

MANAGE YOUR MONEY without FORMULAS

HKMS Texts in General Education
Volume 2

LEE VAN LING



Preface

This book begins with an introduction to different types of interest, followed by basic growth models and the more complicated annuity models commonly found in Hong Kong. Sections entitled “EXCEL Tutorial” introduce the computer skills needed to model and solve problems with EXCEL spreadsheets. We will also cover more advanced ideas including forecasting trends in interest rates, estimating market-price behavior, and carrying out simulations. This knowledge will allow students to select the best deals from the overwhelming number of plans offered by Hong Kong financial institutions and use simulated stock prices to understand real stock market trading. This book uses real-life examples to help students build a strong foundation in logical thinking and problem solving and enable them to use cost-benefit analysis as a decision-making tool in their daily lives. Local examples not only provide a sense of familiarity for students, but also make the skills acquired in this course applicable to Hong Kong situations. We hope that this book will help students learn to enjoy using mathematics in real life.

Objectives

This book is intended as a textbook for a university-level general education course. It is specifically designed to suit the needs of Hong Kong university students who are interested in finance, especially those who are not majoring in mathematics and do not have mathematical knowledge beyond the high school level. However, this does not mean that the mathematics in this book is easy. Our objective is to teach students to make smart decisions about money through an understanding of the basic principals of money management.

This book is written in a clear manner and offers numerous case studies. Each

chapter focuses on one major concept and provides relevant examples. This book is not about calculations, but aims to clarify the logical processes used to obtain the answers to mathematical problems. There are many tools available to simplify calculations. We have chosen Microsoft EXCEL (version 2007) because it is a program that most readers possess. When you see a mouse icon  in the chapter title, the chapter will show how to solve and example with an EXCEL tutorial. EXCEL tutorials are quick guides that demonstrate some common EXCEL functions.

As a major international hub, Hong Kong depends on its finance industry. People in Hong Kong encounter financial problems everyday. In addition, managing personal finance is a complex task because so many financial instruments are available on the market. Most people have a bank account or credit card, and many buy stocks or have a home mortgage, as well. As consumers, students make decisions daily about how to spend their money. Some of these financial decisions are minor, but others are significant, such as applying for a student loan or stock trading. These decisions generally require more than simple arithmetic, requiring a sophisticated understanding of the underlying mathematics and mechanisms behind each instrument. We want to show how mathematical models, rather than closed-form formulas, can be used as the main tools for analyzing and solving problems. Our goal is to show you practical examples of problems that you will encounter in the future, and show you how to model and solve these problems.

To the Students

In response to the new 3-3-4 curriculum, the academic structure will focus more strongly on all-rounded personal development. The need for language ability and mathematical skills has increased considerably; therefore, new courses have been introduced to meet these requirements. To simplify the teaching and learning of this material, we have created a custom series of books. “Manage Your Money *without Formulas*” helps students develop the most important survival skill in this society—the proper attitude towards money and financial derivatives. Unlike traditional textbooks that focus on formulas, this book aims to help you tackle common problems through mathematical models, using computer software to carry out the calculations. Therefore, even if numerical calculations are not your strong point, there is no need to worry because as we will focus largely on modelings and pro-

cesses.

Most of you may find solving financial problems difficult, if not impossible. You may have been discouraged as you struggled to memorize formulas that appear to be unsolvable. However, the reality is that standard formulas cannot be used to solve all everyday financial problems because there are so many possible variations for real financial products. In secondary school, you focused on solving equations and learning different functions. In this book, we will not be solving equations that do not have a purpose. We will demonstrate how mathematics is actually used in our society and teach you to build mathematical models to solve everyday problems. With proper guidance, this is not out of your reach. Enjoy your learning!

Acknowledgements

I would like to thank my leading team members Chi Yan Au, Daricks Chan, Eric Cheung, Ka Man Cheung, Sung Nok Chiu, Man Yee Choi, Hang Wai Chui, Wai Fong Lai, Chit Yuk Lei, and Hiu Yan Mo for making this project possible. Our team was assembled from various backgrounds including Applied Statistics, Commerce, Communications, Economics, Electronic Engineering, English, Mathematics, Mechanical Engineering, and Translations to ensure that the material presented here is suitable for all students. I hope this book will provide our readers with some understanding of the financial situation in Hong Kong.

Hong Kong, June 2011

Leevan Ling

Contents

Preface	iii
1 Simple interest and simple EXCEL 	1
2 Compound interest, still simple EXCEL 	9
3 Don't fool me with the "rate"! 	21
4 Am I forward or backward?	27
5 It's time to save some money	32
6 I will get my own flat someday!	38
7 Is this a good deal?	44
8 Loan Bro asks: "Need a personal loan?"	52
9 I need to cover that student loan!	56
10 I got credit! Fees? What fees?	64
11 ILAS—What? Say that again!	71
12 It's just an insurance scheme!	78
13 Kill bills before the credit nightmare starts! 	83
14 Time to buy a house	90

15	Can I put down less deposit?	95
16	Special offer from the developer	101
17	I should buy a car too!	109
18	APR? What do you mean?	117
19	What a random world! 	125
20	What happens to my mortgage?	131
21	Will my stocks rally tomorrow? 	137
22	Buy low sell high, I know!	140
23	...but which one? 	145
24	Follows the market!	152
A	EXCEL Macros: <i>ISPRIME</i> 	156