CONTENTS

INTRODUCTION

Household is one of the basic entities functioning in the market economy (the others are institutions of public sector, financial institutions and non-financial companies). Similarly, as the other types of entities, households also make economic and financial decisions. These decisions, followed by actions, have significant influence on the financial situation of a household.

Development in the area of theory and practice of personal (household) finance is observable. This development was driven by several factors, the most important being the following:

- Growth of the household wealth in many countries;
- Increasing complexity of financial instruments which are used in financial investments – this led to the development of research that resulted in practical conclusions;
- Changes in retirement systems of many countries that resulted from what was almost a collapse of “pay-as-you-go” systems – this brings about the issue of effective retirement saving as crucial for households;
- Growing specialization and lack of time of household members, who then seek for financial advice.

The most important practical part of personal finance is (personal, household) financial planning, understood as a process of planning of consumption expenditures, investments and financing of the household in order to realize lifetime goals of the household members. Financial planning is individualized (directed towards a particular household), it takes into account the life cycle of household (its members) and it should be conducted not only for wealthy households. It is a dynamic process, which should be monitored and adjusted, whenever necessary.

The considerations of this book concern risk management in personal (household) financial planning. The main outcome is a proposal of the household financial plan taking into account risk. The model is based on the term structure of cash flow and the resulting life cycle cumulated surplus. The basic version of the model is designed for a two-person household and one goal – retirement capital with possible bequest motive. The key issue in the model is the introduction of risk aversion related to life-length risk. Subsequently the model with other financial goals, as well as other types of risk is introduced. Strong emphasis is put on the stochastic aspect of the financial goals.

The proposed model allows for an integration of all important types of risk and for analyzing them together, rather than through “silo-type” analysis. The model is based on all cash flows received and paid by household and oriented towards realization of goals of a household.

Along with the model, a discussion concerning the measurement of risk is provided. Specifically, the aspect of integrated risk management is developed and concluded with suggestion of some risk measures.

The material of the book is presented in six chapters. The first two chapters give introduction to the problem of risk management in personal financial planning.

Chapter 1 gives a thorough introduction to the theoretical and practical issues of financial planning in a household. In Subchapter 1.1 there is a description of personal finance from a scientific point of view by presenting the main categories and ideas. Subchapter 1.2 presents main components of household financial planning and tools used by practitioners. The remaining part of Chapter 1 gives the theoretical background to household financial planning, developed by researchers in economics and finance. The bases for decision making by household are discussed in Subchapter 1.3. These bases are related to household preference characteristic. The criteria used are well-known, such as maximization of expected utility. In addition, in this subchapter utility theory, prospect theory and risk aversion measures are presented. The notion of time and its meaning in personal finance are introduced in Subchapter 1.4, where intertemporal choice and consumption models are presented.

Chapter 2 covers the topics of risk and risk management with relation to personal finance. In household financial planning, risk is reflected in the fact that the goals of a household may not be realized. Subchapter 2.1 introduces basic concepts of risk, including types of risk variables. Then, in Subchapter 2.2 the problem of risk management is discussed in relation to personal financial planning, by presenting stages of risk management process as well as features of the efficient risk management system. Subchapter 2.3 presents types of risk in household financial planning. The most important issue is systematization of different types of risk with regard to six different criteria. Then, seven types of risk are identified for future considerations in the proposed model. These are: life-length risk, risk of investment and financing, income risk, risk of events, risk of goal realization, operational risk of plan management, model risk. Subchapter 2.4 gives the overview of risk measurement methods, systematically presented with regard to several criteria of classification. Some of these measures are then used in risk management of the financial plan. Risk steering methods are briefly introduced in Subchapter 2.5.

Next three chapters are crucial, since a proposal of risk management model in a household is developed there.

Chapter 3 is devoted to household itself and household financial planning. A characteristic feature of financial planning for households is that it must be oriented towards life objectives. In the household financial planning model, the life objectives find reflection in financial goals of the household. This chapter consists of five subchapters. Subchapter 3.1 provides a definition of a household to be later used in the proposed model. Subchapter 3.2 discusses and defines financial goals of the household that may be understood as manifestations of life objectives expressed in financial terms. Properties of these goals, including some elements of statistical modeling, are also discussed in Subchapter 3.3. Financing goals are discussed in Subchapter 3.4. In Subchapter 3.5 the problem of household preferences is widely presented.

Chapter 4 introduces a proposal of multi-person household financial planning model. In Subchapter 4.1 general concepts and main assumptions are introduced. Then, in Subchapter 4.2, a concept of expressing aversion to life-length risk through the width of the so called range of concern is proposed. A basic version of the financial model is presented in Subchapter 4.3. The model in its basic version assumes that the household has set only a retirement goal, in order to preserve the life standard in the retirement period, and, to that, it may show some bequest motive. Moreover, the only risk factors considered here are dates of death of the household members. This version of the model does not take into account, amongst other things, risk of investing. Then, some proposals of further development of the model are discussed. Extending it by other types of goals is one of them. This kind of extension is proposed in Subchapter 4.4, where two additional risk factors are introduced: child's birth time (conditional on the pre-planned time) and real estate price. Another extension, introduced in Subchapter 4.5, allows for influencing financing of the goals on the stochastic factors: return on equity and interest rate.

Chapter 5 develops the financial plan model optimization under risk. The Subchapter 5.1 discusses the issue of including stochastic nature of some risk factors in the model. The next subchapter gives proposals of several measures of risk for a household financial plan. Finally Subchapter 5.3 presents the ways in which the risk factors are taken into account in household financial plan optimization.

The last, sixth chapter is an empirical one. Here some numerical examples based on stylized data are presented. They are used to illustrate main properties of the household financial plan optimization model. In Subchapter 6.1 performance of the range of concern is analyzed for different cases of households. We present how the width of the range of concern, which is determined by aversion towards life--length risk, influences financial stability of the plan under different scenarios. Subchapter 6.2 is intended to demonstrate how propensity to consume and the bequest motive impact the result of plan optimization. In Subchapter 6.3, a question of advantage of having a two-person household, instead of living separately, is addressed. Subchapter 6.4 demonstrates some properties of a more advanced version of the model, in which not only life-length risk is taken into account, but also return on equity. The scenarios analyzed in this chapter are defined in relation to the expected date of death.

The main contribution of the book to the area of the household financial planning with risk management component can be characterized as follows:

1. Definition and systematization of the household financial goals;
2. Presentation of the relations between the household financial goals;
3. Proposal of introducing stochastic approach in the household financial plan;
4. Proposal of differentiating the cost of financing depending on the life cycle;

5. New method of including household preferences in the household financial plan;
6. Proposal of systematization of retirement goal realization schemes;
7. New approach to life length aversion introducing the concept of “range of concern”;
8. Proposal of a two-person household financial plan model based on risk aversion;
9. Including many goals in plan optimization and modification of the model by introducing several other risk factors;
10. Including prefinancing and postfinancing in the plan optimization;
11. Including return on equity and interest rate in the household financial plan;
12. Proposal of several integrated risk measures of the household financial plan;
13. Proposal of household financial plan management under risk.

The functioning of the model is illustrated with the use of the stylized household data. The proposed model, after its development and operationalization, can be used in practice.