Flashcards

for

GIFRE - US

Yanlin Shi, PhD, FSA, CERA

Study notes

Those flash cards might be more informative and longer than those you have seen. This is partly because of the lengthy required reading. Besides, from my personal experience, I did not find flash cards that only contain keywords particularly useful, since you may need to refer back to the texts for more details all the time.

To make the most use of those flash cards, my suggestion is to go though them like another set of study manual in your second or third round of studies, and to highlight any words that you feel important and can help memorize the materials. Then, in your last study round(s), try to focus on those highlighted parts to recall the whole picture. In this way, your memory of those materials would be strengthened more effectively. Remember, do not try to skip any parts since this exam is very much detail-focused.

Again, best luck for your study!

Yanlin Shi, PhD FSA CERA

Part I

General Insurance Financial Reporting Topics, 5th edition, Society of Actuaries

2 primary financial statements in accounting

- Balance sheet (BS): also referred to as the statement of financial position, addresses valuation
- Income statement (IS): also referred to as the statement of earnings or statement of profit and loss, addresses performance

General rules of accrual accounting

- Income is shifted to better match earning patterns
- Expenses can be shifted to reflect the income
- Premium revenue is accrued, unearned premiums are deducted from written premium to form earned premium
- Losses are recognized when they are incurred, not when they are paid

Attributes of accounting system

- Reliable and unbiased
- Consistent
- Transparent and understandable

Basic accounting equation that ties together BS and IS

- Assets = liabilities + equity + income
- income = revenue - expenses
- Hence, Assets + expenses = liabilities + equity + revenue
- Increase to an asset or an expense, or a decrease to a liability, equity or revenue, represents a debit record (Dr)
- Increase to a liability, equity or revenue, or a decrease to an asset or expense, represents a credit record (Cr)
- When there is an increase (or decrease) to the left side of the equation, there must be a matching increase (or decrease) to the right side of the equation
- Dr must always equal Cr in a bookkeeping transaction

Typical assets/liabilities found in a BS

Assets	Liabilities
Cash and investments	Unpaid loss and loss adjustment expenses (L/LAE)
Receivables	Unearned premiums (UEP)
Reinsurance recoverable	Payables
Other assets (e.g., owned property)	Borrowed amounts

Diversity of valuation methodology for GI unpaid losses

- SAP and GAAP: nominal value (full value loss reserve)
- CGAAP: discount at investment yield on assets (adjusted for risk margins)
- US tax accounting: discount at mid-term risk-free rates with no margins
- IFRS 17 (both IASB and FASB): discounts unpaid claims at a company-specific rate
  - The rate is principle-based to reflect the risk characteristics of the insurance liabilities and not be based upon the financial instruments held by the insurer
  - The unpaid claims estimate is to include an explicit risk adjustment for insurance risk

Typical IS items for General Insurance

Underwriting Revenue	Underwriting Expenses
Premiums earned (EP)	L/LAE incurred
	Underwriting expenses incurred
	(acquisition and general operating expenses)

Investment Revenue	Investment Expenses
Investment interest earned	Investment expenses
Investment dividends earned	
Capital gains (losses)	

Other Revenue	Other Expenses
Finance and service charges assessed by insurer	Interest charged to insurer
Miscellaneous income	Dividends to policyholders
	Income taxes

BS entries are in units that are different from IS entries

- BS entries (assets, liabilities, surplus) are accumulations of value at year-end
- IS entries (revenue, expenses) are flows of value during the year
- Double-entry bookkeeping does not mix accumulations of value and flows
  - Dr and Cr are flows, not accumulations of value
  - Revenues and expenses are flows that result in Cr and Dr
  - The change in an accumulation of value for a BS item from one year-end to the next is a flow during the year
  - An increase in an asset is a Dr, and an increase in a liability is a Cr
- On IS:
  - Cr are activities (revenue) that increase income, such as earning premium or investment income
  - Dr are activities (expenses) that decrease income, such as incurring expenses or claims

BS and IS articulation

- Change in equity from the current year's IS = change from the prior year's BS equity to the current year's BS equity
- For revenues, the simplified articulation expression is: Accrued revenue + $\triangle$liabilities = $\triangle$assets
  - Accrued revenue is a CR on IS
  - $\triangle$liabilities is a Cr on BS
  - $\triangle$assets is a DR on BS
  - Articulation expression says that CR=Dr for any transaction

Accounting treatment for accrued premium

- Premium collected at the inception of a policy is prepaid
- The insurer has the increase in cash (a Dr on BS) but has not yet provided insurance protection (a Cr on the IS)
- Cash asset is offset by a BS liability called the unearned premium reserve (UEPR)
- UEPR is a liability because the insurer has not yet earned the premium
- If the insurer cancels the policy, it must return the unearned premium
- As the insurance services are provided over the term of the policy, UEPR is reduced appropriately and the reduction is recognized as EP on IS
- As premium is earned, EP (a revenue account) is credited, and the UEPR (a liability account) is debited

Differences between EP and WP

- Advance and prepaid premiums are not revenue
  - If the insurer begins operations, UEP are deducted from WP to form EP
  - If the insurer began operations in a previous year, the change in UEP is deducted from WP to form EP
- Premium receivables are revenue, so the change in premium receivables is added to WP to form EP
  - Premium receivables may be billed (agents' balances) or unbilled
  - Unbilled premium receivables are generally from audits or from loss sensitive contracts (e.g., earned but unbilled [EBUB] and accrued retrospective premiums [ARP])
- Accrued premium is matched to services provided
  - Most insurance contracts use pro rata accrual of premium
  - If the cost of coverage varies over the contract period, the premium accrual pattern may be matched to the cost of coverage pattern
- EP = WP + $\triangle$premium receivable - $\triangle$UEPR

Accounting treatment for losses

- Incurred losses = paid losses + $\triangle$loss reserves - $\triangle$loss receivables
- Loss receivables may consist of reinsurance recoverable, salvage and subrogation recoverable, and reimbursements expected on high-deductible policies
- Loss reserves are of three types
  - Case reserves for reported claims
  - Bulk reserves for adverse development on reported claims
  - Incurred but not reported (IBNR) claim reserves
- Incurred losses in a calendar year (CY) do not depend on the type of reserve or the accident date of the claim
- Loss reserves are not known with certainty, and random fluctuations distort the incurred losses
- CY accounting assigns incurred losses to the period in which the money is paid, not the period when the claims occur

Usage of CY, PY and AY accounting

- PY for performance measurement
- AY for reserve estimates
- CY for financial statements: CY figures only change if they reflect errors in accounting methods or material data errors

Aggregation of PY data

- Aggregated by the effective date of the policy
- Premium and loss transactions related to a policy effective in 20X6 are coded to PY 20X6, even if the transaction occurs in a subsequent year
  - PY 20X6 exposures are the exposures (e.g., sales, payroll) for policies issued in 20X6, not the exposures of PH in 20X6
  - PY 20X6 EP stems from policies effective in 20X6, regardless of the periods covered by the policies or the dates the premium is collected
  - PY 20X6 losses are losses stemming from policies effective in 20X6, even if the accident occurs or the claim is reported or the loss is paid in subsequent years
  - PY premium is not earned evenly over the year, even if policies are written evenly through the year

Aggregation of AY losses and CY premium

- Aggregated by the date of the accident
- Claims occurring in 20X3 are AY 20X3 losses, regardless of when the policy is written, the claim is reported or the loss is paid
- The analogue of accident year losses is exposure year premium, which allocates premium by the exposures covered
- CY premium is like exposure year premium in that both allocate EP to the years when the exposures are covered
- Difference occurs only when premium audits or retrospective premium adjustments are misestimated during the policy term
- In general, CY 20X5 EP = estimated exposure year 20X5 EP at year-end 20X5 + changes to exposure year EP estimates for prior years made between year-end 20X4 and year-end 20X5
- CY 20X5 losses are estimated AY 20X5 losses at year-end 20X5 plus changes to AY loss estimates for prior years made between year-end 20X4 and year-end 20X5

Effect of business growth/reserve adequacy on CY data

Loss Reserves	Business Volume	CY Incurred Losses
Consistently Deficient	Growing	Understated
	Stable	Unbiased
	Declining	Overstated
Consistently Adequate	Growing	Unbiased
	Stable	Unbiased
	Declining	Unbiased
Consistently Redundant	Growing	Overstated
	Stable	Unbiased
	Declining	Understated

Differences among SAP, GAAP and IFRS in computing equity

- SAP places primary emphasis on BS and focuses on financial strength in adverse scenarios when the insurer is liquidated
  - It admits only those assets likely to be realized even if the insurer is liquidated
  - BS surplus is computed using a liquidation perspective
  - IS equity (PH's surplus, or PHS) is adjusted to match BS equity
- GAAP places primary emphasis on the IS focusing on investors' predictions of operating performance
  - It matches revenue and expenses to portray insurers' performance
  - it capitalizes and amortizes deferred policy acquisition costs so that BS equity equals IS equity
- IFRS places primary emphasis on the BS, using market values whenever possible
  - GAAP distinctions designed to provide a smoother pattern of income, such as amortization of bonds and recognizing only realized capital gains for stocks, are discarded in most instances (with exceptions)

- BS computation of equity is primary, and IS follows by articulation

Equations for SAP, GAAP, IFRS BS/IS equity

- On BS, equity (or surplus) is a residual after subtracting liabilities from assets
  - Statutory surplus = admitted statutory assets - liabilities
  - GAAP equity = net (after reduction of depreciation and bad debts) GAAP assets - liabilities
  - IFRS equity = fair value assets - fair value liabilities
- BS equation: assets = liabilities + equity, implies that $\triangle$assets - $\triangle$liabilities = $\triangle$equity, which solves for equity
- IS equation solves for change in equity: Ending equity = beginning equity + revenue - expenses

Recognition of premium cash flow

- GAAP, CGAAP and IFRS PAA recognize EP by the loss-incurral pattern and incur expenses by the premium earning pattern
- SAP does not link premiums with acquisition expenses
- The matching of expenses with premiums differs for GAAP, the two IFRS 17 measurement models, tax accounting and CGAAP

Amortization perspective among SAP, GAAP and IFRS

- GAAP uses the insurance protection provided for GI (short duration) contracts
  - Contracts with a constant amount of insurance have constant insurance protection (e.g. motor contracts have constant flows of EP)
  - Contracts with varying exposure have varying EP over their term
- IFRS 17 PAA retains the amortization perspective of GAAP with 2 modifications:
  - Premiums are net of directly attributable acquisition costs
  - Amortization follows the value of coverage or the value of the insurance services
    - For insurance coverage exposed to natural catastrophes, the insurance protection is constant over the year, but the value of the insurance varies with expected losses due to seasonality
- IFRS 17 also changes the definition to the value of the coverage
  - If the claim incidence varies during the year, so does the accrual pattern for the premium
  - The claim incidence is seasonal in many lines of business, so IFRS 17 explicitly uses a pro rata pattern of accrual unless the claim incidence has a material difference

Premiums and policy term

- EP depends on the coverage provided, not on the policy term
  - A change in the policy term does not affect the EP
- WP declines when policy term is shortened and increases when policy term is lengthened
  - The decline or increase is temporary and it reverses in the next year
- UEPR depends on the policy term
  - If the effective dates are spread uniformly through the year, the premium in force at year-end equals the annual EP $\times$ (the policy term/12 months)
  - A decline or increase from a change in the policy term is permanent, not temporary

Premium receivables

- Receivables like agents' balances have recognition criteria restricting when they are recognized
  - Both GAAP and SAP write off premium receivables that will not be collected
  - GAAP estimates bad-debt offsets for other premium receivables
  - SAP has formulas for nonadmitted assets
- A receivable is written off when the insurer concludes it will not be collected
  - Premium is an IS revenue when earned
  - Premium is an IS negative revenue (similar to an expense) when written off

Matching underwriting and acquisition expenses with premium

- Accrual accounting shifts the recognition of premium and losses to match the insurance protection (GAAP) or services provided (IFRS 17) by the insurer
  - Loss incurral pattern is expected to be approximately even over the policy term
  - IBNR loss reserves are posted evenly over the year
  - Premiums are earned evenly over the year

Matching expenses with premium: GAAP

- GAAP capitalizes and amortizes expenses to acquire new and renewal policies
  - Capitalizing a cost means creating an asset (Dr on BS), named deferred acquisition cost (DAC)
  - Amortizing a cost means converting the balance sheet asset into an IS expense according to a schedule as premium is earned
  - For most policies, the insurance protection is provided evenly over the policy term, so premium is earned pro rata
  - IS is primary, and BS values are determined by articulation
  - GAAP presentation of DAC has a drawback: it capitalizes an imaginary asset to match expenses with premiums
    - DAC is an accounting construct, rather than a tangible item, created solely to match expense and revenue patterns

Matching expenses with premium: IFRS

- IFRS 17 has a margin presentation to amortize acquisition costs
  - The excess of the premium over the benefit and expense costs (the margin) is amortized over the policy period
  - Under IFRS, premiums are earned pro rata unless the value of the coverage differs materially
  - In such a case, they are earned in proportion to the value of the coverage (the expected loss-incurral pattern)

Directly attributable expenses

- Not-Taken Costs
  - FASB says that the expenses incurred preparing bids for policies that are not written are written off immediately, since they did not result in policies
  - IASB says that the total underwriting activity of preparing bids is necessary for writing these policies, so the total cost of preparing bids is matched to the revenue from writing the policies
- Expenses to Third Parties
  - Expenses paid to persons writing or selling policies, such as underwriting salaries and sales commissions, are clearly deferrable
  - Expenses paid to others as a percentage of WP are less clear (e.g. state premium taxes, state guaranty fund assessments, and rating bureau fees)
  - FASB says these expenses are like salaries and commissions and can be deferred
  - IASB says that these expenses are not paid to acquire the policies, so they cannot be deferred

Revenue and expense articulation expressions

- Articulation expression has several equivalent forms, using slightly different terms
  - Expenses are negative revenues, cash outflows are negative cash inflows, and liabilities are negative assets
  - Accrued revenue in the articulation expression need not flow through IS
  - For SAP, realized capital gains flow through the IS and unrealized capital gains are a direct credit to surplus, but they are treated equally in the articulation expression
  - GAAP shows unrealized capital gains in other comprehensive income
  - IFRS for Financial Instruments (IFRS 9) shows unrealized capital gains as part of profit and loss
  - The articulation expression does not distinguish other comprehensive income from profit and loss (income)
- Incurred expenses = paid expenses + $\triangle$accounts payable - $\triangle$accounts receivable

Articulation of insurance losses

- Incurred losses = paid losses + △loss reserves -△loss receivables
- Loss reserves are of three types: case reserves for reported claims, bulk reserves for adverse development on reported claims, and IBNR reserves
- Incurred losses in a CY do not depend on the type of reserve or the accident date of the claim
- Loss receivables are reinsurance recoverables, salvage and subrogation recoverables, and employer reimbursements expected on high-deductible policies
  - They are coded as assets in GAAP and IFRS
  - SAP these receivables as offsets to the direct loss reserves if the claims have not yet been paid and as separate assets if the direct losses have already been paid to claimants
  - Receivables estimated by aggregate actuarial methods are often coded as offset to direct loss reserves (e.g. anticipated salvage and subrogation)
- SAP shows most loss reserves and loss receivables at nominal values

Reinsurance recoverables entires: SAP vs GAAP

- The direct insurance policy is a Dr to cash and a Cr to UEPR
- The reinsurance policy is a Cr to cash and a Dr to the UEPR
- SAP follows the economics of insurance business
  - SAP shows the receivables as assets if the direct loss has already been paid and as contra-liabilities if the direct loss is still unpaid
- GAAP follows legal offsetting rules
  - Primary insurer has no legal right of offset: It cannot reduce its liability because the reinsurer does not pay its portion
  - GAAP therefore shows all reinsurance recoverables, both unearned premiums and unpaid losses, as separate assets

PH dividends: SAP vs GAAP

- PH dividends differ from other operating expenses in that they are discretionary and dependent on insurer earnings
  - GAAP uses going-concern: accrues expected PH dividends as BS liability and flows the change in estimates through IS
  - SAP uses liquidation perspective: financially distressed won't pay PH dividends
- Incurred dividends = paid dividends + $\triangle$dividends reserves
- GAAP and SAP differ in the recognition of policyholder dividends
  - SAP assumes no PH dividend liability until they are actually declared and accuses only paid dividend
  - GAAP estimates and accrues expected dividends at year-end, assuming the insurer continues as a going concern as expected in its business plan

Accounting for income taxes

- Estimated taxes are often paid in advance, and taxes paid during the year include taxes relating to past years
- Current taxes (are taxes owed for current year) = paid taxes – tax refunds + $\triangle$taxes owed but unpaid – $\triangle$tax recoverable
- On BS, tax owed but unpaid is liability and tax recoverable is asset
- Tax payment/refunds are on cash flow statement, and current taxes are on IS
  - Current taxes are CY figures
  - They are best estimate of tax liability for the most recent year + change in estimates for previous years
  - "Current" means that the tax is already due (not deferred, not tax stems from operations in the most recent year)

Deferred taxes: SAP and tax accounting

- 3 activities that can cause DTA/L
  - Unrealized capital gains and losses
  - Writing new business giving rise to UEPRs
  - Reporting loss reserves
- SAP underwriting income has two implicit accounting margins
  - The prepaid expenses in the UEPRs
  - The implicit interest discount in the undiscounted loss reserves
- Tax accounting has neither margin, so the tax basis reserves are lower, the taxable income is higher and the tax liability is greater
- Thus, the insurer has a DTA that will reverse in subsequent years

Tax basis reserve discounting in US

- SAP uses nominal value (no discount)
- Tax accounting use discount rates based on high-quality bonds and no margin
- Tax accounting computes incurred loss as paid loss + the change in discounted loss reserves
- Incurred losses are offsets to taxable income, i.e. the tax rate multiplied by the tax basis incurred loss is a refund of other taxable income
- If taxable income is greater (lower) than statutory income initially and reverses in subsequent years, the insurer has a DTA (DTL)
- For loss reserves, the tax basis underwriting income is greater in the first year, so it is less in subsequent years

Revenue offset in US

- SA has no DAC but immediately deducts expenses
- Hence, for current CY, SA income $<$ GAAP income or economic income
- Tax accounting creates DAC = 20% of WP
- DAC offsets the expense evenly along policy term
- Hence, EP under tax accounting $>$ ($<$) EP under SAP in first (second) CY for all annual policies
- Assuming policies are written evenly through the year and business growth is not material, UEPRs are about half of earned

Changes in DTA/L: SAP, GAAP, IFRS and tax accounting

- DTA/L are shown on BS, and their changes are shown as direct charges/credits to surplus under SAP, and on IS or other comprehensive income under GAAP
- Accrued tax = current tax + $\triangle$DTL – $\triangle$DTA
- GAAP use nominal loss reserve, so it shows the same DTA for loss reserve discounting as SAP
- IFRS 17 discounts loss reserves, differs in 3 way from tax accounting
  - Tax accounting uses high-quality bond yields, whereas IFRS 17 uses current market yields for a replicating portfolio of the same liquidity
  - Tax accounting uses high-quality bonds of specified durations, whereas IFRS 17 uses the same currency and duration as the loss reserves
  - Tax accounting freezes the discount rates as the long as the claims are on the books, whereas IFRS 17 changes the discount rate to the current yield at each valuation date