Chapter 3

How Is the Financial Performance of Insurers Measured?

Educational Objectives

After studying this chapter, you should be able to:

1. Identify and describe the sources of income for a property and liability insurance company. (pp. 3-4 to 3-6)
2. Identify and describe the types of expenses that a property and liability insurance company incurs. (pp. 3-7 to 3-9)
3. Describe and distinguish between admitted and nonadmitted assets of insurance companies. (p. 3-11)
4. Describe the two major types of liabilities found on the financial statements of insurers. (p. 3-12)
5. Identify the typical items found on the balance sheet of a property and liability insurer. (pp. 3-14 to 3-15)
6. Identify the typical items found on the income statement of a property and liability insurer. (p. 3-15)
7. Calculate and explain the significance of the following profitability ratios: (pp. 3-16 to 3-19)
   a. Loss ratio
   b. Expense ratio

c. Combined ratio
d. Investment income ratio
e. Overall operating ratio

8. Calculate an insurance company's capacity ratio, and explain its importance. (p. 3-20)
9. Define or describe each of the Key Words and Phrases for this assignment. (All Key Words and Phrases appear in bold print in the text and in boxes in the margins throughout this chapter.)

Chapter 3

How Is the Financial Performance of Insurers Measured?

Sound management of an insurance company requires careful attention to its financial performance. One concern about any insurance company's financial performance is its profitability: Does the insurer generate enough profit to survive? A related concern is the insurer's solvency: Does the insurer have adequate resources to meet all of its financial obligations? Insurance companies prepare financial statements that address these concerns, and analysis of these statements helps insurers, regulators, and other interested parties to monitor insurers' financial performance over time and to identify any financial difficulties.

Insurer Profitability

To survive in the long term, any business must make more money than it spends. In a given month or year, its expenses might exceed its income, requiring the business to pay some of those expenses with accumulated funds. A pattern of this, however, will eventually deplete accumulated funds, and the business will fail. Like any other business, an insurance company must manage its income and expenses to produce an overall gain from its operations and to ensure the profitability on which its survival depends.

Educational Objective 1

Identify and describe the sources of income for a property and liability insurance company.

Income

Insurance companies receive income from two major sources. The first is the sale of insurance, which generates premium income. The second is the investment of funds for the purpose of generating investment income. While some insurers receive other income from the sale of specialized services or other incidental activities, most of the income an insurance company receives comes from either premium income or investment income.

Premium Income

Premium income is the money an insurer receives from its policyholders in return for the insurance coverage it provides. When measuring its total premium income for the year (or any other period), an insurance company must determine what portion of its *written premiums* is considered *earned premiums* and what portion is considered *unearned premiums.*

Written Premiums

Written premiums are premiums on policies put into effect, or "written," during a given period.

During a particular calendar year, an insurer calculates its **written premiums** by totaling the premiums on all policies written with effective dates of January 1 through December 31 of that year. Although written premiums provide a source of cash for insurers, rules of accounting allow insurers to recognize only earned premiums as income.

Earned and Unearned Premiums

Earned premium for a particular policy is the portion of the written premium that applies to the part of the policy period that has already occurred.

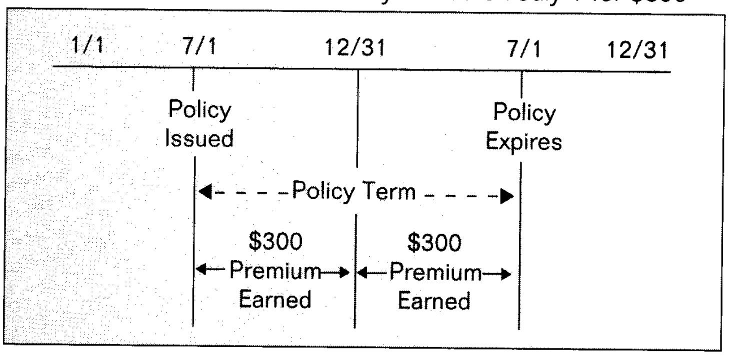
Unearned premium is the portion of the written premium that applies to the part of the policy period that has not yet occurred.

Earned premiums represent the portion of written premiums that is recognized as income only as time passes and as the insurance company provides the protection promised under the insurance policies. The remaining portion of written premiums applies to the part of the policy periods that has not yet occurred. The latter portion is therefore called **unearned premiums**, representing insurance coverage yet to be provided.

The concept of earned and unearned premiums is similar to the way in which a magazine subscription might operate. When a subscriber pays a $24 annual subscription fee for a monthly magazine, the publisher does not "earn" the entire $24 subscription income until the magazine has been provided for twelve months. If the subscriber cancels the subscription after receiving only six monthly issues, the publisher might refund $12, or half of the subscription income (the "unearned" portion).

Likewise, when an insured pays a premium of $600 on July 1 for a one-year policy, the $600 premium is not fully "earned" until the end of the twelve-month coverage period. The entire $600, however, is considered written premium for the current calendar year. As Exhibit 3-1 shows, only half of the $600 annual premium paid on July 1 is earned as of the end of the calendar year because only six months, or half of the protection period, has passed. Therefore, at the end of the calendar year, the insurance company records $300 of earned premium for this policy and $300 of unearned premium. During the next calendar year, between January 1 and July 1, the unearned portion of the premium is earned as coverage is provided by the insurance company. If this policy is not renewed on July 1 of the second year, the insurance company records *no* written premium for this policy in the second year (remember that the entire $600 was considered to be written during the first year) and records only the earned premium of $300 from the previous year's written premium. (See the examples on page 3-6.)

Exhibit 3-1
Earned Premium—One-Year Policy Issued on July 1 for $600



Investment Income

Because an insurance company collects premiums from its policyholders and pays claims for its policyholders, the insurer handles large amounts of money. Insurers invest available funds to generate additional income. Particularly during periods of high interest rates or high returns in the stock market, investment income can be substantial.

An insurance company has funds available for investment for two reasons. First, the insurer is legally required to maintain a certain amount of funds, called *policyholders' surplus*, so it can meet its obligations even after catastrophic losses. As long as an insurance company is operating profitably, its policyholders' surplus is generally available for investment.

The second reason that an insurance company has funds available for investment is that it usually receives premiums before it pays claims on the corresponding policies. Thus,

Examples of Written Premiums, Earned Premiums, and Unearned Premiums

Case 1

Annual policy with $600 premium is effective July 1.

At the end of Calendar Year 1:

Written premium = $600
Earned premium = $300 (6 of the 12 months of coverage have elapsed)
Unearned premium = $300 (6 of the 12 months of coverage have not elapsed)

At the end of Calendar Year 2 (assuming the policy is not renewed):

Written premium = $0
Earned premium = $300 (the remaining 6 months of coverage have elapsed)
Unearned premium = $0 (there is no more coverage; all the premium is earned)

Case 2

Annual policy with $600 premium is effective December 1.

At the end of Calendar Year 1:

Written premium = $600
Earned premium = $50 (1 of the 12 months of coverage has elapsed)
Unearned premium = $550 (11 of the 12 months of coverage have not elapsed)

At the end of Calendar Year 2 (assuming the policy is not renewed):

Written premium = $0
Earned premium = $550 (the remaining 11 months of coverage have elapsed)
Unearned premium = $0 (there is no more coverage; all the premium is earned)

In each case, the written premium and the earned premium total $600 by the time the coverage has expired. However, all of the written premium is recorded immediately, while the earned premium is counted as it is earned over time. In both cases, the unearned premium disappears by the expiration date of the policy because all of the written premium has been earned by the time the policy period ends.

insurers can invest premium funds and earn additional income until those funds are needed to pay claims. However, when insurance companies settle claims, they must have funds readily available to meet their obligations. Similarly, if a policy is canceled before the end of the policy period, the insurer must be able to refund the unearned premium.

Insurers have investment departments whose objective is to earn the highest possible return from investments while ensuring that funds are always available to meet the insurance company's obligations. Thus, the investment department must have a thorough knowledge of financial markets in order to select high-quality investments that are relatively secure and that can be readily converted to cash.

Educational Objective 2

Identify and describe the types of expenses that a property and liability insurance company incurs.

Expenses

The major expenses incurred by an insurance company are claim payments for insureds who have suffered losses and the costs associated with handling those claims. The insurer also incurs operating expenses in providing and servicing its insurance products. In addition, the insurer has expenses associated with its investment activities. For an insurer to be profitable, its combined premium and investment income must exceed its total loss payments and other expenses.

Losses and Underwriting Expenses

Expenses associated with an insurer's underwriting activity include payment for losses, loss expenses, and other underwriting expenses.

Losses

The major expense category for most insurance companies is payment for losses arising from claims. Claims are demands for payment made by insureds based on the conditions specified in their insurance policies. For property and liability insurers, loss payments often represent 70 to 80 percent of their total expenses.

Claims are not necessarily settled immediately after a loss occurs. Sometimes the loss is not reported immediately. When the loss is reported, the insurer's claim representative usually investigates the loss and verifies whether the loss is covered before the insurer pays the claim. Liability claims might involve lengthy legal proceedings. Some losses occur in one year but are settled in a later year. In any given year, an insurance company knows only the amount of losses it has paid so far, but not a definite amount it will ultimately have to pay. To compare income and expenses, however, an insurer must calculate not only its **paid losses** but also its **incurred losses** for the period.

Because it has been paid, a paid loss is a definite amount. Paid losses, however, do not include those losses in the process of settlement or losses that are *incurred but not yet reported* (IBNR). Therefore, another method to measure losses is to calculate incurred losses for a particular period, as shown below:

Incurred losses = Paid losses + Changes in loss reserves

Loss reserves are based on estimates of future payments for losses that have already occurred. Changes in loss reserves are calculated as follows:

Paid losses are claim payments that an insurer has made.

Incurred losses for a particular period equal the sum of *paid losses* and changes in *loss reserves* (loss reserves at the end of the period minus loss reserves at the beginning of the period).

Loss reserves are amounts designated by insurance companies to pay claims for losses that have already occurred but are not yet settled. A loss reserve for a particular claim is the insurer's best estimate of the total amount that it will pay in the future for a loss that has already occurred.

Changes in loss reserves =
Loss reserves at end of period – Loss reserves at beginning of period

Because setting loss reserves for individual claims is an important part of the claim process, it is discussed in more detail in Chapter 6.

Loss Expenses

Insurers also incur loss expenses, which are expenses necessitated by the process of investigating insurance claims and settling them according to the terms specified in the insurance policy. For property insurance claims, the claim representative must identify the cause of the loss and decide whether this loss is covered by the policy; if the loss is covered, the claim representative must determine the amount covered by the policy.

For liability claims, the claim representative must determine whether the insured is legally responsible for the bodily injury or property damage that is the basis of the claim and, if so, for how much. Determining the legal responsibility of the insured for a loss might require a complex and costly investigation. In addition to paying covered losses, liability insurers often pay the costs to defend the insured in the event of a lawsuit, regardless of whether the insured is ultimately held responsible for the damages. Thus, loss expenses associated with a liability claim can be substantial.

Other Underwriting Expenses

In addition to losses and loss expenses, the costs of providing insurance include other significant underwriting expenses. As much as possible, insurance companies try to classify their underwriting expenses in relevant categories. The major categories of insurer underwriting expenses, other than losses and loss expenses, are:

- Acquisition expenses
- General expenses
- Taxes and fees

Acquisition Expenses The expenses associated with acquiring new business are significant. All property and liability insurance companies have a marketing system to market and distribute their products. This marketing system includes individuals involved directly with sales (usually called agents, brokers, producers, or sales representatives) and the administrative staff that manages and supports the sales effort. Many people who directly generate insurance sales for insurers receive a commission, which is usually a percentage of the premium written by the salesperson. Others receive a salary, or a combination of salary and commission, and sometimes also a bonus based on sales, profit, or some other measure of productivity. While some insurers operate without salespeople (usually through direct response systems such as mail, telephone, and Internet sales), these insurers must still employ and pay staff to manage and administer their marketing operations.

Advertising expenses can be a significant component of acquisition expenses for most insurers regardless of whether the advertising is directed toward the general public or specifically toward insurance producers. Insurers incur still other expenses in the process of underwriting and issuing insurance policies. They need staff to review and analyze applications for insurance, assemble and issue insurance policies, issue billing statements, collect premiums, and record necessary information.

General Expenses Like other businesses, insurance companies incur certain miscellaneous expenses. While these expenses do not relate directly to activities such as claims, marketing, and underwriting, they are crucial to the insurers' operations. These general expenses include expenses associated with staffing and maintaining departments such as accounting, legal, research, product development, customer service, electronic data processing, and building maintenance. In addition, insurers must provide office space, telephones, and other utility services, as well as office equipment and supplies for these necessary support functions.

Taxes and Fees Property and liability insurance companies must pay several different types of taxes and fees. All fifty states levy premium taxes, which are usually between 2 and 4 percent of all premiums generated by the insurer in a particular state. Unless they function as excess and surplus lines insurers, insurance companies must hold and pay for licenses in each state in which they operate. In addition, insurers must participate in various state insurance programs, such as guaranty funds and automobile insurance plans.

Investment Expenses

An insurer's investment department includes a staff of professional investment managers who oversee the company's investment program. In addition to devising investment strategy and implementing it through the purchase and sale of stocks, bonds, mortgages, and other investments, the investment department is responsible for a careful and thorough accounting of all invested funds. Investment expenses include the salaries and all other expenses related to the activities of the investment department. On their financial statements, insurance companies deduct these expenses from investment income to show the net income from investments (Investment income – Investment expenses = Net investment income). Gains or losses realized from the sale of invested assets are added to net investment income resulting in net investment gain or loss, which represents the total result from investment activity.

An insurer's **net underwriting gain or loss** is its earned premiums minus its losses and underwriting expenses for a specific period. When an insurer adds its net investment gain or loss results to its net underwriting gain or loss, the resulting figure is its **overall gain or loss from operations**.

Gain or Loss From Operations

Adding net investment gain or loss to **net underwriting gain or loss** shows an insurer's **overall gain or loss from operations.** (Net investment gain or loss + Net underwriting gain or loss = Overall gain or loss from operations.) This overall figure gives a more complete picture of an insurance company's profitability than net underwriting gain or loss, because net investment gains generally help to offset underwriting losses.

Net Income Before Taxes

An insurer's net income before taxes is its total earned premium and investment income minus its total losses and other expenses in the corresponding period. Some adjustments for other income items might be necessary. For example, the insurance company might have to write off some uncollected premiums, or it might have to add premiums that were written off during the previous period but were ultimately collected during the current period. Adjustments might also be necessary for a gain or loss on the sale of equipment or other items.

Income Taxes

Like other businesses, insurance companies pay income taxes on their taxable income. Taxable income might differ from net income before taxes because of the special requirements of the tax code. For example, interest earnings from qualified municipal bonds are not taxed, and deductions for certain expenses are limited. The income tax due is a percentage of the insurance company's taxable income.

Net Operating Income or Loss

After an insurance company has paid losses and reserved money to pay additional losses, expenses, and income taxes, the remainder is net operating income, which belongs to the owners of the company. The owners may receive a portion of this remainder as dividends. The amount that is left after dividends are paid becomes an addition to the insurer's surplus, which enables the insurer to expand its operations in the future. When they evaluate insurers' rates, regulators permit an allowance for profits and contingencies that should provide the owners of an insurance company with an adequate return on their investment. Unless the insurance company generates an adequate return or profit, it will not attract and maintain the investment funds it needs to survive.

Insurer Solvency

For a property and liability insurer to serve its policyholders in the long term, it must remain financially sound. Although comparing an insurer's income to its expenses in a single year reveals whether the company produced a net operating income or loss, this information alone does not indicate the insurer's financial condition. The financial position of an insurance company at any particular time is measured by its assets, liabilities, and policyholders' surplus.

Educational Objective 3

Describe and distinguish between admitted and nonadmitted assets of insurance companies.

Assets

Insurance companies accumulate funds when they receive premium and investment income. As stated previously, insurers do not immediately need all of their premium income to pay claims and operating expenses; before these funds are needed for claim and expense payments, insurers invest them in income-producing assets.

Assets typically accumulated by an insurance company include money, stocks, and bonds; tangible property, such as buildings, office furniture, and equipment; and accounts receivable from agents, brokers, and reinsurers.

Assets are property (both tangible and intangible) owned by an entity, in this case, by an insurance company.

Admitted Assets

For the purposes of filing financial reports with state insurance regulators, an insurance company's assets are classified as either *admitted assets* or *nonadmitted assets*. Regulators allow **admitted assets** to be shown on insurers' financial statements because these assets could easily be liquidated, or converted to cash, at or near the property's market value. In addition to cash, admitted assets include stocks, bonds, mortgages, real estate, certain data processing equipment, and premium balances due in less than ninety days.

Admitted assets are types of property, such as cash and stocks, that regulators allow insurers to show as assets on their financial statements. Such assets are easily convertible to cash at or near the property's market value.

Nonadmitted Assets

Nonadmitted assets could not readily be converted to cash at or near their market value if the insurer were to liquidate its holdings, so regulators do not allow insurers to show them as assets on their financial statements. Nonadmitted assets include office equipment, furniture and supplies, and premiums that are more than ninety days overdue.

Nonadmitted assets are types of property, such as office furniture and equipment, that insurance regulators do not allow insurers to show as assets on financial statements because these assets cannot readily be converted to cash at or near their market value.

The creation of the two categories of assets, admitted and nonadmitted, reflects the financially conservative view that insurance regulators take when evaluating an insurer's financial strength. Regulators do not want insurance companies to overstate their true financial condition. Therefore, certain types of assets are deemed "nonadmitted" and cannot be used to inflate the value of an insurance company's holdings or its financial strength.

Educational Objective 4

Describe the two major types of liabilities found on the financial statements of insurers.

Liabilities

Liabilities are financial obligations, or debts, owed by a company to another entity, usually the policyholder in the case of an insurance company.

An insurance company has a financial obligation to its policyholders; it must satisfy legitimate claims submitted by insureds and other parties. The major **liabilities** of an insurance company arise from this financial obligation to pay claims. Two major types of liabilities are found on an insurer's financial statements: the loss reserve and the unearned premium reserve.

Loss Reserve

The loss reserve is considered a liability because it represents a financial obligation owed by the insurer. It is the insurer's best estimate of the final settlement amount on all claims that have occurred but have not yet been settled. Although establishing loss reserves for claims whose value is not yet definite might seem impossible, insurers use their experience, the law of large numbers, and their statistical expertise to make reliable estimates of future claim settlement values.

Unearned Premium Reserve

The **unearned premium reserve** is the total of an insurer's unearned premiums on all policies at a particular time.

The unearned premium reserve is the other major liability found on the financial statements of property and liability insurance companies. The **unearned premium reserve** is a liability because it represents insurance premiums prepaid by insureds for services that the insurer has not yet rendered. If the insurer were to cease operations and cancel all of its policies, the unearned premium reserve represents the total of premium refunds that the insurer would owe its current policyholders.

Policyholders' Surplus

The **policyholders' surplus** of an insurance company is equal to its total admitted assets minus its total liabilities (Policyholders' surplus = Admitted assets – Liabilities).

Once the total value of an insurance company's admitted assets (cash, stocks, bonds, real estate, and so forth) and liabilities (loss reserve and unearned premium reserve) is known, the insurer can determine its **policyholders' surplus**. Policyholders' surplus equals the insurer's total admitted assets minus its total liabilities. Policyholders' surplus measures the difference between what the company *owns* (its admitted assets) and what it *owes* (its liabilities).

Policyholders' surplus provides a cushion that is available in case the insurer has adverse financial experience. While premium rates may include a margin for error, that margin might not be sufficient to offset unexpected losses, particularly catastrophic losses. If losses exceed expectations, the insurance company has to draw on its surplus to make required claim payments. Policyholders' surplus also provides the necessary resources if the insurance company decides to expand into a new territory or develop new insurance products. Thus, the amount of policyholders' surplus held by an insurer is an important measure of its financial well-being.

Exhibit 3-2 summarizes the admitted assets, liabilities, and policyholders' surplus held by the property and liability insurance industry in 1997.

Exhibit 3-2
Consolidated Balance Sheet for Property-Liability Industry

Consolidated Property-Liability Industry Totals Balance Sheet December 31, 1997 (in millions of dollars)*	
Admitted Assets:	
Cash and short-term investments	$ 39,481
Bonds	512,692
Preferred stock	12,859
Common stock	172,960
Mortgages	2,230
Real estate	9,087
Other assets	120,747
Total Admitted Assets	$870,056
Liabilities:	
Loss and loss expense reserve	$367,181
Unearned premium reserve	112,802
Other liabilities	81,594
Total Liabilities	$561,577
Policyholders' Surplus	308,479
Total Liabilities and Policyholders' Surplus	$870,056

*Based on data from A.M. Best Company, *Best's Aggregates and Averages: Property-Casualty* (Oldwick, NJ: A.M. Best Company, 1998).

Monitoring the Financial Performance of Insurers

Because the objectives of most insurers include being profitable and remaining in business in the long term, insurance companies must carefully monitor their financial performance. Regulators, investors, and others also monitor the financial performance of insurance companies.

Insurers must record and report financial information in a consistent manner, using various financial statements. Interested parties can analyze these financial statements to evaluate the insurers' financial performance. Insurance buyers, agents, and brokers often use the reports and evaluations of financial rating organizations, such as A.M. Best Company and Standard & Poor's Corporation, to select insurance companies that are considered to be in strong and stable financial condition.

Financial Statements

Insurers must prepare accurate financial statements that describe the company's financial position in an objective, standardized format. The two financial statements that provide the most information concerning the financial condition of an insurance company are the balance sheet and the income statement.

Educational Objective 5

Identify the typical items found on the balance sheet of a property and liability insurer.

Balance Sheet

A **balance sheet** is a type of financial statement that shows a company's financial position at a particular point in time and includes the company's admitted assets, liabilities, and policyholders' surplus.

The **balance sheet** shows an insurance company's financial position at a particular time. Exhibit 3-3 shows a condensed balance sheet for INS Insurance Company, a fictitious insurer. It shows the admitted assets, liabilities, and policyholders' surplus on the last day of the year.

Exhibit 3-3
INS Insurance Company Balance Sheet as of December 31

Admitted Assets:	
Cash and short-term investments	$ 50,000
Bonds	1,100,000
Common stock	350,000
Total Admitted Assets	$1,500,000
Liabilities:	
Loss and loss expense reserve	$ 650,000
Unearned premium reserve	350,000
Total Liabilities	$1,000,000
Policyholders' Surplus	500,000
Total Liabilities and Policyholders' Surplus	$1,500,000

Although a balance sheet indicates an insurance company's assets and liabilities only as of a particular date, they change constantly. Insurers establish unearned premium reserves for premiums they receive. The unearned premium reserve for each policy declines with the passage of time. Also, losses occur and insurers establish loss reserves. New policies are written, and old policies expire or are renewed. Meanwhile, the insurance company buys and sells stocks, bonds, and other investments as needed to meet its obligations while earning investment income. Thus, an analysis of an insurance company's assets and liabilities is only as current as the date of the balance sheet, which presents a snapshot of the financial position of the company at that time.

Educational Objective 6

Identify the typical items found on the income statement of a property and liability insurer.

Income Statement

An insurance company's **income statement** shows its revenues, expenses, and net income for a particular period, such as one year. Exhibit 3-4 shows a condensed income statement for INS Insurance Company.

An **income statement** is a type of financial statement that shows a company's revenues, expenses, and net income for a particular period, usually one year.

Exhibit 3-4
INS Insurance Company Income Statement for the Year Ending December 31

Earned Premiums	$1,000,000
Expenses:	
Incurred losses	$ 650,000
Loss expenses	100,000
Other underwriting expenses:	
Acquisition expenses	220,000
General expenses	90,000
Taxes and fees	20,000
Total Expenses	$1,080,000
Net Underwriting Gain (Loss)	$ (80,000)
Net Investment Income	100,000
Net Operating Gain	$ 20,000

During the year, INS Insurance Company's earned premiums totaled $1,000,000. In the same year, the company's expenses totaled $1,080,000. These expenses included incurred losses, loss expenses, acquisition expenses, general expenses, taxes, and fees. Because losses and underwriting expenses exceeded earned premiums, INS Insurance Company experienced a net underwriting loss of $80,000. However, INS also earned net investment income of $100,000 during the year. Therefore, INS Insurance Company realized a net operating gain of $20,000.

Financial Statement Analysis

Analyzing the relationships of different items that appear on insurers' financial statements helps determine how well insurance companies are performing. Comparing two items produces a ratio that highlights a particular aspect of financial performance. Several such ratios are widely used in the insurance industry.

Many people and organizations use these ratios. Managers of insurance companies use such ratios to identify strengths and weaknesses in their companies' operations. Investors analyze these ratios to identify the insurance companies that are most attractive as investments. Regulators examine the ratios to determine whether insurance companies have the financial strength to remain viable in the long term and to meet their financial obligations to policyholders and other parties.

These ratios are important to insurance agents and brokers as well. The financial condition of an insurer should be one of the factors considered when producers select the companies with which they place business. Producers should be reasonably sure that an insurer is financially sound and that it will be able to meet its financial obligations.

Educational Objective 7

Calculate and explain the significance of the following profitability ratios:

a. Loss ratio
b. Expense ratio
c. Combined ratio
d. Investment income ratio
e. Overall operating ratio

Profitability Ratios

Several ratios measure the profitability of an insurance company. These profitability ratios include:

- Loss ratio
- Expense ratio
- Combined ratio
- Investment income ratio
- Overall operating ratio

Profitability ratios are usually converted into percentages for easier analysis of financial performance.

Loss Ratio

The **loss ratio** is calculated by dividing an insurer's incurred losses (including loss expenses) for a given period by its earned premiums for the same period.

The **loss ratio** compares an insurance company's incurred losses to its earned premiums for a specific time period. The figure for incurred losses includes loss expenses. The loss ratio is defined as follows:

$$\text{Loss ratio} = \frac{\text{Incurred losses (including loss expenses)}}{\text{Earned premiums}}$$

When converted into a percentage, the loss ratio provides the percent of earned premiums used to fund losses and their settlement. By looking at this percentage, insurers, regulators, investors, and others can determine how closely actual loss experience compares to expected loss experience. For example, at the beginning of the year, management might have decided that a 75 percent loss ratio is the target for the coming year. As each month progresses, the loss ratio is recalculated based on the company's experience to date to determine whether the insurer is meeting the targeted 75 percent ratio.

Expense Ratio

The **expense ratio** compares the underwriting expenses that an insurer has incurred to its written premiums in a specific time period. The expense ratio is defined as follows:

The **expense ratio** is calculated by dividing an insurer's incurred underwriting expenses for a given period by its written premiums for the same period.

$$\text{Expense ratio} = \frac{\text{Incurred underwriting expenses}}{\text{Written premiums}}$$

The expense ratio indicates what proportion of an insurer's written premiums is being used to pay acquisition costs, general expenses, and taxes. In other words, this ratio indicates the insurer's general cost of doing business as a proportion of the premiums it has written. (Investment income and investment expenses are not part of either the loss ratio or the expense ratio.) The expense ratio gives a general picture of how efficiently the insurer is operating. Insurers watch the expense ratio carefully over time and attempt to reduce it by managing cash flow and controlling expenses.

Combined Ratio

The **combined ratio** combines the loss ratio and the expense ratio to compare inflows and outflows from insurance operations. The combined ratio is defined as follows:

The **combined ratio** is the sum of the loss ratio and the expense ratio.

$$\text{Combined ratio} = \text{Loss ratio} + \text{Expense ratio}$$

In other words, the combined ratio is calculated as follows:

$$\begin{array}{c}\text{Combined}\\\text{ratio}\end{array} = \frac{\begin{array}{c}\text{Incurred losses}\\\text{(including loss expenses)}\end{array}}{\text{Earned premiums}} + \frac{\begin{array}{c}\text{Incurred}\\\text{underwriting expenses}\end{array}}{\text{Written premiums}}$$

Notice that both the numerators (top numbers) and the denominators (bottom numbers) in the loss ratio and the expense ratio are different. The loss ratio attempts to relate the level of losses to the corresponding earned premiums. Both the incurred losses and earned premiums reflect the insurance coverage provided over time. Because these two measurements represent corresponding cash inflows and outflows, they provide the most informative basis for the loss ratio.

Expenses are a different matter. Many of the underwriting expenses incurred by insurance companies involve acquisition expenses, such as agents' commissions. Because these expenses occur at the beginning of the policy period, the use of written premiums, which recognizes the entire premium as soon as it is written, is appropriate for comparing expenses to revenues. Therefore, written premiums are used in lieu of earned premiums as the denominator in the expense ratio.

While the combined ratio is considered the accepted measure of an insurer's underwriting performance, this ratio does not take into account the insurer's investment income. Therefore, the combined ratio does not measure the insurer's overall financial performance. Overall financial performance includes the results from both the insurer's underwriting activities and its investment activities.

Investment Income Ratio

The **investment income ratio** is calculated by dividing net investment income by earned premiums for a particular period.

The **investment income ratio** compares the amount of net investment income (investment income minus investment expenses) with earned premiums over a specific period. It is defined as follows:

$$\text{Investment income ratio} = \frac{\text{Net investment income}}{\text{Earned premiums}}$$

The investment income ratio indicates the degree of success achieved in the insurance company's investment activities.

Overall Operating Ratio

The **overall operating ratio** is calculated by subtracting the investment income ratio from the combined ratio.

The combined ratio (loss ratio plus expense ratio) minus the investment income ratio (net investment income divided by earned premiums) can be used to provide an overall measure of the financial performance of the insurance company for a specific period. The **overall operating ratio** is defined as follows:

$$\text{Overall operating ratio} = \text{Combined ratio} - \text{Investment income ratio}$$

The investment income ratio must be *subtracted* from the combined ratio because investment income is used to *offset* the insurer's losses and underwriting expenses. Of all the commonly used ratios, the overall operating ratio is the most complete measure of insurance company financial performance. To obtain a true picture of an insurer's profitability, overall operating ratios for a number of years should be analyzed, because any company might have a single bad year that is offset by a pattern of profitability over a longer period. Exhibit 3-5 shows the various profitability ratios for the fictitious INS Insurance Company.

Expressed as percentages, the expense ratio for INS Insurance Company is 30 percent, while its loss ratio is 75 percent. This creates a combined ratio of 105 percent. When the investment income ratio of 10 percent is subtracted, the overall operating ratio equals 95 percent.

Exhibit 3-5
Profitability Ratios for INS Insurance Company

Earned premiums	\$1,000,000
Written premiums	1,100,000
Incurred underwriting expenses	330,000
Incurred losses (including loss expenses)	750,000
Net investment income	100,000

$$\text{Loss ratio} = \frac{\text{Incurred losses (including loss expenses)}}{\text{Earned premiums}} = \frac{\$\ 750{,}000}{1{,}000{,}000} = .75 \text{ (or 75\%)}$$

$$\text{Expense ratio} = \frac{\text{Incurred underwriting expenses}}{\text{Written premiums}} = \frac{\$\ 330{,}000}{1{,}100{,}000} = .30 \text{ (or 30\%)}$$

Combined ratio = Expense ratio + Loss ratio = .30 + .75 = 1.05 (or 105%)

$$\text{Investment income ratio} = \frac{\text{Net investment income}}{\text{Earned premiums}} = \frac{\$\ 100{,}000}{1{,}000{,}000} = .10 \text{ (or 10\%)}$$

Overall operating ratio = Combined ratio − Investment income ratio = 1.05 − .10 = .95 (or 95%)

An insurer with an overall operating ratio of 100 percent breaks even because revenues from all operations are equal to total expenses plus incurred losses. A ratio less than 100 percent indicates an overall operating gain because revenues are greater than total expenses. Conversely, if the ratio is greater than 100 percent, an operating loss has occurred because total expenses are greater than revenues.

Although these ratios are the clearest indicators of insurance company profitability, they should be used carefully and reexamined frequently. The loss ratio includes incurred losses as a key component. Since the measurement of incurred losses involves an estimate of the amount that will ultimately be paid on claims that were incurred during the current year, the loss ratio is subject to revision as losses develop. Since the loss ratio is part of the combined ratio and the overall operating ratio, these two ratios are also subject to change. The insurance company cannot know exactly how it performed in a specific period until all claims for incurred losses in that period are fully paid, which might not occur for several years. Monitoring financial results from past years helps to determine the accuracy of the insurance company's loss reserve estimates.

Educational Objective 8

Calculate an insurance company's capacity ratio, and explain its importance.

Capacity

An insurer's **capacity ratio**, or **premium-to-surplus ratio**, is calculated by dividing its written premiums by its policyholders' surplus.

In addition to profitability, an important concern for an insurance company is its capacity to write new business and thus to grow. The measure of an insurer's capacity is its **capacity ratio,** also known as its **premium-to-surplus ratio**, as shown below:

$$\text{Capacity ratio} = \frac{\text{Written premiums}}{\text{Policyholders' surplus}}$$

The capacity ratio compares an insurance company's written premiums (which represent its exposure to potential claims) to its policyholders' surplus (which represents its cushion for absorbing adverse results). If losses and expenses exceed written premiums, an insurer must use its surplus to meet its obligations. Therefore, an insurer's new written premiums should not become too large relative to its policyholders' surplus.

Exhibit 3-6 shows the capacity ratio for INS Insurance Company, using data from Exhibits 3-3 and 3-5. The ratio of 2.2-to-1 is not unusual, because insurance companies often have a premium-to-surplus ratio close to 2-to-1. While it is not a magic figure, insurance regulators use the capacity ratio as a benchmark to determine whether an insurer might be headed toward financial difficulty. For example, a premium-to-surplus ratio above 3-to-1 could be a sign of financial weakness. However, regulators cannot determine an insurer's financial condition by this measure alone. In addition to the capacity ratio, regulators use many other measures of financial performance.

Exhibit 3-6
Capacity Ratio for INS Insurance Company

Written premiums	$1,100,000
Policyholders' surplus	500,000

$$\text{Capacity ratio} = \frac{\text{Written premiums}}{\text{Policyholders' surplus}} = \frac{\$1{,}100{,}000}{\$\ \ 500{,}000} = \frac{2.2}{1}$$

Educational Objective 9

Define or describe each of the Key Words and Phrases for this assignment. (All Key Words and Phrases appear in bold print in the text and in boxes in the margins throughout this chapter.)

Summary

Sound operation of an insurance company requires that great care be given to its financial condition and performance. To survive in the long term, any business must make more money than it spends. Insurers must operate profitably, remain solvent, and provide financial statements so that their financial performance can be monitored by state insurance departments and others.

The profitability of an insurance company is more difficult to measure than the profitability of many other businesses because of timing differences between the receipt of money (premiums) and the performance of the corresponding service (claim payments). Earned premiums are a better measure of premium income than written premiums during a specific period. Similarly, incurred losses are a better measure of losses during that period than are paid losses.

An insurance company's income includes both premium income and investment income. Its expenses include losses, loss expenses, other underwriting expenses, and investment expenses. The company's overall gain or loss from operations is the sum of its net underwriting gain or loss and its net investment gain or loss for a specific period. Unless there is an overall gain—that is, a profit—the insurance company's financial condition will deteriorate.

Solvency is the primary measure of an insurance company's financial condition. Solvency indicates the insurer's ability to meet its obligations. Its assets, or what it owns, must exceed its liabilities, or what it owes. The difference between admitted assets and liabilities is policyholders' surplus. To be certain that insurance companies do not overstate their policyholders' surplus, regulators require them to follow conservative accounting procedures. These procedures allow insurance companies to show on their financial statements only admitted assets, which include defined categories of assets that can be readily converted to cash. These accounting procedures for insurance companies also require that insurers show as liabilities both their loss reserve and unearned premium reserve.

To monitor the financial performance of insurance companies, regulators and others examine insurers' financial statements. The balance sheet, which measures an insurer's financial position, shows the insurer's assets, liabilities, and policyholders' surplus at a given time, such as the last day of the year. The income statement, which measures profitability, shows the company's revenues, expenses, and net income during a given period, such as a year. Analysis of these financial statements makes it possible to measure an insurer's financial performance over time, to compare one company to another, and to identify financially weak insurance companies. Financial statement analysis often involves using ratios to make these comparisons. Several different ratios measure various aspects of profitability. The most useful ratio for measuring profitability is the overall operating ratio, which is calculated by subtracting the investment income ratio (net investment income divided by earned premiums) from the combined ratio (loss ratio plus expense ratio). The capacity ratio (written premiums divided by policyholders' surplus) is also important because it measures an insurer's capacity to write new business and thus to grow.