28, subsequently raised annually.

The Schmitts now have two children, Roxane and Peter, who are 12 and 7 years old, respectively. Peter suffers from mental development problems for which there does not appear to be a solution. He needs extra support at school. The Schmitts' living expenses have increased substantially and stand at €65,000 per year. Although Paul and Jessica increased the amount of life insurance coverage after Roxane's birth, they have not updated their insurance arrangements for many years. Exhibit 8 provides a summary of the Schmitts' financial circumstances.

Exhibit 8 Summary of the Schmitts' Financial Circumstances at Age 45

	Jessica	Paul	Combined
Yearly gross income (€)	80,000	66,000	146,000
Yearly after-tax income (€)	53,650	46,510	100,160
Source of income	Department head, IT	Teacher at state school	
Living expenses (€)			65,000
Pension provisions	Government pension scheme membership as mandated by law Plus Employer's DC scheme (annual contribution of €3,000 from Jessica and employer)	Government pension scheme as mandated by law. As a civil servant, enjoys better pension conditions No separate private pension fund	
Employer-provided insurance		Life, insurance lump sum coverage $3 \times €66,000 = €198,000$.	

Exhibit 8 (Continued)

	Jessica	Paul	Combined
Private life insurance	€200,000 life policy she took out after the birth of their first child.	Life policy of €440,000	
Disability insurance	Government insurance coverage of €25,200 per year. Private coverage of a lump sum of €112,200 (the original €80,000 policy taken out at age 28, reflecting 2% annual benefit adjustment)	Government insurance coverage of €30,245 per year (includes extra payment reflecting more than 10 years of service) Private coverage of a lump sum of €686,100 (the original €490,000 policy taken out at age 28, reflecting 2% annual benefit adjustment)	

4.2 Financial Objectives in the Career Development Stage

Stein first discusses financial objectives with the 45-year-old Schmitts. They wish to achieve the following goals:

- maximize household welfare and reduce the impact of any unexpected events, such as illness, disability, or premature death;
- plan for future costs of support for Peter; and
- have a comfortable retirement.

To help understand the family's circumstances and identify risks, Stein conducts a valuation of Jessica's and Paul's human capital. The exercise is easier now than was the case in the early career stage. The input parameters are less uncertain, because their salary levels now are more stable and predictable than in the early career stage, and the calculation of present values of expected future earnings is conducted over a shorter time horizon. Exhibit 9 shows the assumptions used, including the reduction in risk adjustment on Jessica's salary. It also shows the resulting economic balance sheet. Although the valuation of human capital varies considerably under different assumptions, the result is that the value of the couple's human capital is substantial, amounting to a combined €1.9 million. Stein notes the financial objectives and notices their dependency on the couple's growing earnings.

Exhibit 9 Economic Balance Sheet at the Age of 45**Human Capital Assumptions**

	Jessica	Paul
Expected salary growth (nominal)	5%	2%
Discount rate (r_f)	3%	3%
Risk adjustment (γ)	1%	0%
Length of working life (up to age 65)	20	20
Probability of surviving to age 65	92%	92%

Note: Probability of surviving to a given age is based on mortality tables (not shown here) used in Eurolandia. They are assumed to be the same for men and women.

Economic Balance Sheet

Assets	€	Liabilities	€
Savings account	77,000	Mortgage debt	35,000
Shares of IT companies	130,000		
Accrued DB government retirement plan (Paul)	247,000		
Accrued DB government retirement plan (Jessica)	130,000		
Employer pension value (Jessica)	10,000		
Property (main residence)	320,000		
Paul's human capital	798,000	PV of lifetime consumption needs	2,379,000
Jessica's human capital	1,093,000		
Total assets	2,805,000	Total liabilities	2,414,000
		Net wealth	391,000

Note: The present value of lifetime consumption needs is based on the assumption that the family's current level of expenditure (€65,000) from this point increases by 2% a year in nominal terms (1% above inflation) for the rest of their lives. Assumes remaining time period of 45 years and discount rate of 3%. Numbers in the exhibit are rounded.

To better understand the family's regular cash flows, Stein also prepares a summary cash flow budget, shown in Exhibit 10.

Exhibit 10 Summary Annual Budget of the Schmitt Family at Age 45

	€
Combined yearly gross pay	146,000
Less taxes and Social Security contributions	45,800
Net pay	100,200
Less living costs (including mortgage cost)	65,000
Less (house repair, maintenance, service charges)	3,500
Cash available for insurance and savings	31,700
Insurance premiums	3,500
Funds available to save or invest	28,200
Currently used primarily to:	
Fund investment portfolio	22,000
Add to savings accounts	3,200
Contribute to Jessica's employer's pension plan	3,000

4.3 Identification and Evaluation of Risks in the Career Development Stage

EXAMPLE 3

Identification of Risks

Identify financial risks the Schmitts face. Discuss each risk in turn.

Guideline answer:

The Schmitts face the following main risks:

- Earnings risk resulting from potential loss of employment. The risk of involuntary unemployment remains higher for Jessica than for Paul. Jessica is the higher earner, whereas Paul, a civil servant, could be expected to lose employment only under extreme circumstances. The amount at stake is greater than before because of the salary increases Jessica has enjoyed.
- Earnings risk resulting from disability. The Schmitts remain in good health, so the likelihood of them suffering from disability remains low but is higher than the risk of dying. Their salaries, however, provide their main source of income and funding of their current lifestyles. If one of them were to become disabled, the burden on the rest of the family would not only take the form of lost earnings. It would also limit the range of activities in which the surviving partner could engage, with possible implications for income and costs.
- Premature death risk. This risk remains relevant, because early death could have serious consequences for the family now that children need to be cared for. Not only would costs of bringing up children have to be covered, the surviving spouse would potentially suffer a reduction in income because all family responsibilities would now be performed only by the surviving spouse.
- Risk to the value of their growing but concentrated investment portfolio of shares of IT companies. This is the couple's main investment vehicle but is focused on a volatile sector, whose performance is correlated with Jessica's career prospects.
- Risk to their retirement lifestyle goals. If the couple's contributions to their retirement plans are insufficient or the plans perform poorly, their retirement funding could be insufficient for the standard of living they desire.
- Other risks include property and liability risks.

4.3.1 Assessment of earnings risk

Earnings risk is significant because loss of employment is particularly relevant for Jessica. She is on a relatively high salary and works in a higher-risk sector compared with Paul. If she were to rely on unemployment benefits, at just under €13,500 per year, they would cover a quarter of her net income. In the event Paul were to become unemployed, such benefits would cover less than a third of his net salary.

Earnings risk resulting from disability would seriously affect the couple's ability to maintain their lifestyle and costs associated with providing for the children. In case of disability, Jessica would be entitled to about €25,200 per year, which is less than half

of her net salary. Paul is less exposed because his salary is lower and his entitlement to state disability benefit is higher after more than 10 years of service. Relying on state benefits alone would provide €30,245, amounting to almost two-thirds of his net salary. In addition, the Schmitts have existing disability insurance in place, now providing total payout of €112,000 and €686,100 (if treated as a lump sum) in case of Jessica's or Paul's disability, respectively. Stein suggests that the level of coverage is reassessed before recommendation is made.

Premature death risk, now that the couple has children, requires attention. Death of one of the parents would not only have consequences due to one-off costs resulting from the death but would also mean that family expenditures, currently covered jointly, would have to be funded from the survivor's income. Furthermore, the surviving spouse would potentially suffer a reduction in income because family responsibilities would now be performed only by the surviving spouse, most likely preventing him or her from career progression and possibly forcing the person to work part time. Alternatively, such services would have to be provided by others at a cost.

Although the amount of financial assets available to the family has increased substantially in recent years, at an aggregate amount approaching €210,000, they amount to more than the Schmitts' joint yearly gross earnings of €146,000. Stein points out, however, that those amounts are not significant for the couple to be able to cope with unexpected events beyond the short term. The adviser notes the Schmitts would like to avoid the extreme situation where the children would face not only the tragic loss of a parent (or both) but also a deterioration in living standards. Life insurance would provide support for their young children, who are likely to rely on them for financial support for at least the next 10 years and possibly longer in the case of their son Peter.

4.3.2 Analysis of the investment portfolio risks

Risk to the investment portfolio stems from the fact that Jessica and Paul prefer to invest in a relatively small number of companies they believe they know, all of which are IT companies in their home country. Stein points out the correlation between their IT stock holdings and Jessica's human capital, which is also tied to the prospects for the IT sector. If prospects for IT companies suffer, both the value of Jessica's human capital and that of their investment portfolio would decrease at the same time. Their risk-bearing ability is rather limited, which is important because their financial assets are rather modest compared with their spending needs—particularly in the presence of earnings risk related to Jessica's employment, a risk that is difficult to insure against. Moreover, because there is a relatively high concentration of IT employees where the Schmitts live, the value of the real estate that the Schmitts own there is likely to be positively correlated with Jessica's human capital as well.

4.3.3 Analysis of the retirement savings plans

Stein then takes a closer look at the risk to the Schmitts' retirement lifestyle goals. Through their mandatory social security contributions, the couple will be entitled to a government pension. In addition, Jessica's employer now provides a DC company pension, albeit with a limited amount of employer contributions. At the current rate of recently started contributions of €3,000 per year (combining those from Jessica's employer, her own payments, and the tax incentive), and assuming they grow at 3% annually, the estimated fund value would be near €150,000 at the age of 65, according to the fund administrator. At a typical annuity yield of 5%, such a sum would provide annual retirement income of €7,500. Stein estimates that if they remain employed until their retirement, and if there is no impairment in the benefits that are promised, the Schmitts will have a total gross retirement income, including state pensions, amounting to €76,000. This figure is about half of what they are earning now. Although their spending in retirement is likely to be lower than their current consumption, there is

a risk that retirement income will be insufficient. Moreover, it is possible, and even likely, that the benefits offered by the state pension may be reduced before they retire, because the state pay-as-you-go system is under a significant strain.

4.3.4 Other risks

Stein also reviews the property and liability risks. The Schmitts have what is considered to be adequate health insurance through the government-mandated plan, which provides even quite advanced and costly treatment. It is a “no frills” arrangement, however, without any additional comfort or luxury environment. Property risk is covered by their existing buildings insurance, which includes liability coverage. The property value insured is the one they took out when buying their property: €200,000, well below the current estimated value of €320,000.

4.4 Recommendations to Manage Risk Exposures in the Career Development Stage

Disability insurance Exhibit 11 shows Stein’s calculation of disability coverage requirement based on the amount of earnings potentially lost in the case of disability.

Exhibit 11 Disability Insurance Coverage Calculation at Age 45

	Jessica	Paul
Salary income (net) to be replaced	53,650	46,510
Amount of annual disability coverage currently provided by the social security system	25,200	30,245
Annual shortfall	28,400	16,265
Benefit period (until retirement age)	20 years	20 years
Assumed annual benefit adjustment	2%	2%
Discount rate	3%	3%
PV of future earnings replacement required (annuity due)	519,000	297,000

Note: The purpose is to provide replacement for current income. This table shows the benefit in the form of a lump sum payout.

The current level of coverage is €112,200 for Jessica and €686,100 for Paul. Stein explains that because Paul would now be entitled to a much higher level of disability income from the state system, his level of additional required coverage is now lower. Given Jessica’s pay rises in recent years, resulting in higher amounts of income to be replaced in case of disability, Stein recommends that the Schmitts change the level of coverage. Her suggestion is to increase the amount of coverage to €520,000 for Jessica and to reduce it to €300,000 for Paul.

4.4.1 Life insurance

Stein explains that the amount of coverage that a life insurance policy should provide can be calculated using either the human capital (the human life value method), which estimates the amount of earnings that must be replaced, or the needs analysis method, based on estimating the amount needed to cover survivors’ living expenses. Stein adds that although the methods are distinct in their approach, both rely on a

number of assumptions that may turn out to have been inaccurate. For example, it is very difficult to estimate the financial needs of surviving children who are still very young. Exhibit 12 illustrates the two methods.

EXHIBIT 12 LIFE INSURANCE AMOUNT REQUIRED AT AGE 45

Human life value method

Stein first works out the amount of lost income replacement, adjusting after-tax income for the amount of annual expenses and the value of the person's employee benefits. Assuming the survivors would need the lost income replacement immediately, she works out the present value of an annuity due.

Human life value method at age 45

	Paul	Jessica
	€	€
Pretax income	66,000	80,000
After-tax income	46,510	53,650
Less adjustment for the deceased person's annual expenses that would not exist	10,000	10,000
Add value of employee benefits (retirement contribution) that family will no longer receive	10,000	4,000
Subtotal (after taxes)	46,510	47,650
Amount of pretax income required to replace after-tax income (30% rate assumed)	66,440	68,070
Annual growth rate (to reflect career advancement)	2%	5%
Discount rate	3%	3%
Present value of annuity due	1,213,000	1,644,000
Less existing life insurance (including €198,000 provided by Paul's employer)	638,000	200,000
Recommended additional life insurance	575,000	1,444,000

Note: Amounts are rounded.

Needs analysis

Stein estimates the cash needs required upon death of the insured person, including funeral and burial costs as well as mortgage debt. She next estimates capital needed to fund the family's living expenses by discounting future cash flow needs to their present value. Stein then considers the amount of the surviving spouse's future income, which she assumes would remain unchanged in real terms because the surviving spouse, being a single parent, would most likely be unable to achieve career progression. Finally, she deducts capital and savings available.

Needs analysis method at age 45

	Paul	Jessica
	€	€
Cash needs		
Cash needs (funeral and burial costs & taxes)	30,000	30,000
Mortgage retirement	35,000	35,000
Total cash needs	65,000	65,000
Capital needs		
PV of surviving spouse's living costs (assumed to be currently €35,000 for 45 years)	1,281,000	1,281,000
PV of Roxane's living cost (€9,000 for 10 years until graduation at age 22)	86,000	86,000
PV of Peter's living cost (€13,000 for 83 years until age 90)	743,000	743,000
Less PV of survivor's income until retirement at 65	824,000	777,000
Total capital needs	1,286,000	1,333,000
Total financial needs	1,351,000	1,398,000
Capital available:		
Cash, savings, investments	207,000	207,000
PV of vested retirement accounts (attributable to surviving spouse)	140,000	227,000
Existing life insurance coverage (including benefit provided by Paul's employer)	638,000	200,000
Total capital available	985,000	634,000
Additional life insurance needs	366,000	764,000

Note: The annuity-due PV calculations of living costs assume a 2% annual increase and 3% discount rate. A 1% nominal increase in survivor's income is also assumed.

Stein notes that the human life method suggests a significantly higher increase in the recommended life insurance coverage that stems from different approaches used by the two methods. One may view the differing amounts as a range within which to choose the amount of coverage, taking into account the cost of premiums. The amount of life cover selected may depend on which method is more relevant to the family's circumstances. Taking into account the Schmitts' focus on their ability to meet family expenses, Stein recommends that the Schmitts increase their private insurance coverage from the existing €440,000 to €900,000 in the case of Paul and from €200,000 to €1 million in the case of Jessica.

She adds that it is quite important to obtain such coverage while the Schmitts enjoy good health. If they were to develop any medical conditions later in life, obtaining such insurance would be much more problematic, and available coverage would be subject to exclusions and other limitations. She also suggests that the needed coverage can be met by a temporary life insurance, providing coverage until retirement age in about 20 years, when at least one child is expected to be (or is well on its way to being) independent.

4.4.2 Investment risk recommendations

EXAMPLE 4

Investment Risk Recommendations

Recommend and justify changes to the Schmitts' investment portfolio.

Guideline answer:

Stein has noted the correlation of the €130,000 of investment holdings in IT companies with Jessica's human capital. They should aim to hold an investment portfolio with as low correlation to one's human capital as possible. They should also move away from the concentrated nature of holdings of which they usually hold 10. In order for the Schmitts to achieve better diversification, Stein recommends that, at a minimum, any new investments are no longer made directly into shares of IT companies. Instead, they should be making regular investments into pooled investment vehicles—such as funds that are diversified across a wide range of regions, sectors, and securities—which can be done at low cost. Cost efficiency is paramount because any amount saved from initial charges or annual costs, compounded over many years, may make significant difference to long-term returns. If an active approach to investing is chosen, the additional costs that stem from such an approach should be justified by sufficient active risk-adjusted return.

EXAMPLE 5

Real Estate in Investment Portfolio

The Schmitts earlier mentioned the possibility of making speculative investment in residential property (similar in size to their existing property) in the area where IT companies, including Jessica's offices, are based. Identify issues that an adviser should consider before making a recommendation.

Guideline answer:

The issue to consider is how the prospects for the local property market depend on the performance of and employment in the local IT industry. Jessica's own employment prospects depend on this industry, and purchasing a property in the area would increase the Schmitts' exposure to the local IT industry.

Funding of the purchase would also need to be considered because the cost could exceed €300,000 given that the Schmitts' property, similar in size and value to the one they are considering, is worth about €320,000. The Schmitts do not have sufficient resources available. Devoting a large proportion of their investment portfolio to a deposit and funding the rest of the purchase price using a loan would expose them to risks such as interest rate risk. A greater share of their wealth would be tied to the prospects of the local IT industry as they would no longer hold exposure to equities, foregoing benefits from diversification. They should be made aware of the fact that holding an investment property would represent a large, concentrated, illiquid position and that there are costs associated with owning and managing rental property.

4.4.3 Retirement planning recommendation

EXAMPLE 6

Recommendation for Retirement Saving at the Career Development Stage

Recommend methods to manage risk to retirement lifestyle goals.

Guideline answer:

Analysis of retirement plans identified a significant shortfall in the Schmitts' projected retirement income. To address the risk of having insufficient funds to maintain their lifestyle in retirement, the couple should give serious consideration to increasing the amount dedicated to retirement needs. Their monthly after-tax income of €8,350 exceeds their monthly expenditures by about €2,700, which even after the payment of insurance premiums leaves them with €2,350 (€28,200 per year) to invest. This provides them with an opportunity to boost retirement savings and build up their investment portfolio instead of continuing to build up their liquidity buffer, which is now approaching €80,000 (invested in a low-interest, instant-access bank account). The Schmitts should instead increase contributions into Jessica's pension scheme or open separate private pension plans. Doing so would also allow them to take advantage of the tax benefits of retirement saving because income and capital gains within the regulated plans are tax free, and contributions into the plans are supplemented with the 25% top-up payments from the state. Although the funds from pension plans are normally inaccessible before retirement, the tax advantages, compared with investing outside such plans, can be significant.

4.4.4 Additional suggestions

Stein recommends that they update their property insurance coverage to reflect the current market value.

Supplementary private health insurance could be considered to cover dental care, alternative medicine, hospitalization in a private room, and other health costs. The reason in favor of obtaining such coverage now is that it will be cheaper while they are still relatively young and healthy, whereas it would be much more costly to obtain if and when they suffer from preexisting conditions. An important consideration is the lack of portability of such supplementary medical insurance were the Schmitts to move and/or to retire to another country.

Stein concludes her recommendations by adding that a risk management strategy for individuals should not only consist of establishing objectives, identifying risks, evaluating risks, and selecting methods to manage those risks, but also that outcomes and risk exposures should be monitored and methods for addressing them reviewed and adjusted as necessary.

The Schmitts accept their adviser's recommendations. They drop the idea of purchasing a property near the IT business district; they stop adding to their instant-access savings that form their liquidity buffer and instead increase their contributions to Jessica's employer pension plan. The Schmitts continue their contributions to the investment portfolio but start moving away from individual securities, instead investing in diversified equity funds.

5

THE SCHMITTS IN THEIR PEAK ACCUMULATION YEARS

The Schmitts are now 55 years old and are in their peak accumulation phase. In the last 10 years, they made further progress in their careers. Their incomes continued to increase. Correspondingly, Jessica's employer's contributions into the company pension scheme have increased meaningfully. Jessica herself has also been actively contributing to her employer's occupational pension scheme and into her recently opened private pension, taking advantage of tax incentives. The part of the technology sector in which Jessica's company operates is experiencing volatility arising from a rapidly changing market environment. Paul's employment remains stable. He has been regularly contributing to a private pension plan.

The Schmitts' assets, invested in a number of diversified funds now with a 70% equity (mostly global equity with a small amount in Eurolandia equities) and 30% fixed income mix (split about evenly between domestic government bonds and corporate bonds), have grown substantially thanks to regular investing and investment returns. The value of their property has suffered a decline in real terms as a consequence of the stagnation in Eurolandia's real estate market and of the fact that the area where the property is located has lost its earlier appeal.

Although the Schmitts have already repaid their mortgage, their liabilities have increased. They are still supporting Roxane's living expenses because she just completed her bachelor's degree and is starting post-graduate studies. They are providing the best possible special needs education for Peter, who is now 17 and has made progress but will most likely need assistance for the rest of his life. The Schmitts feel retirement planning has become a crucial issue because they plan to retire in 10 years. They maintain a healthy lifestyle. They meet with Stein to review their risk management arrangements in relation to their lifestyle goals. Together they produce a summary of their financial circumstances, shown in Exhibit 13.

Exhibit 13 Summary of the Schmitts' Financial Circumstances at the Age of 55

	Jessica	Paul	Combined
	€	€	€
Yearly gross income	120,000	80,000	200,000
After-tax income	77,888	53,888	131,776
Source of income	Department head, IT	State teaching job	
Living expenses			75,000
Property			340,000
Bank accounts			80,900
Investment portfolio			611,400
Pension provisions	As mandated by law (state pension), plus a company-sponsored pension scheme €113,000 plus €15,000 in private pension savings	As mandated by law. Paul, as a civil servant, plus €47,500 in private pension savings	

Exhibit 13 (Continued)

	Jessica €	Paul €	Combined €
Disability insurance	Government insurance coverage of €30,805 per year Private coverage of a lump sum of €633,900 (policy benefit was increased to €520,000 at age 45, adjusted for 2% annual benefit adjustment)	Government insurance cover of €36,966 per year (includes extra payment reflecting more than 10 years of service) Private coverage of a lump sum of €365,700 (policy provided €300,000 at age 45, adjusted for 2% annual benefit adjustment)	Government insurance cover of €36,966 per year (includes extra payment reflecting more than 10 years of service) Private coverage of a lump sum of €365,700 (policy provided €300,000 at age 45, adjusted for 2% annual benefit adjustment)
Life insurance coverage (up to age 65)	€1,000,000 private policy <i>Note:</i> This amount reflects the recommendation given at age 45.	€900,000 private policy plus 3× salary insurance coverage of €240,000 provided by the employer	€900,000 private policy plus 3× salary insurance coverage of €240,000 provided by the employer

5.1 Review of Objectives, Risks, and Methods of Addressing Them

Stein sets out to establish the Schmitts' financial objectives and review the financial risks they face. She then proceeds to provide recommendations.

5.1.1 *Financial objectives*

Stein asks the Schmitts to update her on their financial objectives. Paul and Jessica explain that their objectives remain broadly unchanged. They wish to achieve the following:

- Provide financial security for the family in the next 10 years while they remain in full-time employment.
- Have a comfortable retirement, which they anticipate will happen in 10 years when they both reach the age of 65.
- Be in a position (after their retirement) to provide long-term support and assistance for their son Peter for the rest of his life,
- Leave a meaningful inheritance for Roxane.

Stein explains that she will assess the couple's existing insurance arrangements with regard to their financial security while they still are working and earning salaries. She will then focus on assessing risks relating to their three long-term planned goals: the "comfortable retirement," "Peter's long-term assistance," and "inheritance for Roxane" goals.

Stein proceeds to update the Schmitts' financial and economic balance sheets, shown in Exhibit 14.

Exhibit 14 Financial and Economic Balance Sheet at Age 55**Human Capital Assumptions**

	Jessica	Paul
Expected salary growth (nominal)	2%	2%
Discount rate (r_f)	3%	3%
Risk adjustment (y)	1%	0%
Remaining length of working life (up to age 65)	10	10

Note: Probability of surviving to a given age is based on mortality tables (not shown here) used in Eurolandia.

Economic Balance Sheet (€)

Assets	Liabilities		
Savings account	80,900	Mortgage debt	0
Investment portfolio	611,400		
Accrued DB government retirement plan (Paul)	457,000		
Accrued DB government retirement plan (Jessica)	263,000		
Employer pension value (Jessica)	113,500		
Private pension fund (Jessica)	15,000		
Private pension value (Paul)	47,500		
Property (main residence)	340,000		
Paul's human capital	486,600	PV of lifetime consumption needs	2,235,000
Jessica's human capital	668,100		
Total assets	3,083,000	Total liabilities	2,235,000
		Net wealth	848,000

Note: Human capital values are calculated based on an assumption of 2% nominal salary growth rate until retirement in 10 years, discounted at 3%, adjusted for mortality rates and applying a further 1% risk adjustment to Jessica's income.

Lifetime consumption needs are calculated as annuity due based on annual costs of €75,000 over 35 years, with an annual increase of 2%, discounted at 3%.

EXAMPLE 7**Comparison of Economic Balance**

Compare the economic balance sheet at age 55, shown in Exhibit 14, with the one produced 10 years ago, shown in Exhibit 9.

Guideline answer:

The Schmitts' human capital has decreased in absolute terms over time as they approach retirement, which is now 10 years away. Their human capital has also decreased relative to their financial resources, which have seen a significant increase. The Schmitts have repaid their debts, and their net wealth is now much more substantial than 10 years earlier.

EXAMPLE 8**Liquidity Needs**

Discuss the Schmitts' financial position with regard to their ability to meet any unexpected liquidity needs.

Guideline answer:

The level of their financial assets provides sufficient liquidity if their circumstances were to change. The Schmitts are now significantly richer in financial assets than they were 10 years earlier. They have a balance of almost €81,000 in their instant-access savings account and more than €600,000 in diversified funds that they should be able to easily exit if such need arose.

5.1.2 Review of Risks and Related Risk Management Methods

Having gathered information about the Schmitts' financial circumstances and goals, Stein identifies the risks and prepares summary information (in Exhibits 15, 16, and 17) to help analyze those risks.

Exhibit 15 Earnings Shortfall in Case of Disability at Age 55

	Jessica	Paul
Salary income (net) to be replaced	€77,900	€53,900
Amount of annual disability coverage currently provided by the social security system	€30,720	€36,870
Annual shortfall	€47,180	€17,030

Note: Jessica and Paul's annual earnings shortfalls at the age of 45 were €28,450 and €16,265, respectively. Rounding is used throughout.

Exhibit 16 Disability Insurance Coverage Assumptions

Benefit period (until retirement age)	10 years	10 years
Assumed annual benefit adjustment	2%	2%

(continued)

Exhibit 16 (Continued)

Discount rate	3%	3%
PV of future earnings replacement required	€452,000	€163,000

EXAMPLE 9**Analysis of Earnings Risk during Peak Accumulation Stage**

Using the information provided by the Schmitts to their adviser and the information in Exhibits 13, 15, and 16, analyze the earnings-related risks arising from unemployment and disability that the Schmitts face now that they are in the peak accumulation life stage.

Guideline answer:

The Schmitts continue to face earnings risk resulting from unemployment. Jessica continues to work in a sector that shows volatile profitability. A loss of her job at her current age of 55 could make it difficult for her to find alternative employment at significantly above-average salary and level of seniority. Two facts mitigate the seriousness of this concern. First, the Schmitts have a substantial amount of savings and investments to buffer any loss of earnings. Second, Paul's employment appears secure.

The risk to their earnings from disability remains, but the level of coverage should be reassessed because their circumstances have changed and they are closer to retirement.

The amount of annual earnings not protected by the social security system is higher than was the case at age 45 for Jessica because of her salary growth. But the fact that the period over which they would rely on such benefit payments is now only 10 years means that the present value of the disability protection needed is now lower: €452,000 for Jessica and €163,000 for Paul, well below the level of their existing coverage (€633,900 and €365,700).

Stein assesses the level of life insurance coverage needed using the human life and needs analysis methods. Starting with the human life method, the higher level of salaries would be expected to increase the amount of income required to replace the deceased person's earnings. Because the remaining period of earning a salary is now reduced to 10 years until retirement, however, the present value of future earnings would be expected to decline, as Exhibit 17 shows.

Exhibit 17 Human Life Method Insurance Coverage Calculation at Age 55

	Paul	Jessica
	€	€
Pretax income	80,000	120,000
After-tax income	53,900	77,900

Exhibit 17 (Continued)

	Paul	Jessica
	€	€
Less adjustment for the deceased person's annual expenses that will not exist	10,000	10,000
Add value of employee benefits that the family will no longer receive	10,000	4,000
Subtotal (after taxes)	53,900	71,900
Amount of pretax income required to replace after-tax income (30% tax rate)	77,000	102,700
Annual growth rate	2%	2%
Discount rate	3%	3%
Present value of pretax income to be replaced (annuity due, 10 years)	737,000	983,000
Less existing life insurance (including current benefit €240,000 provided by Paul's employer)	1,140,000	1,000,000
Recommended additional life insurance	-403,000	-17,000

Stein should also carry out needs analysis method to help establish the necessary amount of life insurance coverage. The calculation is made simpler by the fact that there are no further debts to repay. The couple's daughter Roxane has graduated and is expected not to require ongoing support once she completes her post-graduate studies in less than two years (Stein excludes the short-term support for Roxane from her calculation in Exhibit 18).

Exhibit 18 Needs Analysis Method Insurance Coverage Calculation at Age 55

	Paul	Jessica
	€	€
Cash needs		
Funeral and burial costs plus taxes	35000	35000
Total cash needs	35000	35000
Capital needs		
PV of surviving spouse's living expenses (until age 90)	1,191,800	1,191,800
PV of Peter's living cost (€13,000 per year, growing at 2%, until age 90)	682,000	682,000
Less PV of survivor's income until retirement at 65	685,000	494,000
Total capital needs	1,188,800	1,379,800
Total financial needs	1,223,800	1,414,800
Capital available:		
Cash, savings, investments	692,300	692,300
PV of vested retirement accounts (attributable to surviving spouse)	392,000	505,000
Existing life insurance coverage (including current benefit €240,000 provided by Paul's employer)	1,140,000	1,000,000

(continued)

Exhibit 18 (Continued)

	Paul	Jessica
Cash needs	€	€
Total capital available	2,224,300	2,197,300
Additional life insurance needs	-1,000,500	-782,500

Note: The PV of the surviving spouse's expenses is based on annual spend of €40,000 for 35 years, annual growth rate of 2%, and discount rate of 3%. Annuity due is used. The same growth and discount rates are used to calculate the PV of Peter's living cost, and the benefit period is 73 years. The PV of the survivor's income is based on a period of 10 years, 1% growth resulting from limited career progress opportunities in such circumstances, a 3% discount rate, and a 1% additional discount rate risk adjustment for Jessica.

Both the human life value and needs analysis methods suggest that premature death risks are covered by the Schmitts' existing insurance. The amount of existing coverage now substantially exceeds the coverage suggested by the two methods. Stein recommends they reduce the amount of coverage, lowering their monthly premiums. She does point out, however, that one of their objectives is to provide adequate long-term support for Peter and plan for an increase in the cost of doing so when they are no longer able to support him the way they do now (the €13,000 per year would increase substantially then). If Paul or Jessica died before retiring, it would no longer be possible to set funds aside for Peter's future care. Stein suggests the Schmitts consider this factor before adjusting their policy coverage.

Stein notes that the Schmitts have adequate life insurance and satisfactory, although no-frills, health coverage provided by the state. They also have sufficient liquidity to cover incidental expenses—for example, in relation to health care needs not covered by their health insurance. By maintaining a healthy lifestyle, the Schmitts are helping to reduce the health risk. The combination of their existing coverage, government-mandated programs, and the ability to self-insure through their own assets is sufficient. As such, no additional insurance is recommended.

5.1.3 **Assessment of Risk to Retirement Lifestyle Goal**

Next, Stein considers the risk to the Schmitts' retirement lifestyle goal. She provides a summary of the retirement assets and then proceeds to establish how much the couple expects to be spending in retirement. Exhibit 19 provides a summary of the retirement plans assuming that the Schmitts retire in 10 years when they are 65. Further assumptions are as follows:

- The Schmitts continue to make social security contributions to the mandatory government pension scheme.
- They also continue making regular payments into their private pensions and Jessica's occupational pension scheme.
- The investment returns of the DC plans remain at 4% per year, slightly lower than the 5% rate seen over the last 10 years, as the assets in the retirement portfolios are gradually moved to lower-risk asset allocation as the retirement date nears.
- The DC plans' final values at age 65 are used to buy an immediate fixed annuity (we assume a 5% annuity "income yield" and no inflation adjustment thereafter).

Exhibit 19 The Schmitts' Retirement Assets and Main Risks (not including their investment portfolio)

Assets	Type and Current Value	Expected Growth Rate	Expected Value at Age 65	Expected Annual Gross Pension Benefit (€)	Risks
Paul's mandatory government pension plan	DB pension plan	—	—	€48,950 (55% of the estimated final salary)	Government may reduce retirement benefits due to fiscal pressures
Jessica's mandatory government pension plan	DB pension plan	—	—	€28,191	As above
Jessica's company pension	DC plan, Current value €113,500 Balanced fund	Annual contributions of €14,000, growing at 2% 4% annual investment returns	€350,000	€17,515	Investment risk and interest rate risk that could result in lower annuity income yield
Paul's private pension savings plan	DC plan currently valued at €47,500 Balanced fund	€6,000 annual contributions growing at 2% 3% investment returns	€135,900	€6,795	As above
Jessica's private pension savings plan	DC plan opened recently Valued at €15,000 Uses aggressive, actively managed investment strategy with high risk	€10,000 annual contributions growing at 2%. 8% investment returns	€201,600	€10,080	As above

Note: Jessica has no influence over the terms and conditions of her company pension scheme, which is a mandatory DC plan. Like all beneficiaries, she has the right to vote for the employee representatives on the company's pension fund board. Figures and percentage growth rates are assumed to be net of fees.

Stein estimates that their combined annual retirement income from pension schemes could amount to about €111,500. This figure would be subject to income tax, which she estimates will leave them with after-tax income of €84,000, excluding any income from their investment portfolio (treated separately). To be able to judge whether or not the existing retirement provisions are sufficient, Stein needs to better understand what percentage of salary the Schmitts want to replace in retirement. The couple finds it difficult to be precise about the amounts they will need to spend. They conclude that they should require no more than their current level of annual spending of €75,000 (in real terms). Stein explains that they are in a good position to be able to maintain their current lifestyle even in retirement. She points out, however, the

risk from loss of employment, the risk to the state pensions system, and the risk of poor investment returns of the DC plans over the next 10 years. Stein explains each risk in turn:

- 1 If the Schmitts lose their employment and cannot obtain work with comparable compensation, their pension assets growth and the corresponding estimated values would be at risk because they would no longer be able to fund their regular contributions. Their insurance policies do not provide income replacement in the event of unemployment. Statutory redundancy pay and unemployment benefits would cover a small proportion of their current pay.
- 2 The other main risk is that the government state pension plan gets overhauled in response to the aging population and fiscal pressures. Such an overhaul could take the form of benefit reduction. A less likely scenario is an increase in the retirement age.
- 3 Investment risk and inflation risk make up a third risk factor. Investment risk affects the non-government, DC plans that the Schmitts hold. Past returns of the Schmitts' retirement funds over the last decade averaged almost 5% per year, but such returns may not continue into the future. Second, inflation may erode the purchasing power of the income from retirement plans.

If the government pension plans continue to provide benefits at the same level enjoyed by current retirees, they will cover the Schmitts' basic living costs. This income would not provide for any other objectives, such as assistance for or bequeathing assets to their children. The arrangements for those other goals are assessed next.

EXAMPLE 10

Withdrawal of Tax-Free Lump Sum

Regulations in Eurolandia allow members of private pension schemes to withdraw 25% of their retirement assets as a tax-free lump sum from the age of 55, the Schmitts' current age. Taking into account the analysis of their retirement assets, discuss the merits of withdrawing the tax-free lump sum at this stage.

Guideline answer:

The potential logic of withdrawing 25% of the DC funds tax free should be assessed in a broad context. The Schmitts have sufficient cash flows from earnings to be able to fund their ongoing expenses and keep adding to their investment portfolio. They are in their peak accumulation stage of their careers and are accumulating assets rather than spending. There appears to be no need for them to access the funds at this stage.

If they were to withdraw the funds now in order to invest outside their retirement programs, the couple would no longer benefit from the fact that they are accumulating assets without having to pay any capital gains or income taxes within the retirement schemes. Not withdrawing the 25% lump sum now, however, still provides them with the option of withdrawing the tax-free lump sum at a later stage.

5.1.4 Analysis of Investment Portfolio

Stein turns her attention to the Schmitts' investment portfolio in relation to the couple's two additional goals:

- Provide for their son Peter's care for the rest of his life.
- Leave an inheritance for their daughter Roxane.

She explains to the Schmitts that she needs to understand the time horizon and risk tolerance in relation to the probability of success for each goal. Stein explains that in goals-based investing, their investment portfolio will be treated as a number of sub-portfolios—in this case, only two—each of which is designed to fund an individual goal.

The goal of supporting Peter Stein first looks into the need to fund support for Peter after the Schmitts' retirement, support that will be required for the rest of Peter's life because he is not expected to ever be in a position to obtain paid employment or to make decisions for himself. Although the state provides a range of benefits to Peter, the Schmitts currently spend €13,000 a year on additional support for their son. They wish to ensure as much as possible that Peter will receive proper assistance, even after they die or otherwise become unable to care directly for him and thus need to hire outside help. This goal is essential for the Schmitts, and they want it to be achieved with the utmost certainty (i.e., with a probability as close to 1 as possible). They are confident that they can fund Peter's long-term care as long as they remain employed for the next 10 years.

Based on average life expectancy in Eurolandia, Peter is expected to outlive his parents by around 40 years, because he was born when they were 38. The Schmitts struggle to establish the period over which they will be able to care for Peter (incurring the €13,000 cost per year and expected to remain unchanged in real terms) without requiring the use of extensive outside help, which currently costs about €30,000 per year. They are also quite worried about possible future inflation despite Eurolandia's low inflation history.

As a base scenario, the Schmitts and their advisor conclude that they should plan for the higher cost resulting from external care to apply in 20 years' time once they reach the age of 75 and Peter is 37. Stein quantifies the amount required to meet that goal, as illustrated in Exhibit 20.

Exhibit 20 Net Present Value of Peter's Care

The required funding for the goal of providing for Peter's care for the rest of his life can be modelled as the present value of a deferred-start annuity (even though they would not be buying one now) that begins in 20 years' time. Its duration would equal Peter's life expectancy then (an additional 53 years of life up to the age of 90). The following table shows the PV of such an annuity, with different assumptions, considering a yearly cost of €30,000 in real terms. Because the Schmitts emphasized the need to address inflation risks, the calculations are performed in real terms—that is, the amounts are expressed in euros based on their value at present time when the Schmitts are 55. The discount rate represents the real discount rate.

Real Discount Rate	PV
1.0%	€1,018,000
2.0%	€669,000
3.0%	€438,000

Note: The amounts are rounded to the nearest €1000 for the present value of this annuity due lasting 53 years.

Based on the current level of real interest rates of 2%, the net present value of Peter's care exceeds the current value of the Schmitts' €611,000 investment portfolio. When the Schmitts inquire about the calculations' sensitivity to changes in economic

conditions and potential solutions to the shortfall, Stein replies that it would be unrealistic to count on a real discount rate much higher than 2% to reduce the net present value, given the very low real rates experienced for quite some time.

Stein notes, however, that the Schmitts are now in the peak accumulation stage of their careers and can continue to add to the investment portfolio on regular basis: approximately €33,000 per year, with the amount slowly increasing. They would be able to do so while also contributing to their pension plans. Failing to continue contributions to the investment portfolio, however, would pose a serious risk of them being unable to completely fund Peter's long-term support. Second, Stein notes that in her retirement planning assessment, their expenditure assumptions reflect the expectation that the €13,000 annual cost (in real terms) of supporting Peter would continue for the rest of their lives and would not stop when they reach the age of 75, which is what the foregoing deferred-start annuity calculation reflected. In other words, the fact that the Schmitts assume they will be paying €13,000 per year (in real terms) even after they reach 75 means that the additional support needed will be closer to €20,000, rather than €33,000, for as long as they live. She therefore suggests that the PV amount they should plan to use for Peter's care should currently be closer to €500,000.

Before advising them on their portfolio's asset allocation, Stein turns to their other goal.

Leaving inheritance to Roxane The Schmitts would like to leave inheritance for their children, particularly for Roxane, because they are already making arrangements for Peter's long-term care.¹ The required probability of success for this goal, however, is far lower than what was attributed to Peter's care goal, and the time horizon is much longer because they expect to live for more than 30 years. When Stein asks about the amount they would ideally like Roxane to inherit, the Schmitts state that they hope the amount would be as high as possible, so that she inherits more than just their property—their main residence. Exhibit 21 summarizes the three main known goals.

Exhibit 21 The Schmitts' Goals

Goal	NPV	Notes	Time Horizon	Required Probability of Success
Having a comfortable retirement	Not applicable	Goal is already covered by existing pension arrangements, assuming projected earnings growth rates and fund contributions are realized.	10 years	High
Providing for Peter's care	Approximately €500,000	NPV is assumption-dependent	Approximately 20 years	Nearly 100%
Leaving an inheritance for Roxane	As much as possible		>30 years	Around 60%

¹ In fact, inheritance law in Eurolandia requires the Schmitts to bequeath a minimum proportion of their wealth to each of the surviving children. They could not, therefore, direct that their entire wealth goes to Peter's care. In this case study, we assume that this legal obligation will be satisfied, so we do not discuss it further.

5.1.5 Analysis of Asset Allocation

Stein reflects on which asset allocation technique should be used. Using mean–variance optimization is problematic because it is a “single-period” framework,” and the Schmitts’ stated objectives span multiple periods. She recognizes that asset allocation can be conducted with a goal-based approach, whereby goals are analyzed and modelled and a probability of success specified for each of them. The additional advantage of the goal-based approach is that it enables a far simpler and more intuitive communication with the Schmitts than discussing the risk–return tradeoff in the context of mean–variance optimization.

The idea behind the exercise is to apply goals-based investing techniques by disaggregating the Schmitts’ portfolio into two sub-portfolios, each designed to fund a goal with its own time horizon and probability of success.

Peter’s care The Schmitts require that the probability to fulfill this goal be as close as possible to 100%. As such, this sub-portfolio should be worth at least €500,000 in real terms (in today’s values) when it becomes necessary to start drawing on it, most probably in around 20 years. Any volatility in the mark-to-market of this portfolio before then, however, is of secondary importance. Stein believes that such portfolio should be invested in inflation-linked government bonds, with long maturities. Yields (including those on inflation-linked bonds) are currently very low, and Stein expects that they may increase over time because of higher inflation expectations (which the inflation-linked bonds would protect them from) or because real rates could rise. Because the time horizon is relatively long, the allocation to inflation-linked bonds can be implemented gradually. The existing portfolio, from which this “sub-fund” will need to be created, is 70% invested in equities and 30% in bonds. By implementing this switch gradually, the Schmitts should be able to minimize capital gains taxes that would otherwise arise from realizing profits on the existing fund holdings. Eurolandia allows residents to pay no tax on the first €25,000 of realized capital gains per year, a level that has remained and is expected to remain unchanged.



If inflation and, correspondingly, bond coupons on inflation-linked bonds increase in the future, the Schmitts will face a significant tax liability from the income arising from this sub-portfolio. The tax will reduce the inflation protection provided by the portfolio. If this occurs, an adviser can study the possibility of structuring this portfolio as a non-taxable trust but only after considering the costs to create and run the structure, as well as the additional constraints associated with it. Theoretically, the modified duration of this sub-portfolio should match that of the associated goal. Such a match will be challenging, however, because no bonds with such a long modified duration are available.

Leaving an inheritance for Roxane Given that most of their investment portfolio is allocated to the first sub-portfolio, only €110,000 in investable assets is available to invest in the second sub-portfolio. This sub-portfolio starts off fully allocated to diversified global equity funds to capture the expected returns from equities.

5.2 Recommendations for Risk Management at Peak Accumulation Stage

Having gathered the facts, established the objectives, and analyzed the risks that the Schmitts face, Stein provides a summary of the following recommendations.

5.2.1 *Risk to earnings*

Stein explains that the risk from unemployment cannot be avoided or insured against using insurance policies but that the Schmitts, thanks to their savings, are self-insuring. Having reviewed their protections against loss of earnings resulting from disability or premature death, she concludes that their existing coverage is more than sufficient. Stein suggests reducing the amount of coverage as well as the premiums they pay where the policies allow for such change.

5.2.2 *Recommendations for retirement savings*

EXAMPLE 11

Reduction of Risk to Retirement Lifestyle Goals

Recommend and justify methods for reducing risk to retirement lifestyle goals.

Guideline answer:

The Schmitts are in a good position to retire comfortably. They should continue contributing to their private pension savings plans up to the legally specified maximum, thereby obtaining the corresponding tax advantage whereby the government adds 25% to their own contributions. Two of their private pension plans are invested in a portfolio that is diversified across asset classes and regions. Over time, the fund holdings are being gradually moved to a lower-risk asset allocation with an increasing proportion of fixed-income government securities.

Jessica's recently opened private pension plan, however, is managed aggressively at the extreme end of what regulated schemes allow. Stein explains that such a high-risk addition to their substantial retirement savings is not necessarily a cause for concern, but she urges the Schmitts to consider moving the fund choice within the scheme to a less risky, more balanced alternative.

5.2.3 *Recommendations for the investment portfolio*

Stein explains that the first goal, the comfortable retirement, is addressed already through the retirement savings schemes. The other two—funding Peter's support for the rest of his life and leaving an inheritance for Roxane—should be addressed by the following:

- The couple should continue adding to the investment portfolio on regular basis at the existing rate of €33,000 per year or higher. These additional contributions, along with capital gains and reinvested income over time, should result in a healthy growth of the investment portfolio.
- Within the growing portfolio, assets devoted to Peter's care goal, currently amounting to €500,000, should be gradually reallocated from the current 70% equity and 30% fixed income to an increasing proportion of inflation-protected government bonds. Gains on investments should be realized in an orderly fashion to take advantage of the €25,000 of tax-free capital gains per year.

Because the Schmitts continue to save and accumulate assets, it is important to review whether the allocation remains in line with the goals listed in the previous section.

Stein further explains that a detailed Investment Policy Statement will be written for them and further analysis of the actual fund holdings will be carried out. The portfolio allocation will be reviewed periodically, at least once a year. The Investment

Policy Statement will be reviewed for any material change in circumstances. She further adds that retirement planning process should also involve an expert, a specialist, on inheritance tax.

THE SCHMITTS ARE ABOUT TO RETIRE

6

The Schmitts are about to turn 65, and retirement is imminent. They are in good health, although they occasionally make use of the country's health system. They spend less than in earlier stages of life, and their investment portfolio now amounts to more than €1.5 million. Despite the gradual move from equity funds to fixed-income ones, equities still account for a sizable portion of their holdings: 50% of the total, as result of healthy returns from the asset class. The rest is evenly held in inflation-protected government bonds and corporate bonds. Jessica's income has decreased because she decided to step down from her department management job and is currently employed as a senior IT consultant. The family's living expenses have also come down because Roxane is now independent.

The Schmitts' financial situation and pension assets are summarized in Exhibits 22 and 23.

Exhibit 22 Summary of the Schmitts' Financial Circumstances at Age 65

	Jessica	Paul	Combined
Yearly gross income (€)	90,000	89,000	179,000
Source of income	Senior IT consultant	State teaching job	
Living expenses (€)		70,000	
Property (€)		420,000	
Investment portfolio (€)		1,511,000	

Exhibit 23 The Schmitts' Retirement Assets

Asset	Current Value at Age 65
Paul's mandatory government pension plan	Annual pension of €48,950 (55% of final salary of €89,000)
Jessica's mandatory government pension plan	Annual pension of €28,190
Jessica's company pension	DC plan. Fund value of €350,000 corresponding to an annual pension of €17,500
Paul's private pension savings plan	€135,000 corresponding to annual pension of €6,750
Jessica's private pension savings plan	€175,000 corresponding to annual pension of €8,750

Note: The annual pension amounts assume that the fund value at retirement is used to purchase a fixed payment annuity at the current 5% annuity yield.

6.1 Key Issues and Objectives

The Schmitts again meet with Stein. They wish to discuss planning for the retirement decision and the management of the investment portfolio. They repeat their objectives, which are as follows:

- Retire shortly with a comfortable level of secure, predictable retirement income for the rest of their lives, and avoid a situation in which they outlive their assets. The Schmitts consider themselves to be healthy and expect to live longer than the average life expectancy. They also state that they wish to make sure to maintain the purchasing power of their retirement income.
- Continue to provide ongoing financial support for Peter, raising the amount devoted to this purpose in 10 years to what they now estimate will need to be €35,000 per year at today's prices.
- Leave a meaningful but as yet unquantified inheritance for Roxane, over and above their residence.
- Help their daughter Roxane with the purchase of her first property in the very near future, up to €150,000.

The Schmitts would also like to have the option to retire in another country.

6.2 Analysis of Retirement Assets and Drawdown Plan

Stein explains the following:

- Now that the Schmitts are about to retire, there is no further need for life or disability insurance coverage.
- There are no decisions to make with regard to the state pension income that they will soon start drawing, the amounts of which are known with certainty.

Regarding the employer and private pension schemes they have in place, a plan must be established. She explains that the Schmitts have the following options:

- Purchase annuities that would provide a stream of income for the rest of their lives.
- Withdraw lump sums to use as they wish.
- Leave the funds invested in the retirement schemes.

Up to one-third can be withdrawn from the company pension as a lump sum. The private pension assets offer more flexibility. There is the option of using all or part of them to buy a stream of payments (an annuity) while withdrawing the rest as a lump sum. Stein points out that many considerations must be taken into account.

EXAMPLE 12

Addressing longevity risk

Identify an option that would most likely address the Schmitts' concern about outliving their assets.

- a Purchase annuities.
- b Withdraw lump sums.
- c Leave funds invested in the retirement plans.

Solution:

The answer is A. Purchasing annuities would address longevity risk. Annuities involve the purchase of a product that provides a stream of regular income for the rest of the asset owners' lives, regardless of how long they live.

Stein summarizes the key differences between the choice of a lump sum or an annuity:

- With a lump sum withdrawal for the purposes of retirement income, beneficiaries take the longevity risk. The payout is the same regardless of how long they live. This approach normally poses the risk of outliving one's assets. An annuity, instead, is paid for the main beneficiary's entire lifetime, often with residual rights for the spouse (or even children, if below a certain age).
- Ordinary retirement fixed-payment annuities guarantee a nominal amount of regular income. Given the Schmitts' concern about inflation reducing the purchasing power of annuity income, they should consider buying an annuity whose amount is annually adjusted by the inflation index. The drawback is the initial cost, which she estimates would result in them receiving a 4.5% annuity yield instead of 5%.
- The tax treatment of lump sum withdrawals and pension payments varies across jurisdictions. In Eurolandia, lump sums of up to 25% of the total pension plan value can be withdrawn tax free.
- The lump sum payment is final when it occurs. If relevant, any tax arising is also finalized and paid at the same time. With a regular pension, the tax liability cannot be fully estimated in advance because of changes in tax rules and rates. Applicable rules would also change if the Schmitts were to move to another jurisdiction.
- The entitlement to an annuity payment exposes the beneficiary to counterparty risk arising from the provider's inability to honor its obligations.

The relative pretax valuation of a lump sum and the corresponding annuity payment calculation can be performed on the basis of the relevant interest rate curve and life expectancy (including that of any remaining beneficiaries, after the death of the main payee). Stein notes that a number of annuity providers exist on the Eurolandia market and they offer what are considered to be fairly valued annuities. Stein calculates that, on a before-tax basis, the annuity will be more favorable if the Schmitts live past 83 years of age.

With regard to any amounts (of pension fund assets) not used to purchase an annuity, they express preference for a lump sum payment of their pension as opposed to leaving the funds invested in the scheme. This is because of favorable tax treatment of lump sum withdrawals and also because they feel they would have more control of the withdrawn funds, providing them with flexibility. On that note they remind their advisor of their wish to help their daughter Roxane with her planned purchase of a property.

The Schmitts are considering also moving to a sunnier and lower-tax country. In Eurolandia, as in nearly all countries, tax liability depends on tax residence.² Some countries offer tax-free status, under certain conditions, to retirees moving there, at least for a certain number of years. One such country is Euromediter, a hypothetical country in the Eurozone.

² The United States is the most notable exception, because US citizens are liable for US taxes regardless of where they reside.

6.3 Retirement Income Recommendations

Stein compares the Schmitts' current, pre-retirement income with what they will be receiving from the government pension, the employer's occupational scheme, and the private pension plans. The objective is to provide the Schmitts with regular, inflation-protected income that is sufficient to fund their current level of expenditure of €70,000. This comparison should help determine how much of the pension plan values need to be converted to annuities, as well as what amount can then be withdrawn as lump sum or simply left in the scheme. Stein presents the Schmitts with the proposals shown in Exhibit 24:

Exhibit 24 Retirement Income Proposal

€	
State pension Jessica	28,200
State pension Paul	48,950
Total pretax income from state pension	77,150
Annuity purchased using 75% of Jessica's company pension plan	11,800
Annuity purchased using 75% of Paul's private pension plan	4,600
Total pretax income from pensions/annuities	93,600
Less tax	21,600
After-tax income	72,000

Note: Assumes 4.5% annuity yield. Purchased annuities would provide inflation protection.

The recommended arrangement would result in the Schmitts relying on the state pension for a large part of their required retirement income. To bring it up to a sufficient level to maintain their current annual expenditures of €70,000 (in real terms), they would need to convert 75% of Jessica's employer's pension plan and 75% of Paul's private pension plan to an annuity that provides annual inflation adjustment. The remaining 25% portions of the two pension plans would be withdrawn as a tax-free lump sum (providing a total one-off sum of €121,250).

The remaining pension plan, Jessica's private pension plan, would not be required to provide retirement income. Stein suggests that 25% of the plan can be withdrawn as a tax-free lump sum of €43,750, with the rest kept invested in the plan.



The Schmitts are considering reducing their current living expenses by moving to a Mediterranean country, at the same time benefiting from the available tax break there. Stein provides them with a number of recommendations.

The prospect of retiring to another country has many financial and non-financial implications. It is necessary to consult with experts before making any decisions that are difficult or costly to reverse.

- a A tax expert with up-to-date country knowledge must assess whether the claimed tax advantages really hold.
- b There are estate planning implications, as it must be understood what the applicable laws are (those of the retirement country, those of Eurolandia, or a combination thereof) and the relevant tax regime for estate taxes.
- c The option of moving back to Eurolandia, should the Schmitts wish or need to do so at a later stage, must be examined.

- d** If the target retirement country is not in Eurozone and hence does not use the euro (€), currency risk must be assessed and managed.
 - e** Efficient and inexpensive arrangements must be made for money transfers and currency conversion (if currency conversion is needed).
 - f** Provision of support for Peter must be assessed.
-

6.4 Investment Portfolio Analysis and Recommendations

The Schmitts ask Stein for her advice regarding their investment portfolio that stands at €1,511,000. They will also be receiving the tax-free pension lump sum of €165,000 while leaving €131,250 invested in Jessica's private pension plan, bringing the aggregate value of funds available to about €1.8 million.

The Schmitts repeat that, having arranged for regular income stream to cover their retirement expenses, the main objectives for the portfolio are to do the following:

- Provide financial assistance for Peter—a top priority.
- Leave an inheritance for the children, particularly Roxane.
- Provide Roxane with a deposit for her house purchase in the very near future.
- Be able to draw on the investment portfolio to cover unexpected expenses or if a need arises—for example, if their pension income fails to keep up with the rising cost of living, not fully captured by the inflation statistics, or to provide support with their health care if such need arises.

Stein first turns her attention to the Schmitts' top-priority goal: care for Peter, described in Exhibit 25.

Exhibit 25

Peter has just turned 27. The Schmitts explain that their current living expenses of €70,000 include about €13,000 in costs related to the support for Peter. That amount is expected to increase to €35,000 in nominal terms in about 10 years because the Schmitts believe that from that age, they will be unable to provide him with the support they currently provide. That amount is expected to remain broadly unchanged (in real terms) for the rest of Peter's life. It would supplement the support he is and will be receiving from the state. Stein calculates the present value of such contribution to support Peter and arrives at an approximate PV figure of €800,000.

Stein then asks the Schmitts about their investment preferences and willingness to bear risk, beyond what they stated as their top priority: Peter's long-term care.

Paul and Jessica explain that they:

- do not want to see their overall investment portfolio fall in value by more than 20% in any given year;
- wish to invest in instruments that can easily be liquidated, because they like to feel that they are in control;
- worry about inflation despite Eurolandia's stability; and
- do not wish to invest in real estate funds.

Stein points out that because their retirement income covers their current needs, the Schmitts have more room to take risk than other couples who require investment income to supplement their pension and fund ordinary living expenses. Their risk

tolerance is limited, however, by their requirement that the portfolio as a whole not suffer a loss of more than 20% in a given year even in the case of a market crash. Stein also points out that real estate funds can provide a degree of protection against inflation.

6.5 The Advisor's Recommendations for Investment Portfolio in Retirement

Having considered the Schmitts' financial circumstances, goals, risk tolerances, and preferences, Stein uses her firm's asset allocation tools that are based on the firm's capital markets expectations, assumptions about asset class volatility, and correlation between asset classes. She suggests the following asset allocation to the Schmitts:

- An allocation to international equities and Eurolandia equities of around 35% and 10%, respectively. This allocation would constitute the "risky" part of the portfolio.
- Allocation of 55% to less risky assets, of which they should aim to have 45% in inflation-linked bond funds and 10% in corporate bond funds.

Exhibit 26 summarizes their goals and Stein's investment recommendations.

Exhibit 26 Goals and Investment Portfolio as the Schmitts Enter Retirement

Existing Assets	Current Allocation	Goals	Time Horizon	Recommended Asset Allocation
Liquid funds (cash proceeds from pension lump sum)	€165,000	Help Roxane with property purchase deposit	<1 year	Keep funds in cash
Investment portfolio for long-term goals				
Inflation-protected government bond funds	€380,000	Care for Peter (PV of €800,000)	10 years	Inflation-protected government bonds 45% (€739,000)
Corporate bond funds	€370,000	Inheritance for Roxane (amount unspecified) and funding for unexpected expenses	Up to 25 years	Corporate bond funds 10% (€164,000)
Passively managed equity funds	€750,000			Global equities 35% (€575,000), including the actively managed equity funds in Jessica's private pension plan
Jessica's private pension plan	€131,250			Eurolandia equities 10% (€164,000)
Total	Approximately €1.8 million			

Note: In addition to these holdings, the Schmitts keep a cash balance of €85,000 in their bank account and do not expect this to change.

Stein notes that her suggested asset mix requires a further switch into inflation-linked government bond funds. She recommends that the necessary reallocation be implemented with capital gains tax implications in mind. Stein also points out that the portfolio's expected return would be higher if the Schmitts dropped their requirement of limiting the maximum drawdown to 20%, thereby allowing a higher allocation to risky assets.

SUMMARY

This case study follows a family from the early career to the retirement stage. It touches on a small and simplified selection of a wide range of issues and considerations that a family may face. A great range of skills and competencies is required to provide financial advice, ranging from the ability to conduct in-depth risk analysis, all the way to making recommendations on risk mitigation strategies, including the choice of insurance products, to perform asset allocation, tax optimization, retirement planning, and estate planning. All of this must be done with a clear understanding of the applicable legal environment and of the level of access and the cost of accessing financial products. In practice, it is very unlikely that a single financial professional can master all the foregoing competencies. The key to success is to understand at what point the generalist needs to bring in, or refer the client to, a subject matter expert.

In this case study:

- We identify and analyze the Schmitts' risk exposures. We observed that the types of risk exposure change substantially from the early career stage to the early retirement stage. We conducted the analysis holistically, starting from the economic balance sheet, including human capital.
- We recommend and justify methods to manage the Schmitt family's risk exposures at different stages of their professional life. We use insurance, self-insurance, and adjustments to their investment portfolio.
- We prepare summaries of the Schmitts' risk exposures and the selected methods of managing those risk exposures.
- We recommend and justify modifications to the Schmitts' life and disability insurance at different stages of the income earners' lives.
- Finally, we recommend a justified a plan to manage risk to the Schmitts' retirement lifestyle goals.