Personal Finances

Teaching cases of financial literacy

EUFIN



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The case of Ahmed

Aisa Amagir, Theo Roos, Eva Marcus, Titia Boerrigter¹

1.1 Learning objectives

All learning outcomes in this case-book are based on Blooms taxonomy (Figure 1.1) where the higher levels (creative original work) are built on lower levels (ability to know facts and concepts). Studying this case about planning his studies the student will be able to:

- describe forms of saving with or without withdrawal restrictions (understand);
- explain the difference between simple and compound interest (understand);
- calculate interest of a savings account based on simple interest (apply);
- calculate the present value and the end value for an amount of money based on compound interest (apply);
- Calculate the future and the present value as well as the periodic instalments for saving in instalments (apply);
- describe transferable securities like equities, bonds and stock options (understand);
- explain the difference between risk and return on investment for saving an transferable securities (understand);
- describe several options for consumer credit (understand);
- describe the financial implications of consumer credit for the borrower (understand);
- calculate regular interest amounts, regular repayment amounts and the remaining debt for the several options of consumer credit (apply);
- make a well-founded decision on financing a study (evaluate);

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Figure 1.1: Bloom's taxonomy (Van der Bilt University, sd)

1.2 Case study – Ahmed and the situation

Ahmed Beelzebucci is a 14 year eight grade student in the general track (HAVO) of secondary education. He plans to be a future software engineer. Before becoming an engineer he has to get his Bachelor degree at the Amsterdam University of Applied Sciences, which lasts four years. He is an excellent student so he does not expect any delay. Ahmed now lives in Uden, a small village near Den Bosch. For practical reasons he has to move to Amsterdam for his study.

The estimated costs for living for Ahmed during his first year study include:

- Rent: \in 5.100 per year;
- Groceries: € 2.160 per year;
- Clothing: \in 540 per year;
- Entertainment: € 1.176 per year;
- Insurances: € 1.500 per year;
- Other costs: \in 900 per year;
- The tuition fee for the study is $\notin 2.143$ per year;
- Books will cost about € 360 per college year;
- Ahmed takes a 2% inflation rate into account;
- Ahmed takes a 0.5% interest rate into account;

Moreover, he wants to have access to the yearly required sum at the beginning of the year.

R Government Student loans in Netherlands In the Netherlands the government provides a student loan and a tuition fee credit. The interest rate for this loan will be determined every 5 years and is always very low. Paying back the loan is partially dependent of the future income of the student. There will be a maximum percentage of the income that monthly has to be paid back to the government. Next to a student loan a tuition fee credit can be obtained. This credit is used to pay the tuition fee and has the same conditions as the student loan. General characteristics of the government student loan are:

• The loan is part of financing the study;



- The student can determine the amount to lend up to a maximum (around € 500 per month);
- Monthly the loan can be increased, decreased or stopped;
- After the degree is obtained, the loan has to be paid back, with interest (DUO, sd).

Ahmed is a keen young guy and he knows that his study will be more affordable if he takes a part-time job during his study. He did some research on the internet and learned that a student works an average 17 hours per month for \notin 12 per hour. Due to the Corona crisis, wages will not increase the next two years. After that, the expectation is that wages will increase by 4% a year. **Problem 1.1** a. Calculate the costs of education for Ahmed during his four years of study.

b. Calculate which sum he needs at the start of his study.

There are a few options for Ahmed to obtain the desired amount of money to finance his study:

- Saving without withdrawal restrictions: Putting an amount of money at a savings account against a variable rate of compound interest. The amount of money can be withdrawn from the savings account.
- Saving with withdrawal restrictions: Putting an amount of money at a savings account against a fixed rate of compound interest. The amount of money cannot be withdrawn from the savings account.
- Instalment savings: periodic contributions into a savings account (see Appendix 1).
- Lending: Getting a student loan and or tuition fee credits from the government.
- Investing: Acquiring transferable securities like equities, bonds and options (see Appendix 2).

Definition 1.2.1 — Savings without withdrawal restrictions. The most common way for saving is saving without withdrawal restrictions using a regular savings account, which is the most flexible. The general characteristics of this savings account are:

- No restrictions for depositing into or withdrawing from the savings account;
- No minimum deposit;
- Variable interest rate.

Definition 1.2.2 — Savings with withdrawal restrictions. The saver and the bank agree on the term the deposit will be fixed. The most common form of saving with withdrawal restrictions are fixed-term deposits. In general this account has the following characteristics:

- The interest rate is fixed during an agreed term;
- No possibilities for depositing into or withdrawing from the account;
- Minimum deposit.

Problem 1.2 a. Discuss in a group the non-financially advantages and disadvantages of the options mentioned above based on the characteristics of these options.

b. Give a short presentation of the chosen option to finance your study without taking calculations into account.

When Ahmed obtains his bachelor degree he will work as a software engineer, starting at a gross income of \notin 2.000 a month, growing in 10 years into a gross income of \notin 4.500 per month (Nationale Beroepengids, 2020). His average tax burden (income and local taxes) will be around 28% (CBS, 2020).

Theorem 1.2.1 — Simple interest. An account based on simple interest only pays interest on the initial payment. The interest will be put aside so no interest is earned on that interest. Simple interest is a quick and easy method of calculating the interest charge on a loan. Simple interest is determined by multiplying the daily interest rate by the principal by the number of days that elapse between payments. Simple Interest= $P \times I \times N$ where: P=principle; I=daily interest

rate; N =number of days between payments. This type of interest usually applies to automobile loans or short-term loans, although some mortgages use this calculation method.

- Simple interest is calculated by multiplying the daily interest rate by the principal, by the number of days that elapse between payments;
- Simple interest benefits consumers who pay their loans on time or early each month;
- Auto loans and short-term personal loans are usually simple interest loans.

1.2.1 Family situation

The home situation of Ahmed influences the way Ahmed and his family are able to finance Ahmed's education. Ahmed's father has a regular job in accounting and his mother has a part-time job as a primary teacher. They earn a middle gross income of \notin 42.000. That equals a net income of approximately \notin 2.500 per month. They have \notin 22.000 on their savings account. Ahmed has a 2-years younger brother and a 4-years younger sister. They also might get higher education in the future. Ahmed's parents also want to create a possibility for his siblings to get an education. Ahmed's family tends to be risk averse. Table 1.1 shows how Ahmed's family divide their budget.

Category	Perc	Amount	Implicating
Living	25%	€ 625	Small apartment with three bedrooms
Food	10%	€ 250	Getting the daily groceries
Transport	10%	€ 250	Driving a budget car
Household / personal	10%	€ 250	Regular cleaning products,
			toiletries and occasionally new clothes
Health	15%	€ 375	Middle class health insurance,
			regular deductible and paid medications
Entertainment	10%	€ 250	Regular phone subscriptions
			and occasionally outings
Saving	15%	€ 375	Emergency fund, small financial goals,
			minimum retirement provisions
Giving away	5%	€ 125	Presents and good causes

Table 1.1: Family's budget

Theorem 1.2.2 — Compound interest. Compound interest (or compounding interest) is interest calculated on the initial principal, which also includes all of the accumulated interest from previous periods on a deposit or loan. Thought to have originated in 17th century Italy, compound interest can be thought of as "interest on interest," and will make a sum grow at a faster rate than simple interest which is calculated only on the principal amount.

- Compound interest is interest calculated on the initial principal, which also includes all of the accumulated interest from previous periods on a deposit or loan.
- Compound interest is calculated by multiplying the initial principal amount by one plus the annual interest rate raised to the number of compound periods minus one.
- Interest can be compounded on any given frequency schedule, from continuous to daily to annually.
- When calculating compound interest, the number of compounding periods makes a significant difference.

The formula for calculating compound interest is:

Compound Interest = Total amount of Principal and Interest in future (or Future Value) less

Principal amount at present (or Present Value)

$$= [P(1+i)^{n}] - P = P[(1+i)^{n} - 1]$$
(1.1)

(Where P = Principal, i = nominal annual interest rate in percentage terms, and n = number of compounding periods.) Understanding the time value of money and the exponential growth created by compounding is essential for investors looking to optimize their income and wealth allocation. The formula for obtaining the future value (FV) and present value (PV) are as follows:

$$FV = PV(1+i)^n, PV = FV/(1+i)^n$$
(1.2)

Studying in the future means you need a certain amount of money at a specified moment. In that case reverse calculation is required aka the present value (Investopedia, sd).

1.2.2 Market situation

Stocks, bonds and interest rates vary through time. Although past results do not guarantee results for the future, past results give an indication of risk and return on investment (Table 1.2 and Figure 1.2).

Definition 1.2.3 — Risk and return on investments. Differences between saving and investing are based on two factors:

- 1. Risk The only risk with saving money is a bank going out of business. In the Netherlands this risk is limited because when a bank goes bankrupt the Central Bank guarantees that a saved amount up until € 100.000 will be returned to the saver: Investing delivers more risks:
 - share prices could fall, due to disappointing results or bankruptcy of the company you own securities from. You will lose a (substantial) proportion or all of your initial deposit;
 - the broker goes out of business. However the Central Bank also guarantees a return of money, this amount will not be higher than € 25.000;
- 2. Return on investment Return on investment means the amount of money you earn upon your initial deposit. For a savings account an interest fee is required. The interest rate is quite stable, however in Europe decreasing the last couple of years. Investing gives two options for return on investment:
 - Selling securities with a profit, what only can be done when a company performs well.
 - Obtaining dividends, which only can be obtained when a company performs well.

Chapter 1	I. Getting	an education	and job
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Year	Interest rate	Return on investment	Return on investment
	savings in %	on bonds in %	in % based on AEX
1991	4,62	8,00	14,11
1992	4,73	8,47	1,80
1993	4,47	8,06	20,77
1994	3,84	6,82	15,85
1995	3,58	5,53	16,84
1996	3,20	7,47	22,29
1997	3,42	5,76	59,14
1998	3,29	5,41	4,16
1999	2,87	4,94	29,76
2000	2,60	3,82	17,85
2001	2,73	5,00	-34,54
2002	2,47	4,71	-28,75
2003	2,89	3,88	4,27
2004	2,67	4,24	2,07
2005	2,51	3,24	22,32
2006	2,42	3,76	19,30
2007	2,62	3,88	13,19
2008	2,93	3,53	-31,57
2009	2,58	3,29	-16,19
2010	1,98	2,76	9,34
2011	2,18	2,00	-19,54
2012	2,24	1,71	23,03
2013	1,64	2,00	13,63
2014	1,36	0,82	11,06
2015	1,16	0,71	0,52
2016	0,62	0,29	6,25
2017	0,40	0,59	17,30
2018	0,28	0,47	3,90
Total return as from 1991	104%	195%	392%

Table 1.2: Return on investment since 1991 (Roos, 2019)

Problem 1.3 1. If the parents decide to finance the study with their savings account (based on compound interest), what are the financial implications for the family?

- (a) There will be no contributions to the savings account beside the current \notin 22.000;
- (b) The monthly instalments are sufficient to finance the study;
- (c) The monthly instalments are sufficient to bridge the gap between the future value calculated at 1.1 and the amount that is needed to finance the study of Ahmed?
- 2. Calculate the financial implications for the family assuming they will invest the money at their savings account if the return on investment will be the same as in the year 2000 or the year 2010.
- 3. Calculate the financial implications for the family assuming they will take a loan equal to the amount that is needed at the start of the study, using the offer as show in Table 1.3.
- 4. Calculate the financial implications for Ahmed if he uses the opportunity of the governmental loan. Use the calculation tool at **Calculate your student finance**

Personal Loan Most important characteristics:	Revolving Credit Most important characteristics		
Sum to lend: € 45.451	Sum to lend: € 45.451		
Form of lending: Personal loan	Form of lending: Revolving credit		
Term: 120 months	Redemption percentage: 1.5%		
Interest rate: 3,8%	Interest rate: 4,6%		
Monthly: \in 455	Monthly: € 682		
Penalty-free redemption possible	Possible redemption percentage: 1% or higher		
	Minimum redemption: € 50		

Table 1.3: Geld.nl (Geld.nl, sd)



Figure 1.2: Return on investment since 1991 (Roos, 2019)

1.3 Additional problems

1.3.1 Problem: financing the education of Ahmed

In the previous paragraphs you have researched different options . You can know make a decision for Ahmed in how to finance his education. Next to the financial implications there will be some other considerations to make. For example: what is the budget of Ahmed's family and how will the financial decision change that budget. Also, you have to check whether this change is eligible. How does Ahmed's family feel about risk regarding return on investment? Which (nonfinancial factors) advantages and disadvantages are important to Ahmed's family?

Problem 1.4 1. Create a diagram or chart in which the risk and return on investment for all options are shown.

- 2. Create a table in which (nonfinancial factors) advantages and disadvantages are mentioned.
- 3. Create a table in which expenditure, costs, revenues and income are shown.
- 4. Research which options are possible for Ahmed's family regarding their budget.
- 5. Make a solid and well-funded decision about financing Ahmed's study, using all the collected data. Describe which steps you made and why you prefer certain financial options above others.

1.3.2 Problem: Getting a masters or start working after obtaining a bachelor's degree?

Ahmed seriously thinks about studying for a Master's degree, after he obtained his Bachelor degree. Having this master title will offer him more chances at the labor market. On the one hand, this may come with the opportunity of a job with more perspective of a higher wage. On the other hand, two more years of studying will also cost an amount of money and Ahmed really wants to know whether further education will be a solid financial investment. To obtain a master's degree he needs a student loan for two years. Ahmed's expenditures will be the same for both working or continuing studying. Therefore, the regular daily costs can be omitted form the calculation. Ahmed collected the following data (Table 1.4):

Education	Bachelor's degree	Master's degree
Job	Software engineer	Embedded engineer
Salary	from € 2.000 to € 4.500 in 10 years	from € 2.600 to € 5.500 in 10 years
Job description	Developing and building applications,	Developing, testing, implementing soft-
	programming and testing of soft- and	and hardware for embedded systems.
	hardware.	
Outlook	A growing industry constantly	A constantly changing production
	offers plenty jobs. Career	process makes this job indispensable.
	developing opportunities for a	Career opportunities for team manager
	managing functions are eligible.	or Master engineer.
Extra costs/		2 years tuition fee, books and other
opportunity costs		necessities. Two years of salary.

Table 1.4: Comparing jobs with a different education level

Ahmed will do a financial analysis for the first twelve years after getting his bachelor's degree. After 12 years he has grown into the top wages of the field he works in. After this period chances may not differ too much. Ahmed makes a decision, taking into account the present value of the expected wages with an interest rate of 0,05% per month and salaries received at the end of each month.

Problem 1.5 Create a chart in which is shown whether obtaining a master degree on the long term will lead to a financial advantage.

1.4 Resources and background reading

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Appendixes

Appendix 1: Instalment savings

With instalment savings a periodic contribution will be done into the savings account. Each contribution has it's own compound interest schedule. However it would be to much work to calculate each future value for each contribution. Instalment savings acts like a geometric sequence. In a Geometric Sequence each term is found by multiplying the previous term by a constant (Math is fun, 2020). For example:



Figure 1.3: Instalment Savings (Roos, 2019)

- The future value (4 years) of the first contribution of \in 1.000 will be \in 1.000 × 1,054
- The future value (3 years) of the second contribution of \in 1.000 will be \in 1.000 × 1,053
- The future value (2 years) of the third contribution of \in 1.000 will be \in 1.000 × 1,052
- The future value (1 year) of the fourth contribution of \in 1.000 will be \in 1.000 × 1,051

The future value (4 years) of all the contributions will be $\in 1.000 \times (1,054 + 1,053 + 1,052 + 1,051)$ where (1,054 + 1,053 + 1,052 + 1,051) is a geometric sequence. In a geometric sequence each next term can be calculated by multiplying by the same factor (here 1,05), also called the common ratio. The number of terms we call *n*. The first term will be referred to as *a*. The sum formula for a geometric sequence is: $a \times (rn - 1)/(r^2)$. Here this will be: $1,05 \times (1,054 - 1)/(1,05 - 1)$. The sum formula can be seen as the multiplier for the instalment. In this example: FV = $1.000 \times 1,05 \times (1,054 - 1)/(1,05 - 1) = 4.525,63$. In general: $FV = T \times a \times (rn - 1)/(r - 1)$ (pre numerando, meaning instalments paid at the beginning of the period).

			SAVI	NG	
	One initial	payment		Saving in:	stalments
Simple interest Int = P x i x n FV _n = P + Interest		Samengesteld Interest FV _n = P x (1 + i) ⁿ FV = P + Interest		SPAREN	OPNEMEN
Future Value	Present Value	Future Value	Present Value	Sum formula Future Value	Sum formula Present Value
FV _n = P + Interest Int = K x i x n P = Int : (i x n) i = Int : (K x n) n = Int : (K x i)	PV _n = E _n : (1 + i x n)	$\begin{split} FV_n &= P \times (1 + i)^n \\ FV_n &= \\ P + Interest \\ i &= \\ (FV_n : P)^{1/n} - 1 \\ n &= \\ log((FV_n : P)) : \\ log(1 + i) \end{split}$	PV _n = FV : (1 + i) ⁿ	Prenumerando somformule = a x (r ⁿ - 1) / (r - 1) $FV_n = T x$ somformule Postnumerando Somformule = a x (r ⁿ⁻¹ - 1) / (r - 1) + 1 $FV_n = T x$ somformule	Postnumerando somformule = $(1 - r^{-n}) / (r - 1)$ PV _n = T x somformule Prenumerando Somformule = $(1 - r^{-n+1}) / (r - 1) + 1$ PV _n = T x somformule

Appendix 2: Investing

We look at investing as buying transferable securities. In general investing will take place at the stock exchange, the market for securities. We look at three ways of investing:

1. Stocks Buying stocks will give you partial ownership of the company. In exchange for buying a stock the stock holder will receive a part of the profits of the company, called dividend. Another way to make money with stocks is selling them to a better price than the purchase

price. The share price depends on a few factors:

- a. Future expectations of the company. The better a company's future looks, the more people want to buy stocks to profit from higher dividends.
- b. The general thoughts about the economy. A positive thought of the economy will increase consumer confidence in companies, as a result people tend to buy more stocks.
- c. The interest on savings accounts. The lower the interest rate on savings accounts the more interesting investing in stocks will be.
- 2. Bonds A bond loan is a loan divided into small parts. Such a small part is called a bond. People can buy bonds and by that they lend money to a company or to the government. In exchange they receive interest against a fixed simple interest rate. The price for bonds depends on the market rate. The higher the market rate the less people will buy bonds unless the bond price will be lowered in order to get the same return;
- 3. Investment funds Investing means taking risk. In order to decrease the risk people can use investment funds. An investment fund is like a basket with several shares in it. The provider of investment funds buy a lot of different securities, in many cases from different industries with a large spread in risk profiles. These shares will be divided and put into the so called basket. The individual investor can only obtain the same decrease in risk by buying securities from every industry and company represented in the basket.
- 4. Stock options A stock option gives an investor the right, but not the obligation, to buy or sell a stock at an agreed upon price and date. There are two types of options: puts, which is a bet that a stock will fall, or calls, which is a bet that a stock will rise.
 - a. Options give a trader the right to buy or sell a stock at an agreed-upon price and date.
 - b. There are two types of options: Calls and Puts.
 - c. One contract represents 100 shares of the underlying stock.

Options do not only allow a trader to bet on a stock rising or falling but also enable the trader to choose a specific date when they expect the stock to rise or fall by. This is known as the expiration date. The expiration date is important because it helps traders to price the value of the put and the call, which is known as the time value, and is used in various option pricing models such as the Black Scholes Model (Investopedia, sd).



The Smith's – a tale of a middle-class family in western Europe

Tommaso Agasisti, Marta Cannistrà¹

2.1 Learning objectives

This Case accompanies the students in working about some key, fundamental concepts of financial literacy. The Case allows the students to act as the father/mother of a middle-class family, in a Western Europe country; he/she will face some typical situations and problems with the management of their financial resources.

Specifically, this Case deals with the following theoretical and practical concepts:

¹All authors from Politecnico di Milano School of Management

Concept	Definition (by Business Dictionary)
Revenues	The income generated from sale of goods or services,
	or any other use of capital or assets, associated with
	the main operations of an organization before any costs or expenses are deducted.
Budget	An estimate of costs, revenues, and resources over
	a specified period, reflecting a reading of future financial conditions
	and goals. One of the most important administrative tools, a budget serves
	also as
	(1) a plan of action for achieving quantified objectives,
	(2) standard for measuring performance, and
	(3) device for coping with foreseeable adverse situations.
Saving and investing	Savings: The portion of disposable income not spent on
	consumption of consumer goods but accumulated or invested directly
	in capital equipment or in paying off a home mortgage, or indirectly
	through purchase of securities.
	Investment: Money committed or property acquired for future income.

2.2 Case Study – the situation and the problem(s)

2.2.1 Setting – background information

The Smith's family lives in a middle-size city in Italy. The family is composed by five members: Tommaso (dad), Samanta (mum) and three kids: Beatrice (female, 15 years old), Elisabetta (F, 11) and Edoardo (M, 5). It can be defined a middle-class family: both parents have a job, and they live all together in a medium-large, nice house. Specifically, Tommaso is a middle-manager working for a company located in their living city. Samanta is a nurse, working at the local hospital.

Although their economic and financial equilibrium is not worrying at all, Tommaso and Samanta are aware that their condition must always take into account (i) potential risks and (i) necessary investments for the future. Indeed, on one side they do not want to have their lifestyle disrupted by unexpected events – so, they need to consider the potential impact of risks, in advance (risk management). On the other side, they will need to invest some money in likely events in few years, and want to have the opportunity of realizing these investments in appropriate way (financial planning). With the aim of understanding how the family is behaving for considering these elements, we first give a look at the structure of its budget.

Problem 2.1 Before looking at the data in detail (section §2.2), each participant (or group) can make hypotheses about how the revenues and costs of the Smith's family are. Please create an Excel file with reporting hypothetical monthly revenues and costs, showing the balance between the two.

2.2.2 The budget of Smith's family

In the Table 1 (Budget – December 2019) we report the typical budget structure of the family in one month of a "ordinary" period. Please note that we consider recurrent (monthly) costs + the monthly incidence of the annual operational costs here. For necessary information, we also report the depreciation of the long-term investments – which, however, is not part of the monthly budget. Lastly, we also report the bank account situation as at December 21st, 2019. The revenues come primarily from the two salaries obtained by the parents for their work. In addition, Tommaso is able to generate some revenues from extra activities in the company (worth of around 750 \in per month, or 13% of the total monthly salary of the family. No other sources of revenues are present (such as financial investments, physical investment for rent, subsidies, money provided by parents, etc.).

The costs are those typical of a middle-class family. There is a mortgage to pay, related with the house where the family lives. Some additional costs for maintaining and operating the house are present as well, including bills and renovating costs. Given that the children attend a private school, some resources are spent in fees (and other school-related activities). In addition to expenditures for food at home, the family has the habit of eating out at restaurants, from time to time. Every month, some money is spent for amenities, like new toys or clothes, and generally for some shopping. The family also pays a person who regularly helps at home with cleaning and ordering. Finally, there is a budget for non-planned extra expenditures, from fines to presents for parties etc. Certain expenditures are billed annually, though. For example, there are costs associated with maintaining the car, and for the private health insurance. Moreover, the family spends 3 weeks of holiday all together every year. When considering their budget overall, Tommaso and Samanta are aware that the monthly incidence of these costs must be included in the picture.

Summarizing the economic balance (as expressed through cash flows), the situation can be described as solid overall. The family usually records revenues for around 5,500 (month, with a total amount of costs around 4,400). As a consequence, the family saves around 1,000 (month, i.e. 18% of the revenues. In absolute terms, such a saving rate guarantees an annual saving of around 12,000 (

2.2.3 The problem (a) – Planning for future

Beatrice is a motivated student, and she starts thinking about her options for higher education. Among the various options (she still has some time for decision!), a University Degree in Medicine is a potential priority.

If accepted, she would like to study Medicine in the University located in the major city close to hers. This would allow avoiding costs for renting an apartment; however, attending such a course would require some important costs anyway. The family starts creating an economic forecast for the costs of attending six years of university – which details are reported in the Table 2 (hypothesis about the inflation: 2% annually). The results reveal (in short) that the overall investment of resources would be around 56,000 \in for the whole six years (or 9,500 \in /year), with the possibility of potential revenues worth of 15,000 \in (or 2,500 \in).

The family, then, would like to develop a plan for facing this investment in the future. The key elements that can be considered for building the set of options are the following four:

- Accumulating savings in the next 4 years (which is the time lag between today and Beatrice's enrolment to the University), and during the 6 years of University attendance at the current rate and without changing the present lifestyle.
- Important! Consider the effects on current budget once Beatrice will attend university (meals, holidays, etc.).
- Changing the cost structure of the family's budget, to secure an increase in savings to be dedicated to the University choice made by Beatrice.
- Employing some money for a financial investment (see the characteristics of two alternative plans in the Table 2.1.
- Working on the options for the plan of costs and revenues forecast for the attendance of university.

The family can decide to invest part of the money in two alternative financial products, which characteristics are described below in Table 2.1.

As an additional constraint, it must be considered that the family does not want to use all the savings generated for the choice of Beatrice, with the aim of continuing the accumulation of savings for the (future) necessities of other kids. Thus, in the plans developed by the Smith's family, there is always an amount of money saved for future use by Elisabetta and Edoardo.

Problem 2.2 Each Candidate should develop an option for the Smith's family to cover the in-

	Investment A. Low risk	Investment B. Medium risk
Minimum amount:	10,000€	25,000€
Duration:	4 years	6 years
Average investment return	3.5%	5.5%
in the past 3 years: Risks:	risk-free	risk premium 1.5%

Table 2.1: Characteristics of the financial investments

vestment in Beatrice's attendance of university. Please specify the options considered, and the associated hypotheses with details of the annual plan. For simplicity, the Candidate can refer to the budget (revenues and costs) for the single year. Hypothesis of inflation: 2% annual.

2.2.4 The problem (b) – Facing an unexpected (negative) event

In February 2020, a dramatic pandemic of an unknown virus (COVID-19) created a very bad sanitary and economic situation. The country enters a long phase of health care and economic crisis; many people got recovered in the hospitals, and the government imposes a strict lock-down to almost all the companies.

While the evaluation of the consequences in the long-run are quite difficult to predict, the government activates three main economic interventions in the short run, especially for facing the emergence due to many workers locked down at home (in many cases, without working):

- A subsidy worth 300€ per month for families with an income lower than 80,000€ (gross salary);
- A subsidy for companies (layoff) to pay their workers for the number of hours not worked (equal to 75% of the gross salary, up to 1,000€ per person;
- An extra subsidy worth 500€ per month for families with an income lower than 25,000€.

The overall situation with the COVID-19 pandemic has a strong impact on the Smith's family. The job of both parents is affected, and they decide to carefully look at the consequences for the whole year 2020. The idea is to calculate the economic negative impact on the family (for the period March-December 2020), and to define a contingency plan for guaranteeing an economic equilibrium – if possible, without recurring to the current savings.

For calculating the economic impacts for the family, please consider the following information:

- The company (employee) for which Tommaso works activated the request for the subsidy, for 50% of Tommaso's working time.
- Samanta works at the hospital, so her salary increases by 10%, due to some additional hours of working she has to guarantee (due to the emergency).
- The additional revenues refer to a job that, due to the pandemic, is cancelled starting from March 1st until the end of the year.

Problem 2.3 Each Candidate should develop an option for revising the (annual) budget according to the next economic situation, maintaining the level of savings that the family granted before crisis (at least %, if not absolute value). Important: the Candidate should refer to the budget (revenues and costs) for the entire year.

Appendices

Appendix 1: Monthly budget, December 2019

Revenues (cash flows, +)	€	Comments
Net Salary - Tommaso	€ 3 500.0	Gross salary = 56,700€, taxation+ social contributions
		at 35% (average)
Net Salary - Samanta	€ 1 300.0	Gross salary = 19,500€, taxation+social contributions
		at 25% (average)
Not recurrent salaries (net)	€ 750.0	Presents, additional work activities (Gross salary =
		11,700€, TSC at 30% average)
Total revenues	€ 5 550.0	
Costs (cash flows, -)		Only those billed monthly, included
Mortgage (capital + interests)	€ 1 100.0	Remaining duration of mortgage (for the house)
		- 19 years
Electricity and other costs for house	€ 100.0	
Food (house meals)	€ 300.0	75€ per week
Transportations	€ 300.0	Fuel, ticket for public transports, etc.
Food (leisure and restaurants)	€ 300.0	75€ per week
Schools (fees, books, materials)	€ 750.0	
Phone bills	€ 70.0	3 plans for smart-phones
Amenities for T and S	€ 100.0	Fitness club
Amenities for everyone	€ 100.0	PayTV, Internet Cable
Amenities for kids	€ 150.0	Piano lessons, sport club, McDonald
Cleaning assistance	€ 180.0	A person who is assisting at home for cleaning
		and meals, 3h/week
Extraordinary (non-planned) costs	€ 400.0	Fines, non-planned shopping
Total costs (billed monthly)	€ 3 850.0	
Costs (cash flows, -)		Those billed annually
Car maintenance	€ 1 000.0	Insurance, extraordinary repairs, etc.
House maintenance	€ 2 000.0	Administration, ordinary maintenance
Health insurance	€ 1 000.0	Additional private plan
Holidays	€ 4 500.0	Two weeks for all the family
Total costs (billed annually)	€ 8 500.0	
Total monthly costs (cash flows, -)		
Recurrent costs	€ 3 850.0	
Incidence of annual costs	€ 708.3	
Total monthly costs (grand total)	€ 4 558.3	
Monthly savings	€ 991.7	17.87%
Annual saving	€ 11 900.0	

Appendix 2: Costs and revenues of attending University

Costs (cash flows, -) - Annual	year 1	Comments
Tuition and fees	4 500.0 €	Can be discounted by 25% for merit reasons
Academic materials	900.0 €	Books, supplies, etc. (average of 100€
		per month, calculated for 9 months)
Meals	1 800.0 €	10 € per day, 5 days a week, for 9 months
Transportation	360.0 €	$30 \in$ per month; covers the entire year
Leisure	900.0 €	25€ per week, for 9 months
Annual costs	8 460.0 €	
Non-recurring costs		
New laptop	3 000.0 €	Buying 2 laptops in six years
Other electronic equipments	2 100.0 €	
New backpack	225.0 €	A new backpack every 2 years
Total non-recurring costs	5 325.0 €	
Total costs for University attendance (6 years)	56 085.0 €	Net present value
	9 347.5 €	Year value

	nominal values, inflation $=2\%$				
	year 2	year 3	year 4	year 5	year 6
Tuition and fees	4 590.0 €	4 681.8 €	4 775.4 €	4 870.9 €	4 968.4 €
Academic materials	918.0 €	936.4 €	955.1 €	974.2 €	993.7 €
Meals	1 836.0 €	1 872.7 €	1 910.2 €	1 948.4 €	1 987.3 €
Transportation	367.2 €	374.5 €	382.0 €	389.7 €	397.5 €
Leisure	918.0 €	936.4 €	955.1 €	974.2 €	993.7 €
Total	8 629.2 €	8 801.8 €	8 977.8 €	9 157.4 €	9 340.5 €

Revenues (cash flows, +) - Annual	year 1	comments
Grandparents' presents	500.0 €	
Zero-interest loans (from the University)	1 000.0 €	Special financial product
		guaranteed by the University
Part-time job	1 080.0 €	Baby-sitting for a family of friends
		(3h/week, 9 months/year)
Annual potential revenues	2 580.0 €	
Total potential revenues during University attendance	15 336.7 €	Net present value
Balance (over the 6 years)	-40 748.3 €	

	nominal values, inflation $=2\%$				
	year 2	year 3	year 4	year 5	year 6
Grandparents' presents	500.0 €	500.0 €	500.0 €	500.0 €	500.0 €
Loans	1 020.0 €	1 040.4 €	1 061.2 €	1 082.4 €	1 104.1 €
Part-time job	1 101.6 €	1 123.6 €	1 146.1 €	1 169.0 €	1 192.4 €
Total	2 621.6 €	2 664.0 €	2 707.3 €	2 751.5 €	2 796.5 €

VOCABULARY

Vocabulary 2.1 — Economic equilibrium. xxx

Vocabulary 2.2 — Financial equilibrium. XXX

Vocabulary 2.3 — Investment. Money committed or property acquired for future income.

Vocabulary 2.4 — Financial planning. Long-term profit planning aimed at generating greater return on assets, (...) and at solving foreseeable problems.

Vocabulary 2.5 Budget An estimate of costs, revenues, and resources over a specified period, reflecting a reading of future financial conditions and goals.

Vocabulary 2.6 — Recurring costs. Regular cost incurred repeatedly, or for each item produced or each service performed Depreciation of investments The portion of a tangible capital asset that is deemed to have been consumed or expired, and has thus become an expense.

Vocabulary 2.7 — Cash flows. Incomings and outgoings of cash, representing the operating activities of an organization. (...) cash flow is the difference in amount of cash available at the beginning of a period (opening balance) and the amount at the end of that period (closing balance). **Vocabulary 2.8 — Revenues.** The income generated from sale of goods or services, or any other use of capital or assets, associated with the main operations of an organization before any costs or expenses are deducted.

Vocabulary 2.9 — Savings. The portion of disposable income not spent on consumption of consumer goods but accumulated or invested directly in capital equipment or in paying off a home mortgage, or indirectly through purchase of securities.

Vocabulary 2.10 — Financial investment. XXX

Vocabulary 2.11 — Inflation. A sustained, rapid increase in prices, as measured by some broad index (such as Consumer Price Index) over months or years, and mirrored in the correspondingly decreasing purchasing power of the currency.

Vocabulary 2.12 — Investment return. XXX

Vocabulary 2.13 — **Subsidy**. Economic benefit (such as a tax allowance or duty rebate) or financial aid (such as a cash grant or soft loan) provided by a government to (1) support a desirable activity (such as exports), (2) keep prices of staples low, (3) maintain the income of the producers of critical or strategic products, (4) maintain employment levels, or (5) induce investment to reduce unemployment.

Vocabulary 2.14 — Contingency plan. Organized and coordinated set of steps to be taken if an emergency or disaster (fire, hurricane, injury, robbery, etc.) or strikes.



Case: Thinking of investing in a house or starting a small business

Case authors from KU Leuven¹

3.1 Learning objectives

Buying a house

The student will be able to:

- draw up a definition on a mortgage (remember);
- detect the different varieties in mortgages (apply);
- classify the key factors the bank uses to decide on a mortgage (understand);
- filter through and select/value information on the net in relation to the costs linked to the buying of a house (evaluate);
- present the conclusions of the search (create).

Starting a small business

The student will be able to:

- weigh the choice between a self-employed profession or a career as an employee (evaluate);
- assess his/her entrepreneurial competences and explain the results (evaluate);
- design a project proposal in which the idea and plans (commercial, organizational and financial) become explained (create).

Business Game

By experiencing a Business Game a student can use and obtain the following learning outcomes:

- identify (business) economic challenges with practical relevance and relate them to insights developed in the field (understand);
- able to relate theory to practice (understand);

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- got insight into various aspects of managing a business and the internal relations; (understand);
- knowing the fundamental theories and movements in business economic thought and can implement these in a simulated business context (apply);
- make a master budget based on a given initial situation and various given hypotheses (analyze);
- formulate hypotheses in a simulated business context using given business economic and economic forecasts (evaluate);
- by working in team students also learn to contribute actively to a common result, to take initiative and accept responsibilities (apply).

3.2 Case studies

3.2.1 Buying a house

Situation Description of persons:



Young family, 3 children. Savings 50,000.00 EUR. Family income per month 3,500.00 EUR. Family expenses per month 2,000.00 EUR.

Young successful entrepreneur. Savings 75 000.00 EUR, income per month 3,500.00 EUR. Expenses per month 1,500.00 EUR.



Single parent with a toddler. Savings 15,000.00 EUR. Family income per month 1,500.00 EUR. Family expenses per month 800.00 EUR.

Description of houses

House 1: 879,000.00 EUR



- Luxurious, ready-to-use and energy-efficient open house.
- LIVING AREA 258 m²
- BUILDING TYPE Open
- GROUND SURFACE 1 748 m²

The quiet and residential location, the abundant light through the large windows and the contact with the beautiful, large garden are just a few plus points of this house. The house was fully energetically renovated in 2017 with an eye for detail and quality.

Layout: You enter this high-quality, energy-efficient home through a spacious entrance hall $(14m^2)$ with separate toilet. The house has a large and bright living room $(65m^2)$ consisting of a dining and sitting area and an open and luxuriously equipped kitchen $(20m^2)$ with quality appliances. Next to the kitchen is an office $(20m^2)$ with fitted cupboards. We also have 3 spacious bedrooms $(19-15-14m^2)$ and a large, fully equipped bathroom $(10m^2)$ with high-quality materials consisting of a walk-in shower, bath etc. Finally you will find a double garage with technical storage. Through various sliding windows you reach the beautiful garden with various terraces and a new pool house $(25m^2)$ with all amenities.

House 2: 185,000.00 EUR



- Living area: 102 m²; bedrooms: 2; bathroom: 1; terrace: 24 m²; garden: 100 m²
- DESCRIPTION: Ready to move in house with 2 spacious bedrooms on 172m² of land. Very central location. Walking / cycling distance from shops, schools. This house consists of a spacious living room with an adjacent kitchen. Adjoining the kitchen there is a living veranda with a view of the sunny garden.
- There are also 2 spacious bedrooms and a bathroom.
- Ideal starter home!
- Particularities:
 - Gas heating
 - Electricity is 100
 - Double glass
 - Renewed facade with new safe front door.

Problem 3.1 Assignment

If you want to buy a house, there are several steps to take. To make this as real as possible let's act as if you are buying a house. You can start from your own family situation or you can choose from the given situations. If you start from your own situation, it will be important to have an overview of the savings book, the monthly family income and expenditure.

Of course you must also have a view of the house you want to buy. Here too you can start from your own preferences and search online what you prefer. You can also use the proposed homes above. If you have a good idea of who you are and what property you want to buy, you should look for a good way to finance your purchase. You will find a step-by-step plan for this below. After you have completed the plan, you can present the decision to your fellow students. Do not forget to indicate well what your starting point was and then substantiate whether you can buy the house or

not and what the conditions and/or consequences are.

How to solve the case

If you have a good overview of your assets (savings account and income and expenditure per month), you can see whether you can actually buy the house you have in mind, provided you have a loan from the bank. You should also be aware of the fact that the cost will be higher than the monthly payment of your mortgage loan.

When drawing up your budget, take into account various additional costs and taxes, including registration fees, notary fees, insurance and property tax. However, if you have taken out a mortgage loan, you are also eligible for a tax reduction.

- The following questions are important:
- What budget do you need to become a homeowner?
- How to finance your purchase?

What budget do you need to become a homeowner?

If you want to build or buy a home, you must first thoroughly consider what it will cost and what your financial options are. You could also take a different approach: do not ask yourself what budget you need to buy or build a house, but how much money you have available to start such a project. To estimate the size of your budget, consider the following elements:

- How much savings can you use for the purchase or construction of a house or apartment? Our advice is that the savings should be sufficient to pay all additional costs for buying or building a home. This includes, for example, the fees of the notary, the administrative costs associated with the file, but especially the registration fees that are due as a result of a purchase. In addition, there are the costs for the mortgage or, if you are going to build, the VAT. If you want to build, the ideal scenario is that you pay for the VAT yourself. This amounts to 21% of the total cost of the construction works. If you are considering buying a home, assume 20% of the purchase price; that amount has been counted generously and should enable you to cover all costs.
- What part of your income can you use to repay a mortgage loan? As a general rule, it is best not to use more than 1/3 of your income to repay a loan. Add up all monthly recurring income of your family and divide this amount by 3. Subtract from this amount the monthly repayments of loans that are still outstanding (a car loan, a consumer credit, etc.). The amount you have left is the sum that your family can still bear monthly.
- Once you have determined how much savings you can spend on your housing project and how much you can pay off monthly, you can find out in which price range your project fits.
 - https://www.mortgagecalculator.net/eur/
 - https://www.ing.be/en/retail/mortgage-calculate-my-budget
 - https://www.nexvia.lu/acquisition-monthly-charge
 - https://www.hellobank.be/our-offer/finance/online-mortgage
 - https://www.nerdwallet.com/blog/mortgages/really-costs-buy-home/
 - https://www.bankia.es/en/retail-banking/financing/mortgages/mortgage-simulator
 - https://www.ing.lu/content/siteing/en/Individuals/my-money/categories/ borrow/property-buying--watch-out-for-hidden-costs-.html
 - https://www.notaires.fr/en/housing-tax-system/financing/cost-buying-house-conveya
 - https://www.abnamro.nl/en/personal/mortgages/calculating-your-maximum-mortgage. html
 - https://www.wikifin.be/nl/tools/rekentools/immosimulator(NL)

Do not underestimate the other costs that you as an owner will also have to bear, namely:

- the one-off costs, such as:
 - renovation and furnishing works, painting, etc.
 - installation costs (opening the meters, moving, etc.)

- registration fees (taxes on the purchase of a house)
- notary fees
- administrative charges (for certain attestations)
- bank fees (if you close a mortgage for the purchase of the loan)
- architect in case for renovation
- and the recurring costs such as:
 - common charges (for apartments)
 - insurance premiums (life and fire)
 - property tax
 - invoices such as water, electricity, etc.
 - insurances

Keep some money on hand for these costs that will soon be there once your project becomes concrete. And don't forget to take the recurring costs into account in your monthly budget.

How to finance your purchase? After a search of several months, you will finally find the apartment, house or building site of your dreams. Then you have to finance that purchase.

Do you have enough money of your own to purchase your property? Then you do not need to take out a loan. But watch out! Do not put all your savings into the purchase of a home. There are still a lot of costs associated with such a purchase. Also provide a reserve budget with a view to any work, especially if it is not new construction.

From a fiscal point of view, it can be advantageous to finance the purchase through a mortgage loan. Do you, like most people, have to finance (part of) the requested amount with credit? There are various credit formulas that facilitate the purchase of a home!

- 1. **Mortgage loan** A mortgage loan is the most commonly used credit formula for financing a property purchase. The credit institution makes the agreed sum available. You repay part of the monthly amount, according to a repayment plan that you have agreed with the credit institution. You also pay interest. More information on a mortgage:
 - https://europa.eu/youreurope/citizens/consumers/financial-products-and-services/ mortgages/index_en.htm
 - https://www.thetruthaboutmortgage.com/what-is-a-mortgage-definition/
 - https://www.ecb.europa.eu/pub/economic-bulletin/focus/2018/html/ecb. ebbox201805_05.en.html

Usually, the bank will ask you to take out a mortgage to guarantee the repayment of your loan.

- 2. Which conditions, for example regarding your income, make you eligible for a mortgage loan? "Do you want to thoroughly prepare your search for the most suitable mortgage loan? First calculate the total costs for the purchase of a home. Then compare those costs with the amount you can collect to finance those costs, ie the sum of your savings and the amount of the mortgage loan you can get.", advises Febelfin, the Belgian federation of the financial sector. For a checklist of all the charges you can check one of the tools below.
 - https://www.wikifin.be/nl/tools/rekentools/immosimulator (Dutch)
 - https://www.homeloanexperts.com.au/mortgage-calculators/property-purchase-costs-c
 - https://www.bankrate.com/uk/mortgages/cost-of-buying-a-home/
 - https://www.which.co.uk/money/mortgages-and-property/first-time-buyers/ buying-a-home/the-cost-of-buying-a-house-asdg78z63xuq

• https://www.ing.com.au/home-loans/calculators/buying-cost.html

It's not always easy to get a mortgage loan to finance a home. After all, this usually concerns large amounts, so the bank wants to be sure that you will be able to repay your loan. The bank will take the following elements into account to determine the amount of the mortgage loan it wants to give you: your own savings, your income, the value of the home you want to

buy and the ratio between the amount you want to borrow and the value of the home. The decisive factor in a bank's decision whether or not to grant you a mortgage is the amount of your income. You will have to repay the loan, the interest on the loan and the insurance premium for outstanding balance insurance. The bank will therefore also want to know whether your income is stable: if you are not at risk of becoming unemployed, will you be able to earn as much in the future as a self-employed person as today.

When will the bank choose not to grant you a mortgage? Some examples:

- If you earn 2,000.00 euro per month and you would have to repay 976.00 euro per month (e.g. for a loan of 150,000.00 euro over 20 years at a fixed interest rate of 4.7 %), the bank is likely to refuse the loan. The amount of the monthly payment would be too high compared to the amount of your income.
- The ratio between the amount you want to borrow and the value of the house is also important. If the value of the house you want to buy is estimated at 150,000.00 euro; you apply for a mortgage loan of 165,000.00 euro so that you can also pay part of the purchase costs. Your banker will not be inclined to grant you such a large loan. After all, your home serves as a guarantee for the repayment of your loan. In this example, the security (i.e. the value of the home) is not sufficient to cover the loan amount. It is important to know that each bank has its own criteria for whether or not to grant a mortgage loan.

To keep in mind:

- 1. Take your financial options into account. Don't get into too much debt. Two rules to estimate what you can handle:
 - you will probably have to be able to pay 10 to 25 % of the purchase price with your own savings or with a little help from your family;
 - the monthly payment on a mortgage loan may not exceed about 1/3 of the monthly family income.
- 2. Take into account the costs that can be added to the monthly instalment: the home insurance (also called fire insurance), outstanding balance insurance and property tax.
- 3. There are also costs that you only pay once when purchasing a home (sales rights, notary fees, mortgage rights).
- 4. Even more than for other financial products: look and compare! Ask different banks which rates they offer and do not hesitate to enforce the lowest possible rate. You can also call on credit brokers, who will do the comparative research for you. A small monthly difference can mean a large amount at the end of your loan.
- 5. Take the time to review the pros and cons of the different mortgage loan formulas. Choose the formula that suits you best: fixed monthly amount or fixed capital repayment? Fixed interest rate or variable interest rate? Don't forget that you can combine different formulas!
- 6. Carefully analyse the payment tables. They give you an extremely accurate picture of what your credit will cost you in the end. An instalment table gives a complete overview of the cost of the loan: the monthly instalments, the share of capital and interest in each monthly installment, the total interest to be paid ...

3.2.2 Starting a small business Situation

START UP

1. Jane wants to start a small business. She already has it all set in her mind: she wants to start a flower shop. Jane saved money over the last five years and her parents want to support her too and will give her start capital.



10 steps to start a small business...

Figure 3.1: 10 steps to start small business (Source:)

2. Samuel don't want to be an employee, he wants to be his own boss. But he has no idea in what kind of market he wants to start a business. He has little money himself.

Problem 3.2 BUSINESS GAME With a team of 6 fellow students you can compete in a simulated business game. You choose a role from the situations above (or create your own) and explore the steps described below. At the maximum 4 teams can compete in a simulated economic environment.

How to start a new business: 10 steps

Step 1: Do your research

Most likely you have already identified a business idea, so now it's time to balance it with a little reality. Does your idea have the potential to succeed? In order for a small business to be successful, it must solve a problem, fulfil a need or offer something the market wants. There are a number of ways you can identify this need, including research, focus groups and even trial and error. As you explore the market, some of the questions you should answer include:

- Is there a need for your anticipated products/services?
- Who needs it?
- Are there other companies offering similar products/services now?
- What is the competition like?
- How will your business fit into the market?

Step 2: Make a plan

You need a plan in order to make your business idea a reality. A business plan is a blueprint that will guide your business from the start-up phase through establishment and eventually business growth, and it is a must-have for all new businesses.

If you intend to seek financial support from an investor or financial institution, a traditional business plan is a must. This type of business plan is generally long and thorough and has a common set of sections that investors and banks look for when they are validating your idea.

If you don't anticipate seeking financial support, a simple one-page business plan can give you clarity about what you hope to achieve and how you plan to do it. In fact, you can even create a working business plan on the back of a napkin, and improve it over time. Some kind of plan in writing is always better than nothing.

The Business Canvas Model (Figure 3.2 and Figure 3.3 can be used in this step. You can



Figure 3.2: Idea for Business Canvas

fill in this canvas online, e.g. apply https://www.tuzzit.com/en/canvas/business_model_ canvas

Step 3: Plan your finances

Starting a small business doesn't have to require a lot of money, but it will involve some initial investment as well as the ability to cover ongoing expenses before you are turning a profit. Put together a spreadsheet that estimates the one-time startup costs for your business (licenses and permits, equipment, legal fees, insurance, branding, market research, inventory, trademarking, grand opening events, property leases, etc.), as well as what you anticipate you will need to keep your business running for at least 12 months (rent, utilities, marketing and advertising, production, supplies, travel expenses, employee salaries, your own salary, etc.). Those numbers combined is the initial investment you will need.



Now that you have a rough number in mind, there are a number of ways you can start your small business, including:

- Financing
- Small business loans
- Small business grants
- Angel investors
- Crowd-funding

You may find that a combination of the paths listed above work best. The goal here, though,



Figure 3.3: Business Canvas Model

is to work through the options and create a plan for setting up the capital you need to get your business off the ground.

In order to apply for a loan, you first need a well-prepared credit file. A business plan and a liquidity plan are indispensable in this context. After all, these contain very relevant information, not only for yourself but also for the financier or lender. Before applying for a loan, a business plan contains information that enables a financier or lender to evaluate whether the company has the necessary capacity to repay the loan amount.

A liquidity plan is a monthly, weekly or, in certain precarious situations, even daily budgeting of the cash that your company thinks it needs to finance investments, stocks and receivables that are not immediately realizable. When drawing up a liquidity plan, you must take into account the following elements, among others:

- A distinction between the ongoing need for resources and those associated with or arising from the business activity and cycle.
- Coordinating payment terms of customer receivables and supplier debts. This can be done by drawing up an 'aging list'.
- The amounts and dates for the payment of wages, social security contributions, withholding tax, VAT (advances), advance payments, credit instalments, insurance, any dividends, etc.

What is the importance of a liquidity plan?

A liquidity plan is indispensable for your company in order to gain a good insight from when the company has a cash surplus or a cash deficit. Moreover, it is an important tool to evaluate whether a planned expansion of the business activity can be financially supported by the company. For the banker or lender, the liquidity plan provides additional and important information about the repayment capacity of the company.

You can make a template for a liquidity plan:

- https://www.credit-suisse.com/microsites/business-easy/en/firmengruendung/ vorbereiten/liquiditaetsplanung.html
- http://www.business-planning-for-managers.com/main-courses/finance/financial-statemen liquidity/

Step 4: Choose a business structure

Your small business can be a sole proprietorship, a partnership, a limited liability company (LLC) or a corporation. The business entity you choose will impact many factors from your business name, to your liability, to how you file your taxes. You may choose an initial business structure, and then reevaluate and change your structure as your business grows and needs change.

Step 5: Pick and register your business name

Your business name plays a role in almost every aspect of your business, so you want it to be a good one. Make sure you think through all of the potential implications as you explore your options. Once you have chosen a name for your business, you will need to check if it's trademarked or currently in use. Then, you will need to register it. A sole proprietor must register their business name with either their state or county clerk. Corporations, LLCs, or limited partnerships typically register their business name when the formation paperwork is filed.

Step 6: Get licenses and permits

Paperwork is a part of the process when you start your own business. There are a variety of small business licenses and permits that may apply to your situation, depending on the type of business you are starting and where you are located. You will need to research what licenses and permits apply to your business during the start-up process.

Step 7: Choose your accounting system

Small businesses run most effectively when there are systems in place. One of the most important systems for a small business is an accounting system. Your accounting system is necessary in order to create and manage your budget, set your rates and prices, conduct business with others, and file your taxes. You can set up your accounting system yourself, or hire an accountant to take away some of the guesswork. If you decide to get started on your own, make sure you consider these questions that are vital when choosing accounting software.

Step 8: Set up your business location

Setting up your place of business is important for the operation of your business, whether you will have a home office, a shared or private office space, or a retail location. You will need to think about your location, equipment, and overall setup, and make sure your business location works for the type of business you will be doing. You will also need to consider if it makes more sense to buy or lease your commercial space.

Step 9: Get your team ready

If you will be hiring employees, now is the time to start the process. Make sure you take the time to outline the positions you need to fill, and the job responsibilities that are part of each position. If you are not hiring employees, but instead outsourcing work to independent contractors, now is the time to work with an attorney to get your independent contractor agreement in place and start your search. Lastly, if you are a true solopreneur hitting the small business road alone, you may not need employees or contractors, but you will still need your own support team. This team can be comprised of a mentor, small business coach, or even your family, and serves as your go-to resource for advice, motivation and reassurance when the road gets bumpy.

Step 10: Promote your small business

Once your business is up and running, you need to start attracting clients and customers. You'll want to start with the basics by writing a unique selling proposition (USP) and creating a marketing plan. Then, explore as many small business marketing ideas as possible so you can decide how to promote your business most effectively.

Problem 3.3 Business Game: To get management experience on how to run a company you can participate in a simulation business game

During the business game students are expected to take a vision on the long-term and establish connections between various corporate decisions in a simulated business environment, taking the general economic context and business context into account. The students should also take into account targets that are expected to be realized during the game. In order to achieve these targets, they have to take decisions according to their business situation. For this, they should use their budgeting knowledge. The student must be able to link the various data and predefined assumptions to the financial statements of a company.



Students team up: about six students per company. While playing the game the students will experience how management decisions have an impact on business activities. Three or four teams

compete against each other. Each team makes various decisions in the course of fictional financial years. During the game the students budget different components of the income statement. The business game makes students familiar with the manager's role: he is expected to hold meetings, conduct negotiations, plan and work in team, etc.

Afterwards, the students can present their pursued policy and some business economic aspects of the game by making a website, by answering questions asked by the coach and in a written way by making a policy report.

3.3 Additional reading

- www.wikifin.be
- https://europa.eu/youreurope/citizens/consumers/financial-products-and-services/ mortgages/index_en.htm
- https://www.thetruthaboutmortgage.com/what-is-a-mortgage-definition/
- https://www.ecb.europa.eu/pub/economic-bulletin/focus/2018/html/ecb.ebbox201805_ 05.en.html
- https://www.wikifin.be/nl/tools/rekentools/immosimulator (Dutch)
- https://www.homeloanexperts.com.au/mortgage-calculators/property-purchase-costs-calcu
- https://www.bankrate.com/uk/mortgages/cost-of-buying-a-home/
- https://www.which.co.uk/money/mortgages-and-property/first-time-buyers/ buying-a-home/the-cost-of-buying-a-house-asdg78z63xuq
- https://www.ing.com.au/home-loans/calculators/buying-cost.html
- https://www.thebalancesmb.com/small-business-info-4161643
- www.financieringvanondernemingen.be
- www.unizo.be
- https://www.tuzzit.com/en/canvas/business_model_canvas



The case of Kalev and Linda

Kaire Põder, Karmo Kroos¹

4.1 Learning objectives

This case is about pension planning. The student take the role of a young person (either male or female or as a family) in a specific pension system. This case will teach the student how to make long run plans – choice of mandatory and voluntary pension fund assuming certain streams of incomes and preferences for the future.

The student will be able to (see also Figure 1.1):

- explain difference between pillared and pay-as-you-go pension systems (understand);
- calculate future and present value of pension payments (apply);
- describe the financial implications of the pension planning (understand);
- describe challenges of the pension system regarding ageing and demographic change (evaluate);

This case will introduce the following theoretical and practical concepts:

Concept	Definition	
Pension fund	A fund from which pensions are paid, accumulated from contributions	
	from employers, employees, or both.	
Pay-as-you-go system	Uses contributions from current	
	workers to pay benefits to current pensioners, giving current workers	
	"promises" in return for contributions.	
Funded system	Use contributions from current workers to accumulate assets;	
	these assets are used in part of full to pay benefits for the future	

¹All authors from Estonian Business School

4.2 Case study

4.2.1 Introduction

Most welfare regimes in Europe have a public retirement pension system, principles of which originate from the late 19th century. The general idea of it is to use contributions collected from current workers, usually in the form of social security tax, in order to pay pension to the current retirees. Reflecting the historical background, on the one hand, and its principles, on the other, the model is known as the Bismarkcian pension system in the academic literature, and Pay-as-you-go system (PAYG) in the professional circles. This system has historically been possible thanks to the positive population growth. However, ageing population and reduced (if not negative) fertility rate in some European countries, is making the PAYG system difficult to manage because the number of retirees has been increasing relative to contributors and is expected to increase even more in the next decades as shown on Figure 4.1.



Figure 4.1: Estimates of the demographic change in OECD countries Source: Word Bank (2011)

This has triggered policy makers to introduce politically painful pension reforms in most of the European countries in general, and to change the system from PAYG to funded system in particular. This change means that instead the contributions from currently employed labor-force, people have to save and accumulate assets over their employment career and use these savings and assets in part or in full to cater for or the financial cost of pension age or compliment the falling state benefits to pensioners. These funded systems can have very different structures: it can be a single public agency (as, for instance, in Kosovo); or single but private pension fund (as, for instance, in Bolivia); a few private pension funds (as, for instance, in Uruguay), many private pension funds (as, for instance, in Mexico and Russia). The systems also vary in terms of who chooses the specific pension fund for the individual: is it the employer, employee, industry/social partners or the government regulator. Figure 4.2 shows the percentage of the working-age population that is covered by different types of pension plans around the world.

We introduce you the case of choosing a pension plan relying on Estonian pension system . This system has some particularities so it can be also called a pillar system. Our case is constructed as follows. First, we give you the background information about the individuals – Kalev and Linda – for whom you will make the choice. Second, we introduce you the particularities of the current pension system, which has the elements of PAYG and funded system. Finally, we ask you to solve the pension planning exercise for Kalev and/or Linda.



Figure 4.2: Coverage of funded and private pension plans in selected OECD and other jurisdictions, by type of plan, latest year available. (As a percentage of the working-age population) Source: OECD (2019a, 17)

4.2.2 Estonian pension system

As shown in Table 4.1, Estonian pension system stands on three pillars: First pillar relies on the PAYG system, second pillar is mandatory funded system, and it is supplementary (opt in) funded system. In other words, the first pillar is the guaranteed state system, the second is mandatory private and the third pillar is voluntary private system. These three pillars are explained in more detail below.

Pillar I	Pillar II	Pillar III	
State pension	Funded pension	Supplementary pension	
Mandatory	Mandatory	Voluntary	
PAYG	Funded	Funded	
Financed from social tax	DC	DC	
Paid out from Pension Insurance Fund	Private pension funds	Private pension funds	
National pension + work contribution	Individual pension accounts	Individual pension contracts	

* DC is defined contribution plan

Table 4.1: Three-pillar pension system of EstoniaSource: Better Finance (2019, 165).

First pillar: Pay-as-you-go system

First pillar is a defined benefit pension plan that often is called "state pension. It is paid out of the social tax that is calculated from salaries. Employers pay 33% on the top of the cross salary on each

employee for social tax. 13% of this goes to the mandatory national health insurance fund (which is a solidarity based health insurance system that covers in addition to the active and tax paying labour force also the current pensioners, unemployed, minors, university students etc.) and 20% goes for the pensions of today's pensioners. The state pension is paid for old age and its amount depends on two components: (a) component depending on the work contribution; and (b) national pension. The national pension is paid to the persons of retirement age who do not have sufficient length of employment (15 years) in order to receive the old-age pension.

Please note that the above mentioned means that if an entrepreneur, who instead of paying himself or herself salary (that is taxed, as above mentioned at the rate of 33% as social tax plus 20% as income tax) optimizes taxes by taking out dividends only (that are taxed at the 20% rate), will only get the national pension, which currently is 200 Euro and this is estimated to increase by 5% annually due to political pressures of the ageing voters.

In 2020 these two components that constitute I pillar are national pension (200 Euro a month) and contribution based component that multiplies working years by 7. So monthly state pension can be calculated:

$$p = 200 + \frac{7y}{12} \tag{4.1}$$

where *p* indicates monthly I pillar pension and *y* indicates years that you have worked. However, as stated national pension is expected to increase by 5% annually, so that next year national monthly pension is expected to be 210, then 220,5 etc. However, the contribution based components is expected to stay constant (multiplier = 7).

A person is entitled to the old-age pension after they have become 65 years old. However, early retirement is an option. In this case you had to work at least 15 years to get pension from the first pillar.

Funded system: second and third pillar

Second pillar: Mandatory funded pension

The mandatory funded pension is based on personalized contributions. Moreover, it is mandatory and there is no opt out from the system. More specifically, employer withholds 2% of the gross salary of the employee and transfers it to the personalized account of the pension fund. The state adds to it another 4% of the gross salary (that is deducted from the social tax, which is payable by the employer and equals to 33% of the gross salary of the specific employee). So in general, you get a transfer of 6% of your monthly gross salary to your pension fund (2% from your monthly salary and on top of it 4% from the state budget).

Subscribing to the second pillar is mandatory for the persons who were born in 1983 and later. But, an individual has the right to change the second pillar mandatory pension fund, managed by private for profit fund managers competing for clients, once a year. In general there are 4 pension fond providers – LHV, Luminor and Swedbank and Tuleva (see Table 4.2). LHV is the local Estonian financial institution, while Luminor and Swedbank are internationally owned financial institutions. Tuleva is a pension fund, however, short in history that has revolutionized pension collection in Estonia – first, investors are the owners of the company; second, it introduced a low cost index fund. Evidence shows that the lower the costs of the fund, the better are the long-term returns.

Individuals are free to choose among 14 funds that are run by four private financial intermediaries what we list in Table 4.2. The funds are allowed to invest, following the regulations of the into different types of asset classes of market based fees, conservative pension offered by both — the second and the third pillar – are based on private pension funds (short introduction of the companies can be found below).

LHV	Luminor	Swedbank	Tuleva
XS	С	K10	"World" (conservative)*
М	В	K30	"World stocks" (agressive)**
L	А	K60	
XL	A Plus	K100	

* "World" has 2.24% annual yield

**"World stock" have 2.80% of three year annual yield.

Both funds have management fee equal to 0.34% of total investments.

Table 4.2: Table 2. Second and third Pillar Pension Fund providers in Estonia

- LHV LHV was founded in 1999 and is local Estonian retail bank. 430 people working in LHV and than 200,000 clients are using our banking services. LHV's leading pension funds have nearly 177,000 clients.
- Luminor Luminor Bank AS is a bank headquartered in Tallinn, Estonia, with branches in Latvia and Lithuania, it is the third largest bank in the Baltics. Luminor was founded in August 2017 on the basis on Nordea and Danske Bank. Luminor took over more than million of customers from these two institutions. In September 2018 60% of Luminor's chares are sold to the Blackstone Group.
- **Swedbank** Swedbank is the largest bank in Estonia as it has more than 900,000 private and 132,000 business customers. It was founded in 1991 based on local Estonian capital under the name of Hansapank. In 2008 the name was change to Swedbank after the Swedbank took over Hansapank. Sweden and Baltic states are domestic market for the Swedbank.
- **Tuleva** Tuleva is social startup and civil initiative for pension funding. Tuleva started in 2016 as the initiative of 22 founders. Today over 5000 people have joined Tuleva. Tuleva is not a typical service provider. Tuleva is co-owned by the pension savers themselves who decided to skip banks' middlemen and start pension funds where they personally would like to put their money.

All II pillar providers are supervised and have low general risk level, however fund providers have multiple products (called pension funds) which in case of all fund providers are categorized into:

- Conservative funds: invest only to bonds;
- Balanced funds: 25% to stocks and equity funds;
- Progressive funds: 50% to stocks and equity funds;
- Aggressive funds: 75% to stocks and equity funds.

III pillar: Supplementary funded pension (opt-in funded system)

III pillar is voluntary contribution to the pension. This means that the individual can not only choose the pension provider and pension fund but also determine the amount of contributions with the possibility of changing the size of the contribution at any time. In addition if you invest to the III pillar, you are receiving a 20% income tax benefit on the contributions made during the year, which do not exceed 15% of the gross income. In addition there is the absolute maximum for the tax deductible contributions $\in 6,000$.

All pension fund providers and pension funds are the same as highlighted in previous section (see also Appendix 1). Please also note that Tuleva has only two investment funds highlighted in Table 4.2 and it has been in market only for the few years, so the annual growth rates of the funds are available only for last 3 years.

4.2.3 The case of Kalev and Linda

Kalev and Linda, two orphans from Estonia – who met and fell in love in Tinder, are discussing a forming a household. On the one hand, both of them have been studying at state funded public schools (incl. university studies) and working part-time in order to avoid any debt. On the other hand, they have been spending all their savings on international travelling and, hence, have not been able to save anything. They are living in a rental apartment which costs together with utilities take 30% of their combined net income a month. Unfortunately they are unable to get children and are unwilling to adopt any. Therefore, they plan to concentrate on their careers and are wondering what decisions related to pension planning they need to take in order to avoid the risk of poverty at the pension age (cf. Appendix 2), on the one hand, and to enjoy at least 75% of their pre-retirement income level during the retirement, on the other. See Table 4.3 for information about Linda and Kalev.

Definition 4.2.1 — **Discount factor.** The discount factor, DF(t), is the factor by which a future cash flow must be multiplied in order to obtain the present value (PV). For a real interest rate r (also called spot rate) and a time to cash flow t (in years), the discount factor is calculated by annual rate, so an annually-compounded discount factor is $DF(t) = \frac{1}{(1+r)^t}$. However, in financial markets traders usually use daily compounding to discount cash flows, often counting for 360 days a year: $DF(t) = \frac{1}{(1+\frac{1}{360})^{360t}}$. Sometimes, for manual calculation, the continuously-compounded hypothesis is a close-enough approximation of the daily-compounding hypothesis, and makes calculation easier: $DF(t) = e^{-rt}$.

	LINDA	KALEV
GENDER	Female	Male
AGE	25	23
LIFE EXPECTANCY AT BIRTH	74	64
EDUCATION	Just completed master studies	Just completed IT bachelor
	in literature teacher education	studies
PROFESSIONAL CAREER	Full-time high-school teacher	IT entrepreneur (reg. as limited
	at public secondary school	liability company that does not
		employ any other workers)
PLANNED AGE OF	65 (formal retirement age)	50 (hoping for the early
RETIREMENT		retirement)
CURRENT SALARY/	Net salary = 1000 Euro	After tax income = 2800 Euros
INCOME		
EXPECTED ANNUAL WAGE/	wage increase = 3%	Income increase = 5%
INCOME INCREASE		

 Table 4.3: Information about Linda and Kalev

Theorem 4.2.1 — Permanent income. Resting on permanent income hypothesis [**f57**], that is a theory of consumer spending stating that people will spend money at a level consistent with their expected long-term average income, calculate the pension savings. However, the exercise is not trivial because expected long-term average income calculation makes some assumptions about your future stream of income and future interest rates. Permanent income hypothesis also rests on the premises that intertemporal preferences (time preferences) are not counted, meaning that people intertemporal preferences are simple and expressed by the following utility function $u(c_1, c_2, ..., c_n) = \min(c_1, c_2, ..., c_n)$, where c_i denotes monthly consumption (consumption at period *i*). This equation simply states that your welfare (utility) optimisation exercise turns into simple exercise where $c_1^* = c_2^* = c_n^*$. However, to turn your period income into consumption you need to consider also intertemporal budget constraint $\sum_{t=1}^n \frac{y_t}{(1+r)^t} \ge \sum_{t=1}^n \frac{c_t}{(1+r)^t}$, where *r* in constant real interest rate and y_t indicates period income.

Problem 4.1 Estimate the annual income stream for Kalev and Linda using the information from Table 4.3. Based on income estimates calculate annual pension that Kalev and Linda will receive using either 75% rule or permanent income hypothesis.

Problem 4.2 Based on annual income estimates show how big will be the II (mandatory funded) contributions for each year (keep in mind that in total they are 6% from annual income).

4.3 How to solve the case?

Your task is to choose pension plan for Kalev and Linda. For this you can rest on the assumption that real interest rates (r) will stay at 0 rate, so basically for the calculation you need not to consider any discount factor and use permanent income hypothesis or you can rely on 75%-rule. Latter means that Kalev and Linda want to sustain 75% of their last period before retirement income. However, as Kalev and Linda will expect there income to increase you have to calculate permanent or last period income first. Also, you may think at the risk attitudes before solving the case. Usually at the young age (below 55) it is suggested to rely more on aggressive funds where the expected yield is higher. However, higher yield is always accompanied with higher volatility of the returns. In addition you may consider that individuals have different preferences related to risks – people can be risk loving, risk neutral or risk adverse, still this information is not presented to you because it often stays hidden.

Definition 4.3.1 — Risk attitudes and risk aversion. Risk is a term that's related to uncertainty about an event and its outcome, regardless of whether the event and outcome are positive or negative. A good example of this is the risk of making a financial investment. We are uncertain about the outcome of investing in a stock, and may quantify our uncertainty of loss and/or gain via a probability distribution model. However, risk can be subjective because our assumptions about risk deal with a person's individual attitudes toward risk and their understanding of a specific situation. There are different types of risk attitudes:

- Risk aversion: individual gravitates toward certain, as opposed to uncertain, events.
- Risk loving (risk seeking): attitude or behavior where a person is inclined to take on less-certain activities in lieu of more certain ones.
- Risk neutral: individuals, who have an indifferent attitude toward risk.

Problem 4.3 Calculate the monetary value of total pension funds (sum of all years) for Kalev and Linda what they need for the old age. Discuss why the numbers are so different for Kalev and Linda. What do you think, are the expectations of these two young people realistic?

Problem 4.4 Calculate how much money Linda and Kalev have to get from I and II pillar to meet the needs for the old age.

Problem 4.5 Suggest one of the pension fund for III pillar and calculate how much money monthly they have to invest to get the expected pension. How much Kalev and Linda have to invest every year to get the expected pension (Hint! calculate equal payments each year)? You can use Excel PMT function for the calculations of annuity, it allows to calculate at the end of the period or at the beginning of the period formulas, use default option. In the case of equal payments you will get that in early age they have to save much more in percentage terms, what can be the alternative for saving instead of annuity?

Problem 4.6 Discuss the changes in Estonian pension system that you would propose given the information provided in case and in Appendix 2. Alternatively you can discuss the alternative

pension system of your country of residence.

4.4 Additional reading

- Kapoor, J. R.; Dlabay L. R.; Hughes, R.; & Hart, M. M. "Starting Early: Retirement and Estate Planning" in Focus on Personal Finance. An Active Approach to Help You Achive Financial Literacy, 6th/ Inter. Student Ed. NY: McGraw-Hill, 2019, pp. 458-491.
- Garman, E. T. & Forgue, R. E. "Retirement and Estate Planning" in Personal Finance, 13th Ed. Cengage Learning, 2018, pp. 518-564.

Appendices

Appendix 1: Funded pension statistics

Table 4.4. Funded pension statistics for choosing pension fund				
Management fee	Annua	l growth ra	ates (%)	
(% of total investment)	3 years	5 years	10 years	
0.50	0.17	0.24	2.09	
0.70	1.17	0.76	1.93	
0.30	0.06	0.04	1.32	
0.60	1.42	1.88	3.05	
0.90	0.59	0.60	2.43	
0.50	0.15	0.07	2.08	
0.60	1.42	1.88	3.05	
0.95	0.99	1.09	3.30	
0.55	0.26	0.56	3.08	
0.60	2.57	3.16	4.02	
0.95	-0.12	0.79	3.60	
0.65	-0.46	0.39	3.41	
	Management fee (% of total investment) 0.50 0.70 0.30 0.60 0.90 0.50 0.60 0.95 0.55 0.60 0.95 0.65	Management fee (% of total investment)Annua 3 years 0.50 0.17 0.70 0.70 1.17 0.30 0.60 1.42 0.90 0.60 1.42 0.55 0.60 1.42 0.95 0.60 1.42 0.95 0.60 1.42 0.95 0.60 2.57 -0.12 0.65	Add pension statistics for choosing pension radiusManagement fee (% of total investment)Annual growth ra 3 years 0.50 0.17 0.24 0.70 1.17 0.76 0.30 0.06 0.04 0.60 1.42 1.88 0.90 0.59 0.60 0.50 0.15 0.07 0.60 1.42 1.88 0.90 0.59 0.60 0.55 0.26 0.56 0.60 2.57 3.16 0.95 -0.12 0.79 0.65 -0.46 0.39	

Table 4.4: Funded pension statistics for choosing pension fund

Appendix 2: : Facts about the pension system in Estonia

OECD analysis (2019a) shows that pension systems provide varying degree of security to the retirees. As mentioned, there could be many institutional and demographic factors behind the tendencies. In general, OECD (2019a, 2019b) shows that Estonia is estimated as the highest poverty risk country in EU, leaving more than half of the pensioners (54%) to the poverty risk. This is due to many specificities of the Estonian pension system. First, low national and state pension. Second, private pension plans have had very low or even negative returns related to recent turmoil in global financial markets and due to the fact that Estonian pension funds invest mainly on bond and equities abroad. Also, Figure 4.3 present the survey results that indicate even the increasing worries of the population regarding their old age well-being. However, as indicated last decade II pillar has made mandatory, but negative returns of private pension funds don't support increase of future welfare or pensioners.



Figure 4.3: The percentage of people worrying about their pensions in the long-run Source: Eurostat (cf. Ehrlich 2019)

In addition, it can be argued that in small country (and in small markets) pension funds are expensive to run, or they can collude to ask high management fees. As Figure 4.4 indicates, Estonia has been at far among OECD member states the case of very high management fees (indicated as administrative costs). Also, it can be argued that leaving the choice to individuals will force pension funds to make high advertising costs for signalling their services.



Figure 4.4: Administrative costs of pension funds, as percentage of managed assets Source: OECD and Kaspar Oja

VOCABULARY

Vocabulary 4.1 — Defined benefit pension plan. is a type of pension plan in which an pensioner gets a specified pension payment, lump-sum or combination thereof on retirement that is predetermined by a formula based on the employee's earnings history, tenure of service and age, rather than depending directly on individual contribution.

Vocabulary 4.2 — **Defined contribution plan (DC).** is a type of retirement plan in which the employer, employee or both make contributions on a regular basis. Individual accounts are set up for participants and benefits are based on the amounts credited to these accounts (through employee

contributions and, if applicable, employer contributions) plus any investment earnings on the money in the account.

Vocabulary 4.3 — Fund providers. collective term used to describe the parties providing services to a fund/collective investment scheme (e.g. investment advisers, investment managers).

Vocabulary 4.4 — Funded system. Use contributions from current workers to accumulate assets; these assets are used in part or in full to pay benefits in the future.

Vocabulary 4.5 — Fund providers. collective term used to describe the parties providing services to a fund/collective investment scheme (e.g. investment advisers, investment managers).

Vocabulary 4.6 — Intertemporal budget constraint. Equation showing that present value of current and future cash outflows cannot exceed the present value of currently available funds and future cash inflows.

Vocabulary 4.7 — **Pay-as-you-go (PAYG).** Use contributions from current workers to pay benefits to current pensioners, giving current workers "promises" in return for contributions.

Vocabulary 4.8 — **Pension fund.** a fund from which pensions are paid, accumulated from contributions from employers, employees, or both.

Vocabulary 4.9 — **Permanent income hypothesis.** Person's consumption at a point in time is determined not just by their current income but also by their expected income in future years – their "permanent income". In its simplest form, the hypothesis states that consumption smoothing is the case.

Vocabulary 4.10 — Pillar system. OECD pension system typology worked out to rely on more sources than current contribution of employees to pay pensions.

Vocabulary 4.11 — Tax benefit. an allowable deduction or credit on a tax return intended to reduce a taxpayer's burden while typically supporting certain types of commercial activity.



Case: Risk and insurance

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5.1 Learning objectives

A risk is something that exposes us to danger, harm, or loss. We face risks every day, and often these risks can have a financial impact on our lives. Getting sick, breaking a leg, having a car accident, or experiencing a house fire are examples of risks that may happen to any of us. If we had to pay the full costs for doctor's visits, surgeries, and automobile repairs ourselves, it could cause a substantial financial burden in our lives. To protect against the financial consequences associated with these risks, people often choose or are required to purchase insurance policies. Insurance policies reduce a person's financial risk in areas such as health (medical insurance), travelling (travel insurance), automobiles (auto insurance), homes (homeowner's insurance or renter's insurance), and death (life insurance). Consumers pay a fee for these policies, called a premium, which is typically much less than the costs associated with this risk without insurance. The consumer who buys the insurance policy is called a policyholder. The policyholder might pay the premium all at once or through a payment plan that divides the total cost into payments that are made monthly, quarterly, or some other agreed payment schedule. After studying this chapter, you will:

- remember basic terms,
- understand how insurance market works and how are the principles of insurance,
- apply your theoretical knowledge and practical skills in insurance issues,
- analyse risks and characterize the insurance risk focusing on commercial and non-commercial insurance as well as life and non-life insurance,
- evaluate insurance products which are available on the market,
- create individual insurance portfolio personalized on the basis of your actual needs.

Specifically, this Case deals with the following theoretical and practical concepts:

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Concept	Definition (by Business Dictionary)
Co-payment	A fixed amount you pay for a covered health care service in addition
	to the amount your insurer pays.
Deductible	The amount of expenses an insured must pay before the insurance
	company will contribute toward the covered item. For example,
	the amount you pay for covered health care services before your insurance
	plan starts to pay is your deductible.
Insurance	The practice or arrangement in which a company or government agency
	provides a guarantee of compensation for specified loss, damage,
	illness, or death in return for payment of a premium.
Insured	The person, group, or organization whose life or property
	is covered by an insurance policy.
Insurer	A person or company offering insurance policies in return for premiums;
	person or organization that insures.
Policy	In the insurance context, it is a written contract between the insured
	and the insurer.
Policyholder	The individual or firm that acquires and wants protection from
	the risk and generally in whose name an insurance policy is written.
	The holder is not necessarily the insured. For instance,
	life insurance policies might be bought by employers of key employees,
	or a husband might buy and be the holder of a life insurance
	policy on his wife. In such cases, the buyer is the policyholder.
Premium	The amount of money that has to be paid for an insurance policy.
Risk	Exposure to danger, harm, or loss.

5.2 Case Study – the situation and the problem(s)

5.2.1 Setting – background information

It was a crazy year. I had some problems to complete this school year as I had health complications connected with my sport career. More than that – my father lost his job, so I had to co-fund my studies with a higher proportion as my mother died two years ago and father's salary was the only financial source of our family. Fortunately everything went fine and I decided to recharge batteries at some low cost vacation with my friends. And you know what? I really do not want to experience such a terrible holiday again. It was one of the worst vacations I've ever had with my friends. As the saying goes, "when one thing goes wrong, everything else starts to go wrong." Everything looked great in the beginning. We had fun a lot of fun one day before we left. The next day, when we were supposed to leave at 7 am, my best friend started arguing. He found out that we forgot to insure us. Another friend said that it was not necessary to spend extra money in this way. Since then, I had a strong premonition that the holiday would not turn out as I had hoped and it would be such a kind of memory that I would not want to remember. After a slight quarrel between my friends, we checked to see if the whole shared house was ok. It seemed so. We set off - the situation calmed down and we started singing in the car. On the way to the highway, I noticed two trucks following each other. However, one of them seemed different. It seemed to me that the driver was nervous and that he was trying to overtake the truck that was going in front of him. I didn't pay attention to this fact, so I was quiet. And that's where it came. The truck driver began to precede. He moved further to the edge of the road from which the stones began to fly. One of them damaged our windshield. The rest of the way was more or less calm and nothing serious happened. When we finally arrived at the holiday destination, we found that they were refusing to accommodate us. We

realized that the travel agency did not pay for our vacation. Then I sat down on a chair and let my friends work it out. Unfortunately, another terrible news came in a few minutes. We found out that the travel agency went bankrupt. This was already a serious situation, and I just looked defensively when my friends were trying to resolve the situation. We had to find alternative accommodation. In addition, the hotel required a cancellation fee of 50% from us, which amounted to \in 1,000. Finally, we decided to pay full costs of the accommodation as we were under strong emotional pressure. For replacement accommodation, we spent the entire financial reserve, which we wanted to spend on buying souvenirs and optional trips. We therefore had to go to the nearest ATM and withdraw additional money to cover our basic needs. The next days of vacation developed , until the last day. My friend stepped on a sea urchin in the sea, so we had to seek medical treatment and pay for it in full. As I said, one of my friends did not want to spend money on insurance, so we did not pay for travel insurance before the trip. Therefore, we had to pay all the extra costs of our holiday at our own expense. In sum, it was much more than would be the insurance fee. We only wanted to have ordinary holiday in Croatia as we use to have every year. I don't wish so much bad luck and inconvenience on the holiday to anyone. Next year we will be insured for sure.

Definition 5.2.1 — insurance. The insurance is a means of protection from financial loss. It is a form of risk management, primarily used to hedge against the risk of a contingent or uncertain loss. Any risk that can be quantified can potentially be insured. Thus, there are these most common types of insurance:

- life insurance,
- property insurance,
- vehicle insurance,
- travel insurance,
- income protection insurance,
- casualty insurance.

Insurance involves pooling funds from many insured entities (known as exposures) to pay for the losses that some may incur. The insured entities are therefore protected from risk for a fee, with the fee being dependent upon the frequency and severity of the event occurring. In order to be an insurable risk, the risk insured against must meet certain characteristics. Insurance as a financial intermediary is a commercial enterprise and a major part of the financial services industry, but individual entities can also self-insure through saving money for possible future losses.

Problem 5.1 Let's think about possibilities how to make your life more pleasant and less risky with insurance. Please create a list of:

- 1. risks which could be suitable to be insured based on above described case study,
- 2. insurance companies which operate in your national market.

5.2.2 Life insurance

Your mother passed away two years ago just three months after the primary diagnostics of brain cancer. She was 43 years old. As both her parents lived happily until the age over 80, there was no reason to take out the life insurance. She worked as a teacher at primary school and her monthly gross salary was 900 EUR.

Definition 5.2.2 — Life insurance. Life insurance provides a monetary benefit to a decedent's family or other designated beneficiary, and may specifically provide for income to an insured person's family, burial, funeral and other final expenses. Life insurance policies often allow the option of having the proceeds paid to the beneficiary either in a lump sum cash payment or an annuity. In most states, a person cannot purchase a policy on another person without their

knowledge. Annuities provide a stream of payments and are generally classified as insurance because they are issued by insurance companies, are regulated as insurance, and require the same kinds of actuarial and investment management expertise that life insurance requires. Annuities and pensions that pay a benefit for life are sometimes regarded as insurance against the possibility that a retiree will outlive his or her financial resources. In that sense, they are the complement of life insurance and, from an underwriting perspective, are the mirror image of life insurance. Certain life insurance contracts accumulate cash values, which may be taken by the insured if the policy is surrendered or which may be borrowed against. Some policies, such as annuities and endowment policies, are financial instruments to accumulate or liquidate wealth when it is needed.

Problem 5.2 What if... Just imagine that your mum would have life insurance. Would there be any differences between the conditions of life insurance agreement before resp. after the diagnostics of brain cancer? What recommendations would you give her when thinking about life insurance? Would you recommend her Allianz Happy Life? Would there be any other more suitable product for her on your national market? Which one and why?

Allianz Happy Life

Advantages of Allianz life insurance:

- You can take out the insurance up to the age of 80, lasting until the maximum age of 85
- In the case of the most common types of cancer, the insurance company pays up to twice of the agreed sum insured
- Most insurance claims are solved within 2 working days
- When insuring sick leave, it is possible to select the sum insured with overpayment from the first day of your sick leave
- The insurance guarantees double fulfillment of sick leave in the case of cancer
- The waiting period in case of sick leave is 2 months, in case of high-risk pregnancy it is 12 months

Disadvantages of Allianz life insurance:

- Despite the new volume discounts of 20%, it is one of more expensive products to get a discount, you need to pay more than 700 EUR per year for insurance
- You pay a maximum minimum monthly premium of 25 EUR
- The waiting period for disability insurance is one of the longest on the market, up to 24 months
- In the case of sick leave insurance, the amount of the premium is gradually increased (payment for insurance)

5.2.3 Property insurance

When leaving your house, you checked that everything is OK. No electrical devices unreasonably put into electricity (iron, notebook, battery charger). Windows were closed and water wasn't flowing in any of the bathrooms neither in kitchen. Anyway, you couldn't be satisfied as your neighbour is quite an irresponsible person. Many times you had to quarrel with him because of the damage caused on your property by his behaviour. The need of wall painting due to the flooding was the smallest problem you have ever had with him. How can you relax on your holiday if you know that despite your responsibility your property can be endangered by somebody else's lax approach?

Definition 5.2.3 — Property insurance. Property insurance provides protection against risks to property, such as fire, theft or weather damage. This may include specialized forms of insurance such as fire insurance, flood insurance, earthquake insurance, home insurance, inland

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marine insurance or boiler insurance. The term property insurance may, like casualty insurance, be used as a broad category of various subtypes of insurance. Home insurance, also commonly called hazard insurance or home owners insurance, provides coverage for damage or destruction of the policyholder's home. In some geographical areas, the policy may exclude certain types of risks, such as flood or earthquake, which require additional coverage. Maintenance-related issues are typically the home owner's responsibility. The policy may include inventory, or this can be bought as a separate policy, especially for people who rent housing. In some countries, insurers offer a package which may include liability and legal responsibility for injuries and property damage caused by members of the household, including pet

Problem 5.3 Work in groups. Try to identify your own experience with property (especially home) damage caused by somebody else. Discuss your own remarks with your colleagues and try to identify other types of property insurance (excluding home protection). In case of home protection, these facts are relevant when insurance fee calculating:

- 1. Details about the home
- 2. The rebuild cost of the property
- 3. Lock types and alarms
- 4. The value of personal belongings
- 5. Details of any previous claims
- 6. Details of your roof type

What details would be relevant in scope of other property insurance types identified by you? Is it possible to be insured against damage caused to you by somebody else in all these types or can you be insured only against the damage which you cause?

5.2.4 Vehicle insurance

You have got driving license for less than one year. But everybody says that you are good driver – very careful and responsible. You have got also your own car – Porsche Carrera 911. It was a gift from your grandmother who is famous writer of so called romantic fiction and who loves you very much. Your friend is risky driver. He has driving license more than five years but he has already had two small car accidents. Normally, you would never sit to the car which would be driven by him but now, you do not have any other choice. The problem is that he has much bigger car than you – Mercedes SUV (see Figure 5.1).

Definition 5.2.4 — Vehicle insurance. Vehicle insurance protects the policyholder against financial loss in the event of an incident involving a vehicle they own, such as in a traffic collision. Coverage typically includes:

- 1. property coverage, for damage to or theft of the car,
- 2. liability coverage, for the legal responsibility to others for bodily injury or property damage,
- 3. medical coverage, for the cost of treating injuries, rehabilitation and sometimes lost wages and funeral expenses.

Problem 5.4 Find in Figure 5.1 summarized characteristics of your "Black Honey" and car of your friend. Who does pay less for the vehicle insurance? Why? Which factors are relevant?

5.2.5 Travel insurance

When thinking about vacation you decided for low cost alternative in Croatia. To save even more, your friends decided do not to take out the travel insurance. When reading the case study background information (see chapter 5.2.1), you can fully realize what aspects of travel insurance would be highly appreciated.



Figure 5.1: Cars

Definition 5.2.5 — **Travel insurance.** Travel insurance is an insurance product for covering unforeseen losses incurred while travelling, either internationally or domestically. Basic policies generally only cover emergency medical expenses while overseas, while comprehensive policies typically include coverage for trip cancellation, lost luggage, flight delays, public liability, and other expenses. Travel insurance, are risk-based, and take into account a range of factors to determine whether a traveller can purchase a policy and what the premium will be. This generally includes destination countries or regions, the duration of the trip, the age of the travellers, and any optional benefits that they require coverage for such as pre-existing medical conditions, adventure sports, rental vehicle excess, cruising, or high-value electronics. Some policies will also take into account the traveller's estimated value of their trip to determine price. A policy may be a single trip, covering the exact duration of the upcoming trip, or a "multi-trip" policy can cover an unlimited number of trips of limited duration within a year.

Problem 5.5 Let's open your internet browser. Use available travel insurance calculators and try to find suitable travel insurance which would cover most of the unexpected costs you've had during your vacation. Knowing that you are not able to turn back time, you would be at least well prepared for your next trip. Does the travel insurance cover also the risk of bankruptcy of travel agency? Can you take out insurance on the day you go on holiday if you have forgotten to do it? How would you solve the situation?

5.2.6 Income protection insurance

The salary of your father is the only stable financial source of your family. He works as an IT specialist in one big supranational consortium which operates on the real estate market. After the death of your mother he has realized how important his salary is. Thus, he has taken out the income protection insurance.

Definition 5.2.6 — **Income protection insurance**. Income protection insurance policies provide financial support in the event of the policyholder becoming unable to work because of disabling illness or injury. It provides monthly support to help pay such obligations as mortgage loans and credit cards. Short-term and long-term disability policies are available to individuals, but considering the expense, long-term policies are generally obtained only by those with at least six-figure incomes, such as doctors, lawyers, etc. Short-term disability insurance covers a person for a period typically up to six months, paying a stipend each month to cover medical bills and other necessities.

Long-term disability insurance covers an individual's expenses for the long term, up until such time as they are considered permanently disabled and thereafter Insurance companies will often try to encourage the person back into employment in preference to and before declaring them unable to work at all and therefore totally disabled.

Disability overhead insurance allows business owners to cover the overhead expenses of their business while they are unable to work.

Total permanent disability insurance provides benefits when a person is permanently disabled and can no longer work in their profession, often taken as an adjunct to life insurance. Workers' compensation insurance replaces all or part of a worker's wages lost and accompanying medical expenses incurred because of a job-related injury.

Problem 5.6 According to official statistics, top industries where people take out income protection are:

- construction and property,
- manufacturing,
- engineering,
- information technology services.

Discuss with your colleague the decision of your father and your prospective decision about income insurance protection taking your field of study and qualification into account. How would the situation change if you would be self-employed? Now, play roles – one of you is against the concept of income protection insurance arguing in favour of individual investment and savings creation. Try to use relevant arguments to persuade each other about your point of view.

5.2.7 Casualty insurance

It seems that you've experienced whole the items of the insurance spectrum recently. However, there are still much more such an items that could cross your way.

Definition 5.2.7 Casualty insurance insures against accidents, not necessarily tied to any specific property. It is a broad spectrum of insurance that a number of other types of insurance could be classified, such as auto, workers compensation, and some liability insurances.

Crime insurance is a form of casualty insurance that covers the policyholder against losses arising from the criminal acts of third parties. For example, a company can obtain crime insurance to cover losses arising from theft or embezzlement.

Kidnap and ransom insurance is designed to protect individuals and corporations operating in high-risk areas around the world against the perils of kidnap, extortion, wrongful detention and hijacking.

Political risk insurance is a form of casualty insurance that can be taken out by businesses with operations in countries in which there is a risk that revolution or other political conditions could result in a loss.

Problem 5.7 Just let your imagination fly... Try to enrich the case study and incorporate casualty insurance. Once doing this, present your case study to your colleagues and together try to find the most suitable product on your national market to cover the casualty insurance.