# Budgeting

## **Chapter Outline**

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Inflows and Outflows

Tracking Cash Flow Using Income and Expense Statements

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Chapter Summary

## **Chapter Learning Objectives**

After reading this chapter, students will be able to:

- Assess their own or another's personal net worth using a balance sheet
- Construct an income and expense statement to track cash flow
- Use a budget to manage cash flow
- Use a budget to improve financial decision making
- Use metrics, such as leverage and ratios to evaluate a financial situation
- Devise strategies to grow personal net worth

#### INTRODUCTION: TOOLS FOR UNDERSTANDING YOUR FINANCIAL SITUATION

Have you ever wondered what you are worth? Not as a person—as a human being, you are priceless. But if you think of yourself as a financial entity, like a business, have you considered what you, or your household, is worth? In a way, your personal financial life is indeed a type of business. It has raw materials: you, your education, your talents, and your possessions. And it has products: a stream of income and, ultimately, your well-being. Your business even has a "brand," which is your name and reputation within the financial world. Your well-being is related to your ability to support yourself (and perhaps a family) adequately throughout your life.

A recent college graduate may start his or her career with a student loan, feeling the pressure of debt. If the college education has led to a steady, well-paying job, the money coming in each month will likely be sufficient to meet the demands of the money going out in that time frame, so the recent graduate will be able to make the monthly student loan repayments. But even with a steady cash flow, it is a good idea to keep an eye on your **net worth.** Your personal net worth is the value of what you own minus your debt, and you can track it with a **balance sheet**. Doing so is good business for you, personally. The person who manages his or her personal finances well will do their best to see that net worth goes from negative to positive over

time, and keeps on growing.

To keep net worth increasing over time, you need to keep your saving on track. While net worth or savings is the "stock," saving (income minus expenses) is the "flow"; you can increase savings (the stock) by saving (the flow) more, as will be described below. Budgeting your income and expenses helps you do this, and it gives you a way to measure the increase (or decline) of your net worth, on a yearly, monthly, weekly, or even daily basis. In order to budget, you first need to understand your income and expenses. You can monitor your money coming in and money going out for a specific time frame—a week or a month, or more. The resulting **income and expense statement** will then help you to create a **budget**, or the plan for managing your household (or business) income. The interaction of these three tools is shown in Figure 3-1 and this chapter will explain how to work with each of them.

Figure 3-1: Tools to Manage Your Finances and Increase Your Wealth



How the tools introduced in Chapter 3 help you manage your finances and improve your wealth.

#### **CASH FLOW**

A good understanding of your personal cash flow is the most powerful tool available for answering the first question for financial decision making: How will this decision affect my present finances? Cash flow simply refers to the accounting of how money flows into your personal accounts (**cash inflow**) and how you spend it (**cash outflow**). One way to visualize cash flow is as the actual flow of water, as shown in Figure 3-2.

#### Figure 3-2: A Visual Representation of Cash Flow



The incoming flow of water represents all income received during a given period of time. The outflow represents money spent on expenses and bills or committed to an account, such as savings or retirement, in that same time period. The difference between the incoming and outgoing amounts is what is available to spend on extras or to save. The current state of your finances is largely the result of prior financial decisions and life history; the state of your future finances will be impacted by the decisions you make today.

#### **Inflows and Outflows**

For people just starting out in the work world, one surprising aspect of cash flow is that the outflow can begin even before you receive your paycheck. Your **take home pay**, which is the amount you receive from your employer, is less than your gross pay, because quite a bit is subtracted from it before it gets to you. You can determine how much is being subtracted by using a paycheck calculator or by reviewing your paystub. The example below shows the output of a typical paycheck calculator for someone earning a salary of \$42,000 per year (for the last fiscal full year, which is 2017), detailing all of the deductions that would appear on the statement that accompanies the check. These include federal taxes, Social Security and Medicare deductions, and state income tax (in the case below for Maine).

## Figure 3-3: Paycheck Calculator

Your F	ay Check Res	ults	Calculation Based	d On
Monthly Gros	ss Pay	\$3,500.00	Tax Year	2017
Federal With	holding	\$471.98	Gross Pay	\$42,000.00
Social Securi	ty	\$217.00	Pay Frequency	Monthly
Medicare		\$50.75	Federal Filing Status	Single
Maine		\$170.00	# of Federal Exemptions	0
			Additional Federal W/H	\$0.00
Net Pay		\$2,590.27	State	Maine
			Filing status	Single
			Allowances	0
			Additional State W/H	\$0.00
N	ew Calculation		Print Options	

## The Paycheck Calculator

Calculator @1999-2018 Symmetry Software. Powered by PaycheckCity.

Caption: Sample output of a paycheck calculator for a monthly check based on annual salary of

\$42,000. *Source*: Authors' calculation generated by Symmetry Software.

How much, really, is \$42,000 per year as a salary? If you assume that a person works 50 weeks per year (two weeks of the year as vacation) at 40 hours per week, then they have worked 2,000 hours.

42,000/2,000 hours = 21 per hour.

Is this a good wage? The Social Security Administration reported an average wage of \$26.98 per hour in June 2018. But this is across all age brackets. For someone just out of college with a non-technical degree, this is slightly better than average. As a point of comparison, the highest minimum wage in 2018 was \$12.50, while the lowest was \$5.15 for the United States.

After required federal and state withholding (taxes), **Social Security** (the national system that provides for people who are retired, unemployed, or disabled), and **Medicare** (the national health insurance program for people over age 65), a \$42,000 per year salary translates to a net monthly salary of \$2,590. In addition to these deductions, there could be others: for example, payment to a retirement account or coverage for personal health insurance through your employer. What is left is your **take-home pay**, which is the money that you have to cover bills and other expenses, which are further outflows of cash.

It's important to note that employee benefits, although not directly taken into account as pay, have a big impact on your finances, as is described in Understand the Math 3-1: The Value of Employee Benefits.

#### [Insert Understand the Math 3-1: The Value of Employee Benefits here]

#### **Tracking Cash Flow Using Income and Expense Statements**

One tool frequently used to understand your present situation and current cash flow is an **income and expense statement**. This is nothing more than a record of all income for a given period (say a month) and all expenses. Creating this statement can be as simple as using pen, paper, and a calculator, writing in all of your personal income and expense categories and doing the math required to determine your cash flow for the period, as shown in Table 3-1. A spreadsheet program such as Excel is a useful tool as it can be programmed for all of the entries representing your sources of income and your expenses and can do the calculations for you. You can find programmed spreadsheets for income and expense statements, budgets, and balance sheets on this book's companion website, and instructions for working with spreadsheets in the Resources section. Before trying to control your cash flow, you need to know its present condition. Every month will look slightly different, so to get a good idea of your cash flow, you need to track every purchase you make and bill that you pay for a few months. Here is what a typical income and expense statement might look like:

After-Tax Income	\$2,590
HOUSING:	
Rent	\$995
Heat	included with rent
Electricity	\$55
Phone	\$40
Internet	\$45
Cable	bundled with Internet

<b>Table 3-1 Income and Expe</b>	se Statement for One Mont	th
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Water	included with rent			
Trash removal	included with rent			
HOUSING TOTAL	\$1,135			
TRANSPORTATION:				
Car: payment	\$185			
Car: insurance	\$110			
Car: registration	\$20			
Car: repairs	\$90			
Car: gas	\$120			
Bike, bike rental:	\$20			
Bus/cab/share transportation:	\$20			
Train:	\$0			
Air/flights:	\$0			
TRANSPORTATION TOTAL	\$565			
LOAN PAYMENTS:	1			
Student loan	\$250			
Credit card	\$75			
LOAN PAYMENTS TOTAL	\$325			
PERSONAL ITEMS:				
Groceries	\$200			
Clothes	\$25			
Household supplies	\$20			
Personal supplies	\$10			

PERSONAL ITEMS TOTAL	\$255
ENTERTAINMENT:	I
Dining/drinks out	\$50
Movies, concerts, etc.	\$30
Other	\$50
ENTERTAINMENT TOTAL	\$130
VOLUNTARY RETIREMENT	\$500
CONTRIBUTION	
TOTAL EXPENSE	\$2,910
TOTAL INCOME	\$2,590
DIFFERENCE	- \$320

There are a few important things to notice in this budget. This person has only one source of income. It is easy to imagine multiple sources: a second job, gratuities, rental income, etc. All of these would count as income. Also, this person is doing some things that may seem strange: coming up short on household expenses while contributing to a savings account, for example.

What can you learn from this statement? In this particular month, the person tracking their income and expenses had a negative cash flow. Perhaps this month's income and expenses are unusual and in other months, the cash flow would be positive and it would all balance out. Or perhaps not, and the deficit is being covered by use of a credit card or other loan. The fact that this person paid \$75 to a credit card company may mean that he or she is carrying a balance on the card that is getting larger each month. Or it may just mean that they paid off a full credit card balance of \$75.

#### [Insert Understand the Math 3-2: Implications of a Credit Card Balance]

#### **Cash Flows and Decision Making**

The first question for financial decision making, "How will this decision affect my present finances?" is fundamentally a question about cash flow. Creating an income and expense statement and then thinking about what it shows lets you thoughtfully examine your spending habits and obligations in relation to your income. Incorporating the likely results of a financial decision into that statement, for example your decision to spend more on food, gives a projection of the effect that decision is going to have. Will your decision cause an increase or a decrease in your cash flow? Will you feel like you are falling behind each month? Will you need your credit card to make ends meet? Tracking your monthly cash flow with an income and expense sheet is the first step in taking control of your financial decision making.

We can look at the expense items in Table 3-1 as percentages of total expense, shown in the pie chart below (Figure 3-4). The chart illustrates the composition of the expenses—which ones are substantial portions of your budget and which have a smaller impact. Examining expenses in this format can offer a useful way to make a budget adjustment if you need to. For example, from the chart we can infer that a 10% reduction in housing cost would have a much bigger effect on the budget than a 10% reduction in personal expenses, because housing is a bigger piece of the overall budget pie.



Figure 3-4: Budget categories for expenses detailed in Table 3-1

## [Begin Case Study Part 1]

#### Case Study Part 1: Kelly's Persistent Problem

Kelly has been out of college for six years and works for the National Park Service in Portland, Maine. She earns \$42,000 per year, lives in an apartment by herself, and has a modest lifestyle. Each month, she contributes \$500 to her tax-deferred 401(k) retirement account. Additionally, she puts \$50 into a savings account each month in case of an emergency. She has \$13,100 in student loan debt, owes \$1,000 on her car, and has \$2,000 in credit card debt.

Kelly feels okay about her finances, with the exception of her credit card debt. Though she pays more than the minimum each month, she has been carrying a balance on her credit card. In the past, she has managed to reduce the balance when she's gotten a tax refund, but she knows that's not a sustainable solution. Kelly finally turned her attention to her finances and with the following goals in mind:

- 1) Pay off her credit card and car debt.
- 2) Continue to contribute to her retirement account for future financial security.
- 3) Determine where her money is coming and going and learn to budget.

Kelly calls her fun and frugal cousin, Maria, and asks her for advice. Maria suggests that Kelly create an income and expense statement to account for all transactions in the prior month to see where she might cut costs (see Table 3-2).

After having done it, Kelly studies the statement. It is obvious that her car is costing her a lot of money, relative to her overall budget: the \$185 monthly car payments will continue for another year and she also has to pay for insurance, registration, and repairs. (These are not monthly costs, so to incorporate them into her income and expense statement, Kelly divides the annual cost by twelve.)

After-Tax Income:	\$2,553
HOUSING:	
Rent	\$995
Heat	included with rent
Electricity	\$55
Phone	\$40
Internet	\$45
Cable	bundled with Internet
Water	included with rent

 Table 3-2 Income and Expense Statement for One Month

Trash removal	included with rent			
HOUSING TOTAL	\$1,135			
TRANSPORTATION:				
Car: payment	\$185			
Car: insurance	\$110			
Car: registration	\$20			
Car: repairs	\$90			
Car: gas	\$120			
Bike, bike rental	\$20			
Bus/cab/share transportation	\$20			
Train	\$0			
Air/flights	\$0			
TRANSPORTATION TOTAL	\$565			
LOAN PAYMENTS:				
Student loan	\$250			
Credit card	\$75			
LOAN PAYMENT TOTAL	\$325			
PERSONAL ITEMS:				
Groceries	\$200			
Clothes	\$25			
Household supplies	\$20			
Personal supplies	\$10			
PERSONAL ITEMS TOTAL	\$255			

ENTERTAINMENT:	
Dining/drinks out	\$50
Movies, concerts, etc.	\$30
Other	\$50
ENTERTAINMENT TOTAL	\$130
CONTRIBUTION TO EMERGENCY	\$50
FUND:	
VOLUNTARY RETIREMENT	\$500
CONTRIBUTION	
TOTAL EXPENSE	\$2,960
TOTAL INCOME	\$2,553
DIFFERENCE	\$-407

## **Discussion Questions**

- 1. What are the problems of setting saving goals without looking at an income and expense statement?
- 2. What are some factors contributing to Kelly's expenses being higher than her income?
- 3. Are there any aspects of Kelly's income and expense statement that surprise you?

Explain your answer.

[End Case Study Part 1]

## THE BALANCE SHEET

The second tool that gives useful information about your current financial situation is the

**balance sheet**. The chapter introduction asked you to think of your well-being as connected to your net worth. Net worth is a larger picture of your financial situation than an income and expense statement. How a financial decision will impact your balance sheet is a big part of the answer to Question 1, "How will this decision affect my present financial situation?"

Businesses make use of balance sheets to track their net worth, and individuals and families can use this tool too. A basic balance sheet setup is shown in Table 3-3. On one side, the balance sheet lists all of your **assets**—cash and liquid assets, your investments, and your possessions—with a dollar value assigned to each of them. At the bottom of that list is the sum of these values: your total assets. On the other side, the balance sheet lists all of your **liabilities**. This is a list of what you may owe—student loans, home mortgages, car loans, outstanding credit card balances.

At the bottom of that list is the sum of these values: your total liabilities. Listed below the liabilities is your net worth, the difference between what you have and what you owe, which is calculated using the formula

#### Assets – Liabilities = Net Worth

Below the net worth calculation is a sum that shows that the balance sheet does balance:

net worth + total liabilities = assets

Table 3-3: Balance Sheet		
Assets Liabilities		
List of assets	List of liabilities	
	Total liabilities	
	Net worth	

Total assets	Total liabilities + net worth

You can create a balance sheet simply by using a pen, paper, and calculator, writing in all of your assets and liabilities and doing the math required to determine your net worth. Or you can use a spreadsheet to do this. (A spreadsheet template for a balance sheet is available for download from this textbook's companion website.) The income and expense statement is closely related to the balance sheet, as the bottom line of the income and expense statement is going to be added to (or subtracted from) the balance sheet. For example, if you spend \$300 less than your earnings in a year, this amount can be added to your stock of wealth, increasing your assets.

A person just coming out of school and starting their first job may well have negative net worth, as shown in Table 3-4, below. This balance sheet for a recent graduate with a student loan of \$22,500, no car, and \$1,000 in the bank shows a net worth of -\$21,500, which sounds horrible. But if you think of this recent college graduate as a business just starting out, it's not so bad. Having negative net worth is not the same thing as being bankrupt—it means that for now, this person has more liabilities than assets, but some good raw materials are there: a college degree and a little money in the bank. If that "business" continues to improve its product and/or services, brings in income that increases year after year, and keeps costs down, the net worth will increase over time. And though the total student loan debt looks like a large sum, its implication is a known monthly payment over a predictable time period, and that cost will be offset by regular income, once the new graduate begins working.

According to the life cycle theory of consumption and saving described in chapter 1, young people should look ahead and consider not just their current income but also their future

income. Young people will have taken out loans to invest in their education. When they start working, they will have to repay these loans. Because of the investment in education, young people will likely face an upward-sloping income profile, meaning income will keep rising in the future and they will be able to use the higher income earned later to repay any debt incurred while in school. Of course every theory comes with a lot of assumptions. In this case, one assumption is steady employment and increasing income throughout your working life. Another assumption is that debts incurred while young are not too large to pay off in the future.

Table 3-4: Balance Sheet for a Recent College Graduate			
Assets Liabilities		ies	
Checking account	\$900	Student loan debt	\$22,500
Cash	\$100		
		Total liabilities	\$22,500
		Net worth	-\$21,500
Total assets	\$1,000	Total liabilities + net worth	\$1,000

An objective of this new graduate is to increase his or her net worth over time, which will happen if he or she routinely asks the second question for financial decision making, "How will this decision affect my future financial situation?"

#### **Taking Assets into Account**

In the example above, the recent college graduate has only a small amount of assets to report on the asset side of her balance sheet. As your wealth grows and life becomes more complicated, the items you may think of as assets can vary greatly. Expensive possessions such as houses, cars, boats, or jewelry all count as "assets." These items do not put any money in your pocket in the short run. In fact, it takes a lot of money to maintain houses and cars, which takes a toll on your cash flow. But they count as assets because you could sell them and get the money that they are worth.

As you grow your wealth you may invest money in various ways. You may own stocks, bonds, or mutual funds. You might have a retirement account. These various financial instruments also count as assets. Roughly speaking, assets can also be classified as liquid versus illiquid, depending on how quickly they can be transformed into cash. Money in a checking account is very liquid. As we will discuss in future chapters, it is normally easy to sell a short-term bond quickly and without having to suffer a loss in the selling price. But that is not necessarily the case for assets, such as stocks, whose prices are subject to potentially wide fluctuations. The same can be said for a house. It can take time to sell a house and there can be many costs associated with selling such an asset. There are assets, such as retirement accounts, that cannot in general be accessed without paying a penalty. Thus, not just the total assets but the composition of those assets matter in your balance sheet.

As your wealth increases and life becomes more complicated, your balance sheet will reflect that. The balance sheet of someone in mid-life is likely to be much more detailed than the one shown in Table 3-3.

#### [Insert Understand the Math 3-3: Growing Your Assets]

#### Valuing Your Possessions

In order to create a balance sheet, you have to know the value of your material possessions. A

bank account, stock, or mutual fund is a type of possession that has stated value attached. On any given day, you can look up the price of your mutual fund or stock portfolio because there is a market in which they are bought and sold. Material possessions also have values that change as time passes. A house may appreciate, or grow in value. Most cars, on the other hand, depreciate, or lose value. The same is true of other major possessions.

For each one of these physical possessions there are tools for estimating its value. For example, if you are applying for a loan to buy a house, the bank will send an appraiser to determine its market value, which is based on the home's features and the prices of recently sold houses in the area. In the case of a car, there are online services that give an estimated value for any type of car of any age.

When creating a balance sheet for your own use you may prefer to omit some personal possessions, under the assumption that in the short run, you are going to keep them and not redeem their value in cash. But from the perspective of a bank, those possessions count.

#### **Taking Liabilities into Account**

A liability is any debt that is owed. In the example above, it was a college loan. But it also could include credit card debt, car loans, mortgages on houses or other buildings, and so forth. All of these must be accounted for in a balance sheet. If you have a car worth \$15,000 but have a car loan on which you still owe \$10,000, the \$15,000 counts as an asset, but it is offset by a \$10,000 liability.

Liabilities normally have different maturities as well as different payment structures. For example, mortgages, car loans and student loans normally require monthly payments to be serviced and have maturities, indicating how long you have to pay to extinguish the debt; a 30-

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year mortgage means you have to make monthly payments for 30 years. Maturities can be shorter as well; for example, a car loan may be for 5 years only. Credit card debt does not have a maturity, meaning you can roll it over for several months or even years.

As for assets, the composition of debt also matters: you need to service the debt, i.e., you need to make sure you are able to make the payment and this is why balance sheet and cash flows are linked: if you have a lot of debt, you could have a negative cash flow resulting from regular debt payments. In addition to looking at assets and liabilities in isolation, it is also useful to look at them as a part of the whole (the balance sheet) and do some comparisons. For example, someone could have a lot of assets, but if those assets were bought with debt, the net worth of that person may be very low. In some cases, the net value of some assets can even be negative. For example, the value of a house may go down so much that, when considering the resale value minus the value of the mortgage, it is actually a negative value. That is why it can be useful to look at ratios: if the value of the mortgage over the value of the house is very high, it may be easy to end up with a negative value, if home prices were to decline. If the ratio of liquid debt to liquid assets is very high, you may have problems servicing the debt, or may have to sell illiquid assets.

We could also link the balance sheet to the income and expense statement. For example, if you carry a lot of debt, it may be important to consider the payments required to service the debt with respect to income. For example, if a large part of net income has to be devoted to servicing the debt, you may end up with little left over for bills or other expenses.

#### [Begin Case Study Part 2]

#### Case Study Part 2: Kelly Considers Her Balance Sheet

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Next, Maria suggests that Kelly create a balance sheet to get an overall sense of her financial situation (see Table 3-5).

Table 3-5: Kelly's Balance Sheet				
Assets	S	Liabilit	ies	
Bank savings account	\$3,000	Student loan debt	\$13,100	
Car resale value	\$2,600	Car loan	\$1,000	
Retirement accounts	\$10,000	Credit card debt	\$2,000	
		Total liabilities	\$16,100	
		Net worth	-\$500	
Total assets	\$15,600	Total liabilities + net worth	\$15,600	

The negative net worth is initially distressing to Kelly, but six years ago, upon graduating from college, she had no assets and more debt, so her balance sheet has been moving in a positive direction over time. This realization makes Kelly feel better. Also, she is happy she has built up a retirement fund.

To keep her balance sheet moving in a positive direction, Kelly needs to keep her expenses lower than her income. She also needs to look at the composition of her balance sheet.

#### **Discussion Questions**

- Sometimes people refer to someone's wealth by saying that that person is "worth two million dollars." Explain how it is possible that someone could be worth two million dollars and yet have a cash flow problem.
- 2. What interest rates do you expect are associated with the different assets and liabilities in

Kelly's balance sheet? Discuss the implications of those different interest rates on her assets and liabilities over time.

3. Kelly could pay off her credit card bill using the money in her savings account. What are the advantages and disadvantages of doing so? If Kelly were to do that, what impact would that decision have on her present finances? Her future finances? Is she taking any risks to do so?

[End Case Study Part 2]

#### **BUDGETS AND BUDGETING**

The income and expense statement is a tool that shows how much money is coming in and how much is going out *in a given time period*. A **budget** is a *plan for the future*. The budget describes in detail how you can allocate your income in a given time period so that your money is going where you want it to, you have a positive cash flow, and you grow your net worth.

#### Using a Budget to Control Expenses

A budget is a personalized plan to manage and control spending so you can meet financial needs and goals. Income and expense statements provide the information needed to create a budget; the budget gives you guidelines that help control your spending in a certain time period. You can think of a budget as a tool that you create to manage your own behavior. Your budget tells you whether or not you can afford to go out to dinner or buy a new pair of jeans. Your budget is flexible: you can alter it to suit your changing financial situation, goals, and desires. The expense categories in your budget should correspond to those in your income and expense statement, as those are categories that you have identified as expenditure areas. The difference may indicate changes you must make to stick to your budget.

Expenses can also be divided into fixed and variable expenses. It is important to take that distinction into account when making a plan because, while there is often little or no flexibility in fixed expenses (such as rent, cable, some utilities, etc.) at least in the short term when contracts can be considered fixed, one can look for adjustments in the variable expenses.

Table 3-6 shows a sample monthly budget for a person living in an apartment with no car and several important utilities included in the rent.

Budget item	Expected cost
HOUSING:	-1
Rent	\$1,025
Heat	included with rent
Electric	\$55
Phone	\$7
Internet	\$10
Cable	\$0
Water	included with rent
Trash removal	included with rent
HOUSING TOTAL	\$1,097
TRANSPORTATION:	
Car: payment	\$0
Car: insurance	\$0

 Table 3-6: Sample Monthly Budget

Car: registration	\$0
Car: repairs	\$0
Car: gas	\$0
Bike:	\$30
Bus:	\$50
Train:	\$50
Air:	\$50
TRANSPORTATION	\$180
TOTAL	
LOAN PAYMENTS:	<u> </u>
Student loan	\$250
Credit card	\$0
LOAN PAYMENTS	\$250
TOTAL	
PERSONAL:	<u> </u>
Groceries (from store)	\$200
Clothes	\$25
Household supplies	\$10
Personal supplies	\$100
PERSONAL TOTAL	\$335
ENTERTAINMENT:	<u>I</u>
Dining/drinks out	\$50
Movies, concerts, etc.	\$30

Other	\$50
ENTERTAINMENT	\$130
TOTAL	
RETIREMENT SAVINGS	\$50
CONTRIBUTIONS	
TOTAL EXPENSE	\$2,042
TOTAL INCOME	\$2,053
DIFFERENCE	\$11

#### A Budget as a Tool for Decision Making

Once you have created a budget and decided to stick with it, it makes your spending decisions for you, assuming nothing unexpected arises. Ensuring that you are sticking to your budget involves tracking your expenses closely to see how well you are able to meet the budget you've set for yourself. It also involves exercising self-control over purchases, and sometimes being clever about buying things you want so that you pay little for them, perhaps by doing some searching to find the best possible price on something you need. Learning a few skills, such as cooking, ironing, or carpentry, so that you can do some things yourself instead of paying a premium for them can also be helpful. Setting priorities and being willing to satisfy only the top-priority items in a given month can help your budget succeed. Tracking your expenses reveals where your money is really going and will motivate you to avoid unnecessary purchases.

## [Insert Mistakes People Make 3-1: Failing to Expect the Unexpected]

You can think of creating and sticking to a budget as a game, but one that you play all the time, which can be both challenging and interesting. It's the modern-day version of being a

hunter in the wilderness—relying on skill and cleverness rather than immediately available resources. As such, it brings similar rewards—scoring a great piece of furniture for next to nothing can feel like you managed to bring down a bison—with all the psychological benefits and far less mess.

For example, the budget above accounts for \$200 a month, or \$50 per week, for groceries. If you believe you have \$50 per week to spend on groceries, it is very easy to spend that amount. But perhaps you could revise your budget and spend just \$40 per week. How could you figure out if this is possible? A trip to the grocery store and some online research might give the following possibilities:

Forty dollars might buy a pound of ground beef, a pound of dried beans, a pound of rice, some onions, a bag of carrots, a head of lettuce, chili seasoning, oranges, a pound of cheddar cheese, a loaf of bread, peanut butter, cereal, and milk. This provides a lot of food overall, with meals consisting of chili, grilled cheese sandwiches, peanut butter sandwiches, dry salad, and oranges—enough to last one person all week and then some.

A determined budget designer would have several options for a successful \$40 per week grocery budget.

Breaking the weekly grocery budget into subcategories makes it easier to see how to make it work. Buying larger quantities of staples and spices in bulk will save money, although it may require thinking ahead on a monthly rather than weekly basis. Using a big bulk retailer once a month makes it possible to stock up cheaply on certain items. Thinking ahead this way requires care, as the big initial expense will reduce the amount available in subsequent weeks.

#### [Insert Mistakes People Make 3-2: Spending More by Eating Out]

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#### [Begin Case Study Part 3]

#### Case Study Part 3: Kelly Comes Up with a Budget

Kelly is determined to develop a plan that keeps her from coming up short each month. As she contemplates this problem, she thinks about her options for paying off her credit card debt: (1) use her savings; (2) ask her parents for a low-interest loan; (3) wait for her tax return.

Option 1 would significantly deplete her emergency savings. Option 2 would mean asking her parents for a loan and making regular repayments to them but at a lower interest rate than her credit card charges. Option 3 would retain her savings and not involve her parents, but interest would accrue on her balance in the months before her tax refund arrives.

With Maria's help, Kelly identifies a few potential areas for reducing her monthly expenses.

Kelly has a college friend who is moving to Portland and is looking for an apartment. Kelly's lease is almost up, so she and her friend decide to share an apartment. They find a twobedroom apartment for \$1,800 with some utilities included. The roommate agrees to pay slightly more to have the larger bedroom. Kelly expects her electric bill will be lower, too, as costs will be shared. Kelly finds a cheaper phone provider and plans to go without cable.

Next, Kelly considers her car. If she pays off the \$1,000 she owes using her savings, she can reduce her insurance premiums, as the higher collision insurance coverage will no longer be required. Kelly will be able to get just liability insurance for \$600 per year, or \$50 per month. She decides to pay off the car and change her insurance policy. Her new apartment is not far from her office, so she decides to cut her gas consumption by buying a \$360 bicycle to use in nice weather. Kelly accounts for the used bike's cost as a monthly \$30 cost.

Kelly approaches her parents about the credit card bill and asks them for a short-term

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loan to be paid back after her income tax refund arrives. Her parents agree and she pays off the credit card. Kelly goes even further, aiming for a shopping "diet." She plans to do some research to lower the cost of monthly groceries and other items. Table 3-7 shows Kelly's budget and how it compares to her previous monthly expenses.

Budget item	Kelly's original monthly	Kelly's new monthly
	expenses	budget
HOUSING:	1	
Rent	\$995	\$800
Heat	included with rent	included with rent
Electricity	\$55	\$35
Phone	\$40	\$15
Internet	\$45	included with rent
Cable	bundled with Internet	\$0
Water	included with rent	included with rent
Trash removal	included with rent	included with rent
HOUSING TOTAL	\$1,135	\$850
TRANSPORTATION:		
Car: payment	\$185	\$0
Car: insurance	\$110	\$50
Car: registration	\$20	\$20
Car: repairs	\$90	\$90

Table 3-7: Kel	lv's Monthly	y Budget Com	pared to Her	<b>Current Expe</b>	nses
	ly s monun	Duuget Com	parca to mer	Current Lape	11000

Car: gas	\$120	\$60
Bike, bike rental	\$20	\$30
Bus/cab/share transportation	\$20	\$0
Train	\$0	\$0
Air/flights	\$0	\$0
TRANSPORTATION TOTAL	\$565	\$250
LOAN PAYMENTS:		
Student loan	\$250	\$250
Credit card	\$75	0
LOAN PAYMENTS TOTAL	\$325	\$250
PERSONAL:		
Groceries (from store)	\$200	\$152
Clothes	\$25	\$20
Household supplies	\$20	\$8
Personal supplies	\$10	\$8
PERSONAL TOTAL	\$255	\$188
ENTERTAINMENT:	1	
Dining/drinks out	\$50	\$50
Movies, concerts, etc.	\$30	\$30
Other	\$50	\$0
ENTERTAINMENT TOTAL	\$130	\$80
CONTRIBUTION TO	\$50	\$50
EMERGENCY FUND		
	•	•

VOLUNTARY RETIREMENT	\$500	\$500
CONTRIBUTION		
TOTAL EXPENSES	\$2,960	\$2,168
TOTAL INCOME	\$2,553	\$2,553
DIFFERENCE	\$-407	\$385

Kelly is thrilled with her new plan. If she is able to stick to this budget, she will even have extra cash.

#### **Discussion Questions**

- 1. What would you have recommended Kelley to do in order to increase her saving. Do the income and expenses statement that would have resulted from your suggestion.
- 2. What do you think the hardest aspect of sticking to Kelly's budget will be? Explain your answer.
- 3. Do you recommend Kelley to keep contributing to a retirement account? Why or why not?

[End Case Study Part 3]

## WORKING WITH THE THREE QUESTIONS

In the course of this chapter, you learned how to use income and expense statements, balance sheets, and a budget to understand your current financial situation and predict the impact of financial decisions on your future situation. These are powerful tools to help answer the questions:

- 1. How will this decision affect my present finances?
- 2. How will this decision affect my future finances?
- 3. What risk will I be taking with this decision?

#### 1. How will this decision affect my present finances?

The decision to track your income and expenses and net worth (using a balance sheet) and the decision to create a budget gives you some control over your cash flow. Understanding your current financial situation via an accounting of income and expenses for a certain time period gives you valuable insight into your spending needs and habits. Once you have a budget, you can assess how financial decisions you regularly face impact your cash flow. A budget is a powerful thing. It gives you structure to manage your spending and that gives you a measure of control over your financial future.

Your budget usually has more flexibility than you realize. While some expenses are not easily negotiable—as mentioned before, they are normally fixed (you must make your loan payments, pay taxes, and pay for health insurance)—there are things that you likely need to spend some money on (utilities, food, transportation) but the amounts can vary; these are the variable expenses. These are some of the bigger expenses you're likely to have, and careful choices here, such as turning down the heat and using less hot water, can save big money, making the difference between getting ahead and falling behind every month.

Finally, even small expenses can matter. For example, in a grocery budget, not paying attention to categories of food could easily result in a repetitive, unbalanced diet. Ultimately, such a diet could cause you to run out and splurge on something delicious, ruining the good intentions of a food budget.

#### 2. How will this decision affect my future finances?

Goals matter. Having stated goals for saving (whether the purpose is vacation, future education, a house, or for a rainy day) enable you to construct a budget for getting ahead, rather than just getting by. Having a budget that accounts for or results in regular saving means that your net worth will grow. This will be reflected in changes in your personal balance sheet over time. There is a world of difference between getting by and getting ahead.

Here is an example of how the concepts introduced in chapter 2 along with the tools of budgets and balance sheets can grow net worth. Suppose in a few years Kelly wants to buy a new used car. She could take out a loan for \$6,000 or use her savings. Which is a better idea? As far as the balance sheet shows, it's the same either way on the day she makes the purchase. But because payments are made over time, and interest on an investment accrues over time, these two options are rarely the same.

Kelly's investments are growing at 5% per year on average. If her car loan charges 6% interest, then taking out that loan will cost her 1% per year more than if she used her savings to buy the car. But if the loan is only at 4% per year, then she will be ahead 1% per year by taking out the loan and keeping her money in her investment account.

Using a financial calculator, we can test this possibility:

If Kelly invests \$6,000 at 5% per year, compounded monthly, after four years it will grow to \$7,325.37.

If she takes a loan for \$6,000 at 6% interest for four years, Kelly's monthly payment would be \$140.91, and the total paid will be \$140.91 \* 48 months = \$6,763.38.

If, instead, Kelly put that \$140.91 into an investment account every month, at 5% per

year compounded monthly, it would grow to \$7,501.45 during the same four years.

In this situation, Kelly is better off buying the car outright and paying herself back at the rate she would have had to pay off the loan. She would be about \$176 ahead this way (\$7,501 - \$7,325 = \$176) at the end of 48 months. In addition, she will have paid less for the car. She'll have saved \$736.38 on the price of the car.

As the interest rate of a loan rises, it becomes more and more profitable to "borrow" from yourself, as long as you promise to pay yourself back. In the example above, if Kelly is not willing to pay herself back, at the end of four years she has a car paid off, but has \$7,325.37 less in her investment account than otherwise, no matter what the interest rate might be. That will have an impact on her balance sheet.

#### 3. What risk will I be taking with this decision?

Monitoring your income and expenses, managing your cash flow, and creating and working with budgets are important skills to have. Not only can they help your personal finances, but they can make or break a business. These skills can help reduce the risk of financial trouble in two ways. First, they give you the capacity to create a "rainy day fund" to handle modest financial emergencies. Second, they give you the skill and discipline to reduce your budget when times get rough.

**Rainy day funds** (reserving some money for unexpected changes in employment or expenses) can be vital to meeting expenses. For your financial security it is important that your rainy day fund has sufficient resources to cover a potential loss of income or an emergency. Unemployment is a risk we all face.

The Bureau of Labor Statistics reports that the median duration of unemployment in the

United States in 2017 was 24–27 weeks (depending on the month). That means that half of the people who were unemployed during a given month had been unemployed for at least 24–27 weeks, or about 6 months. Financial planners suggest that a rainy day fund should cover 3 to 6 months of lost income. See Figure 3-5 for an illustration of how much the duration of unemployment has varied in the past.

**Figure 3-5: Data on duration of unemployment from the U.S. Bureau of Labor Statistics** Average Weeks Duration of Unemployment: 1970-2017



Source: Federal Reserve of St. Louis Economic Data (FRED).

The amount of cushion you need depends on your circumstances: Is the work you do in demand locally, or would you have to search extensively or perhaps move a long distance to get similar work? Are you the sole breadwinner? If you are part of a couple, could you live on just one salary? Do you have access to a line of credit at a reasonable interest rate? And so forth. There can also be emergency expenses, not covered by insurance, such as out of pocket medical bills or a car repair. These questions all relate to **liquidity**: how much do you, personally, need to have available as liquid investments to help cushion you financially in times of job loss or other unexpected financial emergencies.

#### **CHAPTER SUMMARY**

Constructing and sticking to a budget leads to control over your financial future, and balance sheets, income and expense statements, and budgets are useful tools for understanding and managing your finances—for assessing the current state of your finances and getting yourself to where you would like to be in the future.

Using all of these tools involves some simple but important math: adding up your assets and liabilities and computing the difference to see your net worth; comparing interest rates so you can decide where your money is generating the most value; and adding up your expenses and comparing them with your sources of income to see if you can save and thus add to your stock of wealth.

Tracking your monthly income and spending with an **income and expense statement** gives you important information. By looking carefully at your expenses, you can see where you are spending more than you want to or need to and where you can save. It's important to remember that some expenses come up less than once a month. If you are using monthly costs to understand your expenses, you need to determine the per-month cost of an expense that might come up just once or twice per year.

• A **balance sheet** gives you an idea of where you stand, financially. Using a personal balance sheet to calculate your net worth on a regular basis helps you see if you are moving toward or away from your financial goals.

- A balance sheet can sometimes be deceptive, however, because it only tells you the current state of your net worth. It does not show how net worth is growing or declining.
- A **budget** that you create and stick to can enable you to meet your expenses and save money that can contribute to your net worth. Making sure you are saving regularly means you are building up your net worth over time.
- Saving money in an accessible account (like a bank account or another liquid asset) can provide a cushion in case of bad luck. Savings provide resilience against risk. No budget can stop certain kinds of bad things from happening, but it can help you get through difficult times much more gracefully.
- Every purchase that you borrow money for is money borrowed from your future self. For large purchases, it is good to think this way, and if you are the lender with the best deal, take it! Be sure to use your budgeting skills to make a plan to pay yourself back.

#### **KEY TERMS**

Asset An item on a balance sheet that represents what an individual or business owns.Balance sheet A statement of assets, liabilities, and net worth of an individual or business at a particular point in time.

Budget A plan used to decide how much money can be spent and how it will be spent.

**Income and expense statement** An accounting of an individual or business's revenues (inflows) and expenses (outflows) in a given time period.

Cash inflow Money coming in.

**Liability** Ability to convert an asset to cash quickly and with minimal cost and loss in value of the asset.

**Liquidity** Cash, cash equivalents, and other liquid assets that can be easily converted into cash, or liquidated.

**Medicare** The federal health insurance program that covers people with certain disabilities and people age 65 and older.

Net worth The difference between total assets and total liabilities.

Cash outflow Money going out.

Rainy Day Fund Money set aside to cover unexpected expenses or emergencies.

**Social Security** The US federal insurance program that provides benefits to people who are retired, unemployed, or disabled.

**Take-home pay** The amount of payment received by an employee after taxes and other obligations are deducted from the income for that time period.

#### **CHAPTER HOMEWORK**

#### **Check Your Understanding**

1. A person whose balance sheet has \$10,000 in assets and \$6,000 in liabilities has a net worth of...

a. \$10,000

b. \$6,000

c. \$4,000

- d. \$0
- e. -\$4,000
- f. -\$6,000

g. -\$10,000

2. A person whose balance sheet has \$6,000 in assets and \$10,000 in liabilities has a net worth of...

- a. \$10,000
- b. \$6,000
- c. \$4,000
- d. \$0
- e. -\$4,000
- f. -\$6,000
- g. -\$10,000
- 3. A person whose balance sheet has \$10,000 in assets and \$10,000 in liabilities has a net worth

of...

- a. \$10,000
- b. \$6,000
- c. \$4,000
- d. \$0
- e. -\$4,000
- f. -\$6,000
- g. -\$10,000
- 4. A person whose financial balance sheet has \$0 in assets and \$6,000 in liabilities has a net

worth of...

- a. \$10,000
- b. \$6,000
- c. \$4,000

d. \$0

- e. -\$4,000
- f. -\$6,000
- g. -\$10,000
- 5. A budget is a way to
- a. understand where your money goes
- b. figure out how to save more money
- c. predict future expenses
- d. all of the above
- 6. If your monthly expenses exceed your income, then your cash flow is
- a. too much
- b. probably okay
- c. negative
- d. positive

#### Do the Math

1. Ramon just got his first job out of college. He has a 10-year college loan for \$30,000, \$5,000 in the bank, and a 4-year car loan for \$15,000. Construct his balance sheet. What is his net worth?

2. Ramon's monthly take-home pay from his new job is \$3,000 and his expenses are \$2,700 on average per month. What is the bottom line of his income and expense statement?

3. If Ramon can invest \$300 per month in an account earning on average 6% per year compounded monthly, how much will he have at the end of four years when his car loan is paid?

4. Ramon has invested \$300 per month in an account earning an average of 6% per year compounded monthly for four years. If he leaves that amount in the investment but adds NO MORE to it for six more years, how much will there be at the end of 10 years when his college loan is also paid off?

5. Assume Ramon saved and invested only what is described above, and took out no further loans or carried credit card debt. Construct his balance sheet at the end of the 10-year period.6. Now assume Ramon continued to invest \$300 each month for the entire 10 years. What would his balance sheet look like at the end of that period (assuming no further debt)?

7. Now assume that, in addition to saving \$300 per month at 6% for 10 years, Ramon further reduced his expenses by \$200 per month and put that amount into a retirement account earning an average of 7% per year. What will his balance sheet be at the end of the 10-year period (assuming no further debt)?

#### **Thinking Hard**

For each of the following statements, say whether you agree or disagree and explain why.

- 1. It's always better to pay off debt than to save.
- 2. If you save \$5,000 and take out a loan for \$5,000, your net worth improves.
- 3. It is fine to only pay the interest you owe on a credit card, without reducing the amount owed, because your balance sheet stays the same.
- 4. The balance sheet is not the whole story.
- 5. The budget is not the whole story.
- 6. The balance sheet AND the budget together are still not the whole story.

#### Working with the Three Questions for Financial Decision Making

#### 1. Question 1: How will this decision affect my present finances?

Xinyue is earning a good salary with take-home pay of \$5,200 per month. She has monthly expenses of \$4,100 because she has purchased a condo in an expensive area. She puts \$500 per month into a retirement account, \$200 into a low interest bank account, and the remaining \$400 into a high-interest investment. She would like to buy a high-end piano, which would cost around \$15,000. The music store offers her a loan: \$290 per month for five years. She could do this or she could use her savings because she has enough in the investment account to pay for the piano.

Xinyue is concerned that, after 5 years, she may take a job in another country. She will be unable to take her piano with her and will have to sell it. One alternative is to rent a piano. Xinyue can rent an acceptable piano for \$159 per month plus an extra \$350 for delivery and pick-up.

- a. What do these alternatives do to her cash flow?
- b. Which will cost more money in the short run, buying the \$15,000 piano using the loan and then selling it in five years, or renting the piano for five years? Which will have a bigger impact on Xinyue's monthly budget? How about her balance sheet?

#### 2. Question 2: How will this decision affect my future finances?

The piano loan Xinyue is offered is a five-year loan at 6% interest.

- a. Under what circumstances would it make sense to take the loan rather than buy the piano outright?
- b. If she buys the piano using her own funds, what can Xinyue do to rebuild her net worth

and how long will it take?

Some sources say that after 5 years, a piano is worth about 75% of the value of a similar,

new piano. After 15 years, it is worth about half the value of a similar, new piano.

- a. What will be the approximate value of Xinyue's piano at the moment she pays off a fiveyear loan for it?
- b. Which will cost more money in the long run, buying the \$15,000 piano using the loan and then selling it in five years, or renting the piano for five years?
- c. Which will have a better result for her balance sheet in five years?

#### 3. Question 3: What risk will I be taking with this decision?

There are always risks inherent in making a major purchase like a piano. Things can go wrong with the purchase or with the purchaser's budget.

Suppose Xinyue gets an amazing job offer in Ireland after a year. In one year, a new piano depreciates about 15%.

- a. What will Xinyue need to do to get rid of this piano after one year if she (1) buys it outright, (2) takes a loan, or (3) rents a piano? Use the costs, interest rates, and rental fees described in previous problems.
- b. In each of these scenarios, what would the piano have cost Xinyue for the year she kept it?

#### **Practice Your Decision Making**

For Caetano it amounted to a new year's resolution: He wants to sort out his finances. He wants to know where he stands. He had been working for an engineering firm in Los Angeles for four years since completing his degree. A promising student, Caetano was lucky to get scholarship support and finished his college education with no student loans to hamper him. In fact, he graduated with \$30,000 thanks to a wealthy uncle who was very proud of Caetano's perfect academic record.

Now he is making \$62,000 as a young engineer. In California, this translates to about \$3,565 per month in take home pay after taxes. For the first two years, Caetano still lived like a student, and he saved quite a bit of money. But for the last couple of years he's been having trouble breaking even. He has used up all the money he saved and has started to dip into his \$30,000 "nest egg." He knows that he has gotten sloppy in his spending, and his credit card carries a large balance. He paid little attention to his finances. At 26 years old, Caetano has \$29,000 in savings (earning 6% per year), another \$15,000 in his retirement account (also earning about 6% per year), \$9,000 on his credit card (at 20% interest) and \$3,000 remaining on a car loan (at 8% interest). He has a bank account with almost nothing in it. Until now he has relied on the credit card as a financial cushion against unexpected expenses. This year he discovered, for example, that a root canal equals four car payments.

Frustrated, he reconstructs his expenses for the last few months, and comes up with an expense statement that looks like this:

Retirement fund	\$500
Rent	\$1,500
Gas	\$75
Electric	\$125
Phone	\$40
Cable	\$55

Internet	\$40
Cell phone	\$50
Car insurance	\$155
Life insurance	\$50
Health insurance contribution	\$150
Interest on credit card balance	\$150
Medical/dental expense	\$150
Groceries	\$250
Lunch at work	\$200
Gas for car	\$160
car payments	\$280
Household items	\$30
Personal care (haircuts, etc.)	\$50
Clothes	\$100
Dry cleaning	\$35
Entertainment (restaurants, shows, etc.)	\$250
Gifts and charity	\$100
Miscellaneous	\$100
Total	\$4,595

His expenses are exceeding his income by over a thousand dollars a month! He was automatically enrolled in a retirement account at work and contributing \$500 each month, which is in addition to his retirement savings, but that money is not liquid. Caetano would like to buy a house in the next year or so, propose to his sweetheart, and maybe start a family. Clearly, his finances are standing in the way of the future he imagines for himself.

Caetano has asked you to look over his financial situation. Create a budget that will improve his situation. Use this question as guidance: Is his balance sheet in good shape? Should he be putting more money into his retirement account? Can you help him figure out how to save for a down payment on a house? He expects to need \$50,000 for that. And what about a "rainy day" savings account as a cushion against unexpected events?

Part 1: Do some research about the options open to Caetano for reducing his budget. What is the rental market like in Los Angeles? What are his biggest expenses and how can he lower them?

Part 2: Make a plan. This should include consideration of a rainy day fund, retirement contributions, other savings and planning for a down payment on a house. What does Caetano's balance sheet look like now and what does it need to look like in five years? How much must be saved each year for this to happen? Is it even possible?

#### You Are Your Own CFO

#### **Consider your present situation:**

Use a table like the one pictured below to estimate your expenses over the course of a week. Fill in the estimated expense column in one sitting, thinking about the week ahead and what you expect you'll spend money on. Customize the Expense Item column as necessary to include categories that are unique to you and your habits. Then, over the course of the week, record your actual expenses. At week's end, compare the two. Were your estimates correct, or did you overor underestimate your expenses? Did anything surprise you? Are there changes you'd like to make to your spending? Do not report your estimates or expenses, but do report the percentage of expenses in each category in the table you made, and also the difference in total between your estimates and reality. In which category would a 10% reduction in expense make the biggest impact? Turn one copy in and keep a copy for yourself.

Expense Item	Estimated expense	Actual expense
Housing (rent, utilities, etc.)		
Food (groceries, meals,		
snacks, drinks, etc.)		
Personal (clothing, gifts,		
medication, personal care		
supplies, etc.)		

Entertainment (movies,	
music, cover charges, etc.)	
Transportation (automobile,	
gas, parking, tolls, bus,	
bike, etc.)	

Think about your future: Estimate whether and how your budget will have to change in light of the financial goals you set for yourself in chapter 1. In chapter 2 you estimated how much you would need to put away right now to meet specific goals. In this problem, take that amount for each goal, and just divide it up equally among all the months between now and the target date at which you will need it. This is an overestimate of what you need to save each month, but it does represent an amount to be saved each month. Write a short essay explaining your calculation, why it is an overestimate, what kind of impact saving that monthly amount would have on your current budget, and a plan for saving what you need for each goal over the long run. Turn one

copy in and keep a copy for yourself.

## **CHAPTER 3 FEATURES**

## Mistakes People Make 3-1: Failing to Expect the Unexpected

A common budget mistake is being overly optimistic about how cheaply you can do something. A second mistake is relying on everything in life to go exactly as planned. Traveling is a place where the best-laid budget plans can go awry. A budget of \$800 for a trip to New York City might be sufficient if everything goes as planned, but any of the following surprises can impact your budget:

- You arrive late at night and have trouble locating the bus you had planned to take, so you end up in a cab, and over the course of your visit, you spend a lot more on bus and subway fares than planned.
- You go out to dinner with a large group and even though you order frugally, the group decides to split the bill evenly.
- You find the perfect used leather jacket and decide you have to have it, adding \$100 to your entertainment and shopping budget.
- On the return trip, you miss the bus for which you have bought a nonrefundable ticket. Needing to get home in time for work, you buy another ticket on a different bus line.

The unexpected expenses change each of the line items on your budget:

Estimated expense	Budgeted amount	Actual amount spent
Round trip bus tickets	\$150	\$220
Meals, 14 days at \$20 per day	\$280	\$330
Entertainment and shopping	\$200	\$300

Buses and cabs	\$0	\$85
Total	\$630	\$935

#### Mistakes People Make 3-2: Spending More by Eating Out

Eating out is fun, convenient, and usually delicious. But it can be significantly more expensive than preparing your own meals. For example, at an inexpensive Italian-style restaurant you could order pasta alfredo for \$9.99 and a Caesar salad for \$7.99. With tax and tip, the total cost would be about \$22.

But if you went to the grocery store for ingredients and made the meal yourself, the itemized costs of ingredients that would make four meals of pasta alfredo and Caesar salad would look like this:

16-ounce box of pasta \$2.24

pasta sauce mix \$1.91

8 ounces of mozzarella \$4.00

Loaf of Italian bread \$3.00

Head of romaine lettuce \$2.50

Bottled Caesar dressing \$2.85

Parmesan cheese \$5

Package of croutons \$3.50

Total: \$25.00

But this makes four meals. The per meal cost is \$6.25, meaning a savings of over \$15.00. Is it worth it to go to this trouble? Let's assume you had to go to the grocery store

anyway. We won't count that effort. How hard is it to make this meal? It would take maybe half

an hour of your time, plus a little time to clean up. So for half an hour's effort you save \$19. You are making, effectively, \$38 per hour. Depending on how much you make hourly, cooking for yourself might better than going to work!

## Understand the Math 3-1: The Value of Employer-Provided Benefits

Companies are required by law to provide certain benefits to employees but beyond these, an employer can offer substantial additional benefits, such as contributions to a retirement plan, childcare support, varying degrees of health insurance coverage, stock options, tuition reimbursement, and more. Be aware of these benefits and their financial implications, as their value can add up! For example, two desirable jobs may have similar salaries but very different benefits, as shown in the chart below.

Annually:	Job 1	Job 2
Salary	\$34,000	\$32,000
Employer contribution to	\$2,000 if matched by	\$3,000 unconditional
retirement	employee	
Health insurance	good	better
Childcare benefit	none	\$2,000
Total without childcare or	\$34,000	\$35,000
any employee retirement		
contribution		
Total with childcare but	\$34,000	\$37,000
without employee retirement		

contribution		
Total without childcare but	\$36,000	\$35,000
with employee retirement		
contribution		
Total with childcare and with	\$36,000	\$37,000
employee retirement		
contribution		

Depending on your circumstances, Job 2 may actually be paying more by contributing more to your retirement fund if you can't meet the match required by Job 1. If you use childcare, Job 2 is definitely the better deal.

## **Understand the Math 3-2: Implications of a Credit Card Balance**

Credit card providers calculate the interest owed on outstanding balances in many different ways. One common way of calculating interest is based on the average daily balance. The average daily balance is the daily average of all the balances owed during the course of a billing period. Interest over the billing period is then calculated to be the daily interest on the average daily balance multiplied by the number of days in the billing period.

Suppose for example that your credit card bills you at the end of every month and suppose that over the month of April you make two \$5,000 payments, one on the 11<sup>th</sup> and one on the 21<sup>st</sup>. This means that for the days between the first and the 10<sup>th</sup> your balance is \$0.00, between the 11<sup>th</sup> and the 20<sup>th</sup> your balance is \$5,000, and between the 21<sup>st</sup> and the 30<sup>th</sup> your balance is \$10,000. Then, your average daily balance for the month of April is going to be [(0 \*

10) + (5,000 \* 10) + (10,000 \* 10)] / 30 = 150,000 / 30 = \$5,000.

Most credit cards charge a high interest rate, between 10% and 20%, on outstanding balances. If you have a credit card that charges 20% per year, what does it charge for one month on an average daily balance of \$5,000? An annual interest rate of 20% translates to an interest rate of 1/365 of 20% each month, or  $0.20 / 365 \sim 0.00055$  or 0.055%. Therefore, the interest that you pay in one month on your average daily balance of \$5,000 is:

0.055% of \$5,000 every day for the duration of the billing period, or

$$(0.00055 * \$5,000) * 30 = \$82.50$$

Compare that to \$5,000 invested in a high-interest account earning, say, 5%. In that case, in one month you would make

$$.05/12 * $5,000 = $20.83$$

By paying off your credit card balance, you would be ahead by 61.67 (82.50 - 20.83 = 61.67).

Is that a lot? It depends. If your take home pay is \$2,590.27, you can do the following calculation:

This tells you that by paying off your credit card with your savings, you have the same amount of net worth but you have given yourself a 2.38% raise! Congratulations! That's not bad, considering the average pay raise in 2017 was around 3%.

#### **Understand the Math 3-3: Growing Your Assets**

Let's look in more detail at how an asset such as a retirement account can grow. We looked at this math in chapter 2. It's an important calculation that allows you to estimate the future state of your net worth, which should be increasing over time.

If you have \$10,000 already, and put \$6,000 every year into an account earning an average of 6% per year, how much will you have at the end of 5 years?

The initial balance of \$10,000 will grow at 6% per year for five entire years, yielding

 $1.06^5 * \$10,000 = \$13,382$ 

The \$6,000 you add at the end of year one will grow for 4 years, yielding

 $+1.06^4 *$ \$6,000 = \$7,574

The \$6,000 you add at the end of year two will grow for 3 years, yielding

$$+1.06^3 * $6,000 = $7,146$$

The \$6,000 you add at the end of year three will grow for 2 years, yielding

 $+ 1.06^2 *$ \$6,000 = \$6,741

The \$6,000 you add at the end of year four will grow for 1 years, yielding

$$+ 1.06 * $6,000 = $6,360$$

The \$6,000 you add at the end of year five has not grown yet, yielding

\$6,000.

This calculation is depicted in the table below:

Year	Money	Number of years	Interest rate (6%)	Yield at
	deposited into	interest will be		5 <sup>th</sup> year
	account	earned		
0	\$10,000	5	$1.06^5 * \$10,000$	\$13,382
	(initial balance)			
1	\$6,000	4	$+1.06^4 * $ \$6,000	\$7,574
2	\$6,000	3	$+1.06^3 * $6,000$	\$7,146

3	\$6,000	2	$+ 1.06^2 * $6,000$	\$6,741
4	\$6,000	1	+ 1.06 * \$6,000	\$6,360
5	\$6,000	0	Has not grown yet	\$6,000
Total			\$47,203	

Recall from Chapter 2 that money grows when invested because of compound interest. In this calculation you can see the compounding over time in each step.