Pricing, Reserving and Forecasting Module

SECTION 1: MODULE OVERVIEW

Introduction

The focus of the Pricing, Reserving and Forecasting module is to build upon the Design and Pricing (DP) and Company Sponsor Perspective (CSP) examinations and the Health Systems Overview module in the Group and Health FSA Track. Through your studies for the exams, you have learned to identify, define, and solve independent problems on pricing, reserving and forecasting.1

In this module we will integrate and expand on the basic concepts presented in the exams. You will be exposed to practical techniques involved in managing the financial control cycle of a health care company—from trend determination to pricing and reserving to analysis of historical results to forecasting future experience. You will:

- Assess the materiality of the various factors addressed.
- See the interrelationship of decisions made at each step with the resultant outcomes.
- Forecast financial results at a case level, block of business level and aggregate company level.

Throughout the module, you will follow the activities of the Concentrated Risk Insurance Company (CRIC) that highlight the interconnected nature of the assumptions. CRIC is a fictional small insurance company marketing both HMO and PPO products for groups and individuals.

While the insurer and the associated exercises deal with comprehensive medical coverage, the techniques are equally applicable to other coverages—individual health, dental, Medicare supplement, hospital indemnity, special disease and most property and casualty coverages. The concepts and factors involving the control cycle of trend and pricing, reserving and forecasting also apply to group life, credit life and health, long-term disability and long-term care, although the techniques are different. For example:

- Pricing = utilization x cost = frequency x pv of benefits.
- Manual rating.
- Incurred But Not Reported (IBNR).
- Experience rating.
- Reserving uses a seriatim approach similar to life and annuity products rather than the completion methodology discussed in this module.
It is recommended, but not required, that candidates complete this module after studying for the DP and CSP exams.

Module Objectives
After completing this module you will be able to apply concepts and methods related to:

- Trending.
- Pricing and rating large and small groups.
- Reserving.
- Financial forecasting.
- Valuation of retiree medical liabilities.

In each section you will be exposed to learning objectives more specific to each topic.

Module Sections
The Pricing, Reserving and Forecasting Module consists of seven sections:

- Section 1: Module Overview (You are here now.).
- Section 2: Projecting Medical Trend.
- Section 3: Pricing and Rating Large and Small Groups.
- Section 4: Reserving.
- Section 5: Financial Forecasting.
- Section 6: Retiree Medical.
- Section 7: The Application of Modeling Theory.

In addition, this module contains an End-of-Module Test and an End-of-Module Exercise.
SECTION 2: PROJECTING MEDICAL TRENDS

Introduction

How an actuary measures and sets trends is a key determinant of financial results and a crucial element in pricing an insurance product. In the health insurance industry, the term “trend” is generally considered in reference to the rate of growth in incurred claims cost per member per month (PMPM) but can also refer to growth in sales, expenses, premium or other factors. A company needs to be able to predict future claim costs in order to properly set premium rates, negotiate provider contracts, prioritize medical management initiatives and stabilize cash flows.

Medical trend is driven by multiple factors such as cost of services, utilization, benefit changes and even economic activity. In this section we will review major components of medical trend and illustrate approaches to identifying specific drivers of medical trend.

For the purpose of this section, we will use only annual trends — that is, year-over-year changes.

Objectives

Actuaries are in the business of analyzing the risk of future contingent events. Some of that analysis involves projecting historical data into future periods for purposes of setting premium rates, negotiating provider contracts, prioritizing medical management initiatives and stabilizing cash flows. An appropriate trend projection is the key to these activities and will provide the basis for the subsequent sections in this module.

After completing Section 2, you should be able to:

- Explain the main components of trend.
- Calculate each of the components of trend retrospectively.
- Project each component of trend into future periods.
- Develop pricing, forecasting and reserving trends from the projected components.
SECTION 3: PRICING AND RATING LARGE AND SMALL GROUPS

Introduction and Objectives
The Fundamentals of Actuarial Practice (FAP) course covers general principles of pricing. The Group and Health Design and Pricing (DP) exam covers detailed methodologies for pricing different group and health products. In Section 3, we will apply these techniques in our CRIC case study to price group health products.

Both case study and real-life actuarial problems can present conflicting forces that must be accommodated. For example, an actuary can price a policy using technically correct trends and expenses, but if the marketing department cannot sell the product at the prescribed price, it is not very valuable to the company. The pricing has to be high enough to produce a profit, but not so high as to drive away policyholders or to raise objections from regulators.

For large group plans, there is generally little or no regulation of rates although covered benefits must be filed so that regulators can ensure that state-mandated benefits, for example, are covered and that benefits are not discriminatory. Small group rates are more regulated, and individual rates are the most heavily scrutinized.

Objectives
This section focuses on the application of principles related to pricing and rating large and small groups. In addition, we will touch on some concepts not addressed on the DP exam syllabus in detail. We will also discuss some unique issues with individual health insurance.

After completing Section 3, you should be able to:

- Calculate manual rates for a block of business.
- Describe how expenses can be allocated and relate to the implicit pricing assumptions.
- Calculate the value of copays, deductibles and other alternative plan designs.
- Experience rate a large group.
- Integrate concepts of experience rating and plan design in a multi-plan environment.
- Explain the use of predictive modeling in a given scenario.
- Calculate employer contribution levels given premium rates and employer benefit goals.
SECTION 4: RESERVING

Introduction

This section will provide you with an understanding of the key concepts and techniques related to valuation of liabilities arising from the sale of group and health products. Through real world scenarios, Section 4 demonstrates establishing incurred but not reported (IBNR) under typical business circumstances with respect to claims operations, system conversion and provider operations and submission. It will also demonstrate when premium deficiency reserves and provider reserves are needed. The section is divided into three main subsections. They are:

- Calculation of Medical IBNRs.
- Other Types of Reserves and Liabilities.
- Calculation of Premium Deficiency Reserves.

Objectives

Like trend analysis and pricing, calculating reserves should be a core component of every practicing health actuary’s skills. In this section, you will learn some basic methods for calculating a variety of reserves. You will also be exposed to key resources to use on an ongoing basis.

After completing Section 4, you should be able to:

- Calculate IBNR medical claims using multiple methods.
- Explain sensitivities of various IBNR methods to changes in claim inventory, system conversions, interruptions in claim operations, interruptions in provider operations, natural disasters and outbreaks of disease.
- Calculate provider reserves.
- Calculate stop loss reserves.
- Determine when a premium deficiency reserve is needed.
- Determine appropriate groupings of contracts for a premium deficiency reserve.
- Calculate premium deficiency reserves.
SECTION 5: FINANCIAL FORECASTING

Introduction
In the context of the CRIC case study, we have now set trends for 2005, priced 2005 business and set reserves at the end of 2005. In this section, we will first analyze 2005 actuals against forecast. Second, we will forecast the financial results for the subsequent calendar year. Since CRIC is not delivering earnings at the level of expectations, we will perform some simulation of optional scenarios. Finally, we will explore the provider revenue calculation in light of different recontracting possibilities.

Objectives
After completing Section 5, you should be able to:

- Analyze the impact of trend and mix on financial results.
- Generate an annual financial forecast.
- Explain book of business risk and apply to a given scenario.
- Recommend a specific forecast and justify conclusions.
- Compute and analyze total provider revenue.
SECTION 6: RETIREE MEDICAL

Introduction
In this section you will learn the techniques associated with the valuation of retiree medical and life liabilities. After completing this part of the module, you will understand and be able to apply these techniques to evaluate new products as they are created.

During your study of this section, you will work through a new case study — The ABC Company. Note that the ABC Company and the accompanying assumptions are completely independent of CRIC and the assumptions used for CRIC analysis.

Objectives
After completing Section 6, you should be able to:

- Explain FAS 106 liability valuation and calculation of annual benefit cost.
- Apply/Adjust FAS 106 for Medicare Part D.
SECTION 7: THE APPLICATION OF MODELING THEORY

Introduction
As we enter the final section of this module, by now you have developed an understanding of each critical activity—pricing, reserving and forecasting. Just as importantly, you have learned how the integration of these activities with one another is critical to fulfilling your responsibilities as a practicing health actuary, through the application of the CRIC and ABC case studies.

The remainder of this section focuses on the application of modeling theory to your role as an actuary.

END-OF-MODULE TEST

END-OF-MODULE EXERCISE