

Dao (道) Meets Mo (魔)

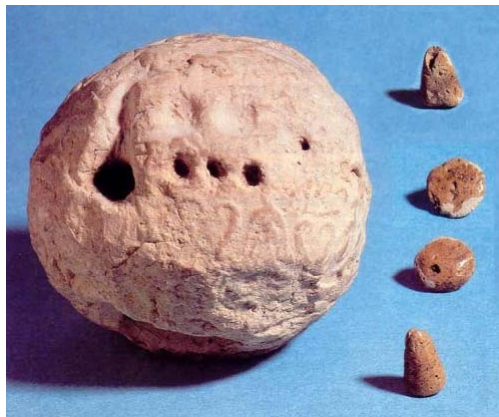
Accounting Challenged by Modern Banking

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Economics (西南财经大学)

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Accounting: a Brief History



Accounting: a Brief History

- 8500 B.C.
Clay tokens made in shapes to represent various commodities constitute first record keeping system
- 200 B.C.
Symbols for all Arabic numerals except zero devised by Hindus in India
- 600 A.D.
Zero was developed . The 10-numeral system spread by traders throughout Europe in the 800s

Accounting: a Brief History



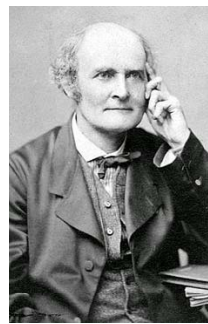
Accounting: a Brief History

- 1400s: Double-entry bookkeeping used in Italy
- 1494: Italian monk and scholar Luca Pacioli published the first known text (*Summa*) on the practice of double-entry bookkeeping
- 1845: Business corporation law passed in England
- 1887: The predecessor of AICPA founded
- 1904: Association of Chartered Certified Accountants founded
- 1934: Securities Exchange Act establishes the SEC and mandates audits for all listed companies
- 1940: the landmark Paton-Littleton Monograph published

High Praises for Bookkeeping



Bookkeeping is "one of the fairest inventions of human mind."



"Bookkeeping is one of two perfect sciences."

Accounting: a Brief History

- 1973: Current US standard-setting group, Financial Accounting Standards Board (FASB), replaced APB
- 1993-1994: Controversy over Accounting for Stock-Option compensation
- Downfall of Arthur Andersen after a series corporate scandals involving the storied firm
- Sarbanes-Oxley Act of 2002 initiates sweeping changes in corporate disclosures (billed as a law to “improve the accuracy and reliability of corporate disclosure made pursuant to the securities laws, and for other purposes”)

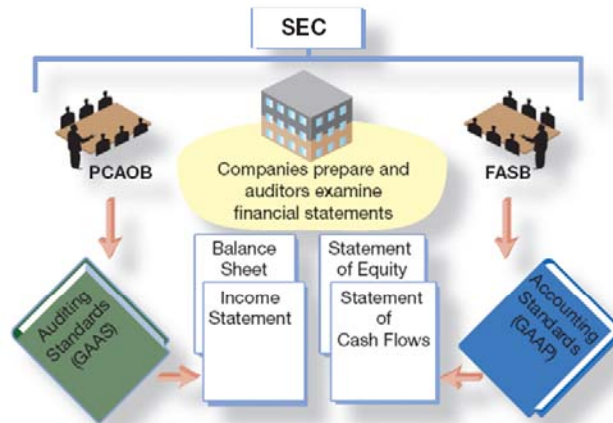
Agenda for Today

- Pillars of Traditional Accounting Model
 - Double-entry Bookkeeping
 - Financial Reporting Features
- Challenges from Modern Finance
 - Stock Options Compensation
 - Structured Products
- Tough Choices to Make
- Does accounting/reporting really matter?

Accounting theory and practices

- Conceptually, accounting can be understood as
 - A device/mechanism to measure some underlying construct (i.e., economic profit of a firm)
 - A provider of information (i.e., informs owners of their firm's financial situation)
 - Conflict and Confusion
- In practice, financial reporting has become very rules oriented. Over time, the accounting profession has developed a network of conventions, rules, guidelines, and procedures, collectively referred to as Generally Accepted Accounting Principles (GAAP).

Key Players in U.S. Financial Reporting



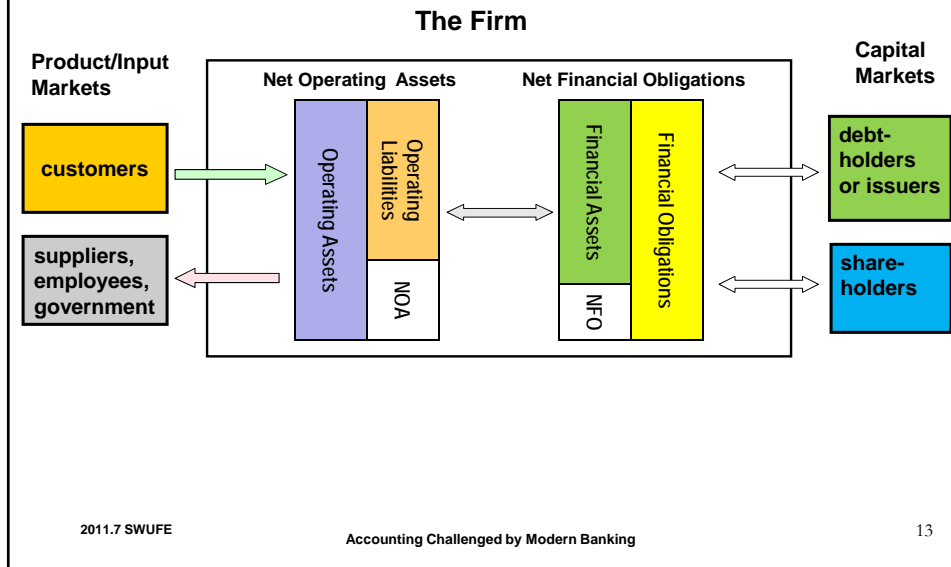
Supply of Accounting Information

- Primary SEC filing requirements
 - Form 10-K: annual
 - Form 10-Q: quarterly
- Benefits of disclosure
 - Lower costs of funds
- Costs of disclosure
 - Preparation and dissemination, competitive disadvantages, litigation potential, and political costs

Interesting Balance Sheets

Millions of dollars	Wednesday 11-May-11		Wednesday 11-May-11
Assets		Liabilities	
Gold certificate account	11,037	Federal Reserve notes, net of F.R. Bank holdings	976,785
Special drawing rights certificate account	5,200	Reverse repurchase agreements 14	54,715
Coin	2,166	Deposits	1,642,882
Securities, repurchase agreements, and loans	2,533,679	Term deposits held by depository institutions	0
Securities held outright 1	2,518,349	Other deposits held by depository institutions	1,546,654
Repurchase agreements 5	0	U.S. Treasury, general account	87,894
Loans	15,330	U.S. Treasury, supplementary financing account	5,000
Net portfolio holdings of Commercial Paper Funding Facility LLC 6	0	Foreign official	124
Net portfolio holdings of Maiden Lane LLC 7	24,812	Other	3,209
Net portfolio holdings of Maiden Lane II LLC 8	14,985	Deferred availability cash items	1,535
Net portfolio holdings of Maiden Lane III LLC 9	24,703	Other liabilities and accrued dividends 15	20,171
Net portfolio holdings of TALF LLC 10	733	Total liabilities	2,696,088
Preferred interests in AIA Aurora LLC and ALICO Holdings LLC 11	0	Capital accounts	
Items in process of collection	503	Capital paid in	26,282
Bank premises	2,210	Surplus	26,282
Central bank liquidity swaps 12	0	Other capital accounts	0
Other assets 13	128,625	Total capital	52,564
Total assets	2,748,652	Total Liabilities and Capital	2,748,652

The Basics of Stocks and Flows



Pillars of Traditional Accounting Model

- Entity and Continuity concepts
 - going concern
- Asset and Liabilities
 - Recognition: Objectivity
 - Measurement: historical cost
- Income Determination
 - Realization (and earned)
 - Matching
- Conservatism

Organic Entities

- Boundaries among economic entities reasonably clear
 - Rights to value and exposure to risk bundled
- Measuring viewed as exogenous to the measured
- Where are Special Purpose Entities?

Staying Away from future actions

- Accounting Recognition
 - Cash, deferrals, and accruals
 - Assets: emphasize “past transactions”
 - Revenues: emphasize “realization”
- What about expected future (trans)actions?
 - Contractual/Committed
 - Forecasted
 - How about growth option?
- Where is hedging?

Operational Expediency

- Accused of operationally defining accounting income instead of intrinsically.
- That is: define Accounting Income to be whatever the result of applying accounting procedures (the realization and matching principles).
- Offered the accounting profession the much-needed protection against potential liabilities from the law or public perception.

"Newtonian" Accounting Model

- "Income finding depended on a series of interlocking assumptions which included historical costs, continuity, conservatism, and periodicity as well as matching and realization. ... It would prove very difficult to alter any one of them without changing their conglomerate effect.
- Those who accepted these assumptions confronted a closed and self-justifying system which, like the laws of Newtonian physics at the turn of the century, seemed to leave little to be discovered." (Chatfield 1974, 260)

Here comes Modern Banking

Varieties of Depository Banks

- Thrifts
 - Interest-spread-based savings associations which receive consumer deposits and make consumer mortgage loans
 - Typically small and retail focused
 - Examples: Dollar Bank, Eureka Bank, and First Federal
- Mortgage Banks
 - Fee-based bank which specialize in mortgage origination and often sell them through securitization.
 - Example: Countrywide, New Century, and American Home Mortgage
- Commercial Banks
 - Banks which offer a wide array of services both fee- and interest-spread-based.
 - Examples: PNC, Citi, JPMorgan Chase, and Bank of America

Main Activities by Financial Institutions

- Fund Aggregation
- Yield Curve Speculation
- Trading and Investment
- Risk Management
- Other Fee-based activities
 - Syndication, securitization, and reinsurance
 - Market-making and brokerage
 - Deal making
 - Asset management and investment advice
 - Transaction processing

Financial Statement Analysis of Banks

- IRR and analysis of NII
- Credit Risk and analysis of PLL
- Financial assets and Fair Value accounting
- Securitization and its disclosure
- Derivatives, hedging and their disclosure
- Capital Arithmetic
- Market-Risk Disclosure and Capital Requirement

Why are accounting and disclosure important

- Financial Institutions are required by industry regulators to provide extensive risk disclosure. These disclosures mostly consist of fair value accounting and estimation sensitivity and risk disclosures.
- They help the readers construct a coherent story about how financial firms generate or destroy value using financial instruments.
- But ...

Modern Banking Challenges Accounting

- Structured Products
 - Financial products designed according to and anticipating certain legal and accounting treatment
 - “Synthetic Entities” (not organic)
- Partitioning risk and, separately, value
- “Bringing” future anticipated transactions to current

Varied Accounting Responses

- Accounting Institutions Tested Mightily
- Three Examples
 - Stock Option Compensation
 - Securitization
 - Hedge Accounting

Example 1:

Stock Option Accounting

In Focus: Employee Stock Option

- Controversies
 - Early 1990s episode
 - Early 2000s episode
- Captures many aspects of tough accounting issues in a modern world
 - Accrual versus cash flow accounting
 - On- versus off-balance sheet
 - Fair value debate
 - Cash flow and Tax Implication

Accounting for ESO

- FASB's initial proposal was thwarted by political lobbying at the US Congress for a decade
- During the period in which US companies could choose whether or not to expense options.
- Essentially NONE did!
- The dispute tested the strength of the private rule-making practice under political pressure.
- The 2000-2001 accounting scandals changed the political equilibrium. Congress began criticizing the failure to expense options.
- FASB issued a revised standard which requires expensing ESO, effective in 2006.

Accounting for ESO

- Key Terms for Employee Stock Options (ESO):
 - Grant Date: Date the options are granted to the employee.
 - Strike price/exercise price: Price at which the option allows the shares to be purchased.
 - Vesting Period: Amount of time employees must work in order to have the right to exercise their options.
 - Exercise Date: Date at which options and cash are exchanged for stocks.

Accounting for ESO

- Grant Date: Compute Fair value of the options granted (off the books)
- Period End during the Vesting Period: allocate proportional option expenses into earnings components (COGS, SG&A) and its deferred tax effects
- Exercise Date:
 - Book cash receipts (i.e., strike price) as equity (additional paid-in capital)
 - Book tax-benefit = $\text{tax\%} \times (\text{market} - \text{strike})$ as equity (additional paid-in capital)
 - Tidy-up deferred tax based on realization.

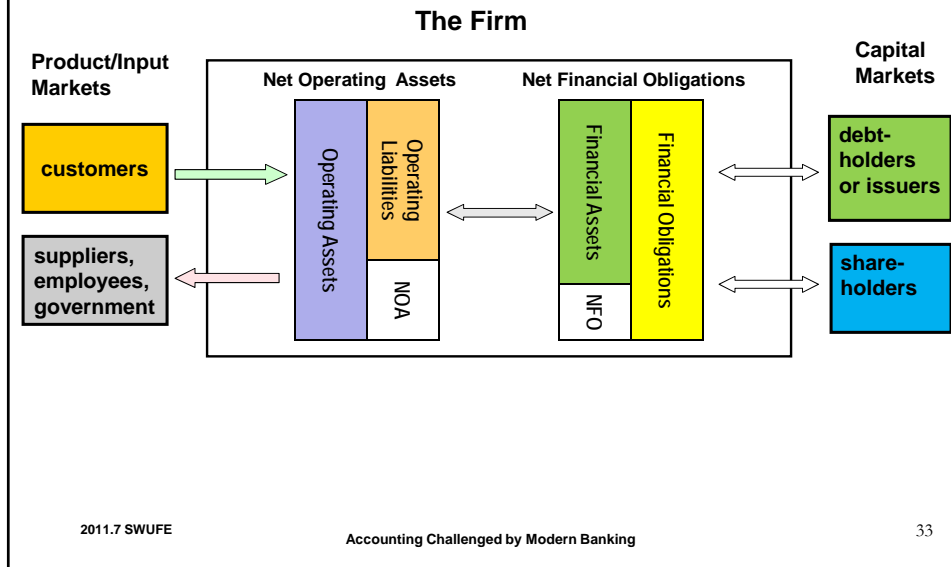
Compromises on the ESO Accounting

- Unamortized expenses stay off-balance-sheet
- Amortized expenses appearing as “additions to equity,” not liabilities
- On exercise date, does not true-up realized after-tax expenses in earnings
- (realized tax-consequences are accounted)

Challenge to Accounting

- Transaction having elements of both
 - Operating nature
 - Financing nature
- Involving accounting/measuring future transactions
- Tension between forecasts and true-up

Why Option Compensation is special?



Example 2:

Securitization

In Focus: Securitizations

Traditional Model

- Funding new originations using deposits
- Holding underlying assets (e.g., mortgages)
- Earning origination fees and NII

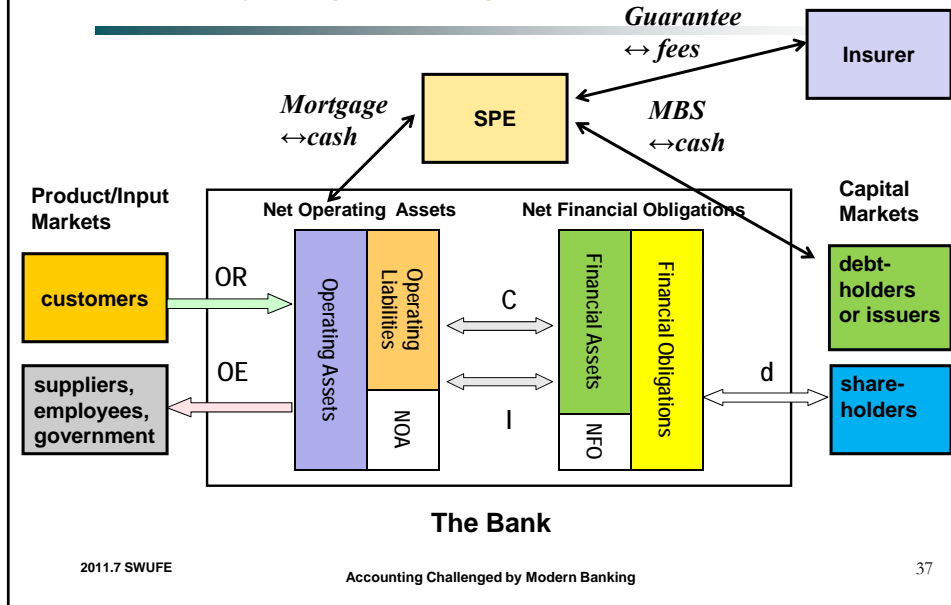
Securitization

- Funding new originations using cash from selling ABSs
- Selling underlying assets (e.g., mortgages)
- Focusing on earning origination fees and gains on selling ABSs

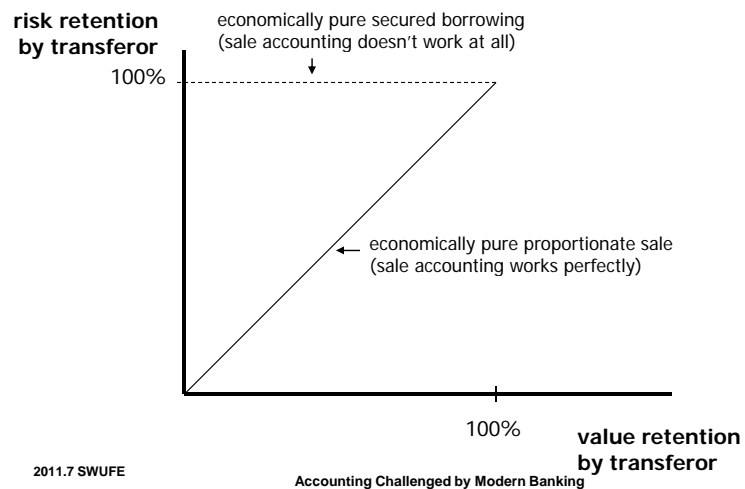
Magnitude of US Loans Market: 2010 Q2

	Total Loan Outstanding	In ABS form
1-4 family residential mortgage	10.6 trillion	2.3 trillion*
Commercial mortgage	2.4 trillion	546 billion
Consumer Credit	2.4 trillion	143 billion
Commercial papers	1.0 trillion	112 billion
US Treasury Debt	8.6 trillion	N/A

The Entity Engineering



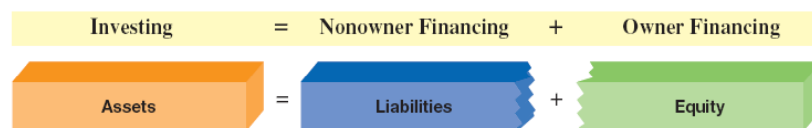
Accounting Problem of Securitizations



Two basic accounting of securitizations

- (Partial) sales of securities
 - Transferring the claims to cash flows generated by the underlying securitized assets (mortgages) to investors
 - if SPE is view as a "separate entity"
- Secured borrowings:
 - Borrowing funds from investors using as collateral the cash flows generated by the underlying securitized assets (mortgages)
 - if SPE is NOT viewed as a "separate entity"

Secured Borrowing Accounting by Issuer



At inception:

Cash (+A)		xxx	
	Debt (+L)		xxx
Secured Assets (+A)	xxx		
	Loans Receivable (-A)		xxx

(Partial) Sales Accounting by Issuer



At inception:

Cash (+A)	xxx	
MSR (+A)	xxx	
Retained Interests (+A)	xxx	
Loans Receivable (-A)	xxx	
Retained Liabilities (+L)	xxx	
Gains on Securitization (+E)	xxx	

Three FAS 140 Concepts

- Accounting under FAS 140 reflects three concepts
 - Financial components
 - Control
 - Fair valuation

Concept 2: Control

- Transfers in which the transferor surrenders control over the financial assets should be accounted for as sales.
- Transfers in which the transferor does not surrender control over the financial assets should be accounted for as secured borrowings
 - record increase in cash (or noncash assets) and debt and reclassify financial assets as pledged
- Control is defined both in terms of legal isolation and effective control. Control is ceded by the transferor only if
 - the financial assets are isolated from transferor even in the event of its bankruptcy
 - the transferee is able to pledge or exchange assets without constraint that provides a more than trivial benefit to the transferor
 - the transferor cannot have the right and obligation to repurchase assets before maturity

Concept 2: Control -- Qualifying SPEs

- “Qualifying” SPEs (QSPEs) are used to finesse the pledge or exchange condition and to meet the effective control condition
 - distinct from issuer
 - significantly limited activities
 - passive holders of financial assets
 - Dispose noncash assets only in automatic response to specific conditions
- QSPEs are not consolidated by the transferor by FAS 140 as well as FIN 46(R)
- In 2009, FAS 166/167 removed this QSPE provision.

Concept 3: Fair Valuation

- For sales accounting, the transferor values
 - At fair value
 - cash
 - servicing assets
 - liability interests in the transferred assets (e.g., servicing liabilities and recourse obligations)
 - excluding beneficial interests in the transferred assets (other than servicing assets)
 - At relative fair value
 - each retained beneficial interest

$$\text{BV of Loans} \times \frac{\text{FV of Retained}}{\text{FV of Transferred}}$$

Concept 3: (Relative) Fair Valuation: an example

- Example: mortgages with a book value of \$100 are transferred for \$98 cash, with the following interests retained by the transferor: MSRs with a fair value of \$3, securities with a fair value of \$6, and a recourse obligation with a fair value of \$2. The transferor's journal entry under sale accounting is

cash (+A)	98	
MSR (+A)	3	
retained securities (+A)	5.7	(=100*(6/[98+3+6-2]))
recourse obligation (+L)		2
mortgages (-A)		100
gains on sale (+E)		4.7 (plug)

Challenge to Accounting

- Confront the tough “defining the entity” issue
- Valuation of retained interests, retained liabilities, extent of retained risks, quality of gains on sale
- Strong likelihood of incomplete or otherwise misleading accounting due to de-linking and repackaging value and risk.

Example 3:

Hedge Accounting

In Focus: Hedging Activities

- Hedging is taking positions that counterbalance the risk of existing exposures
- Question is what is the risk of existing exposures
 - fair value volatility
 - cash flow volatility
- These inconsistent definitions of risk make it difficult to distinguish hedging from speculation
 - lowering cash flow volatility implies raising fair value volatility and vice-versa
 - correct definition of risk is fair value volatility for most financial institutions

Accounting items without the hedge

- Recognized Assets and Liabilities
 - Fixed rate assets/liabilities: amortized cost (using historical rates)
 - Inventory/Accounts payable: historical costs
- Committed Future transactions
 - Committed future sale at a fixed-price: not recognized
- Uncommitted but forecasted future transactions
 - Planned future purchase at spot-price: no recognized

Amortized Cost Accounting

- Amortized cost equals the NPV of expected future cash flows using the information available and interest rate at inception
- Gains and losses are recognized only when realized
- Interest equals the weighted-average amortized cost during the period times the interest rate at inception

What is Fair Value?

- Ideally, Fair value equals the NPV of expected future cash flows using current information about cash flows and current market interest rates
 - subtlety: entry value vs. exit value vs. value in use
- In FAS 157, FASB chose exit value—the price that would be received to sell an asset or paid to transfer a liability in a orderly transaction between market participants at the measurement date
 - in principal market if it exists and most advantageous market otherwise
 - not adjusted for most transactions costs (e.g., bid-ask spread); adjusted for transportation costs

Fair Value Accounting

- Full fair value accounting
 - assets and liabilities are recognized at fair value on the balance sheet
 - gains and losses are recognized on the income statement as they occur
 - interest equals the weighted-average fair value times the weighted-average market interest rate during the period
 - separate classification of interest versus gains and losses on the income statement

Fair Value Hierarchy

- FAS 157 provides a hierarchy of fair value measurement inputs
 - level 1: quoted prices for identical items traded in active markets
 - level 2: other observable market data such as quoted prices for similar items or in inactive markets, yield curves and other price curves, inputs derived primarily from market data by correlation or other means
 - level 3: unobservable firm-supplied inputs that market participants would use
- Debate over Fair Value Accounting

US GAAP “Mixed Attribute” model

- The current “mixed attribute” accounting model requires fair value accounting only for a subset of banks’ financial instruments
 - some investment securities under FAS 115 (trading, AFS on balance sheet only)
 - all derivatives and hedged items in designated, effective fair value hedges under FAS 133
 - Etc.
- FAS 159 allows reporting firms to self-select which items to apply fair value accounting (and mitigate comparability problems through additional disclosure)

Fair Value Accounting for Banks

- Done fully and properly, fair value accounting captures banks’ matched exposures
 - as information and market interest rates change, banks experience offsetting gains and losses if exposures are matched but not otherwise
 - subsequently, banks earn income based on current market prices
 - prevents “gains trading”
- Amortized cost accounting doesn’t capture any of the above

FAS 133 and Hedge Accounting

- Hedge accounting involves accounting consistently for the hedge and the hedged item, at least on the Income Statement.
- FAS 133 allows hedge accounting only for designated hedges of specific exposures using derivatives, so
 - an effective hedge of a specific exposure may not be an effective hedge of the bank's net exposure
 - an effective hedge of banks' net exposure may not be an effective hedge of any specific exposure

FAS 133 Hedge Accounting Varieties

- Allows two models of hedge accounting
 - fair value hedge accounting
 - cash flow hedge accounting
- For overall effective fair value hedges, both the hedged item and hedge are fair valued on both the balance sheet and the income statement
 - Effective Portion: income on the hedge and hedged item offset completely;
 - Ineffective Portion: do not offset
- Requires that gains and losses from hedge ineffectiveness be recognized immediately in net income in most circumstances

Cash Flow Hedge Accounting

- Applies to hedges of on-balance sheet assets or liabilities or off-balance sheet forecasted transactions whose cash flows vary
 - examples: floating-rate assets or liabilities, forecasted purchases of assets or issuances of debt...
- For overall effective cash flow hedges, the hedge is fair valued on the balance sheet with gains and losses initially recorded in accumulated other comprehensive income (AOCI) and subsequently reversed to smooth the income effect of the hedged item
 - e.g., cash flows on interest-rate swaps smooth interest revenue on floating-rate hedged items

Case 1: Fair Value Hedge of a Recognized item

- Without the Hedge
 - Fixed rate assets/liabilities: amortized cost (using historical rates)
 - Leading to so-called "Fair Value Hedge"
- With the Hedge (interest rate swap)
 - Hedged Item: Fair value
 - Hedge (e.g., future contract): fair value
 - In-effectiveness: reported in earnings

Case 2: Cash Flow Hedge of a Recognized item

- Without the Hedge
 - Variable rate assets/liabilities: amortized cost (using historical rates)
 - Leading to so-called "Cash Flow Hedge"
- With the Hedge (interest rate swap)
 - Hedged Item: amortized cost (using historical rates)
 - Hedge (e.g., interest rate swap): fair value
 - Effectiveness: reported in equity (by-passing earnings)
 - In-effectiveness: reported in earnings

Case 3: Fair Value Hedge of a Unrecognized item

- Without the Hedge
 - Future Committed transactions: Not recognized
 - Leading to so-called "Fair Value Hedge"
- With the Hedge (interest rate swap)
 - Hedged Item: Fair value
 - Hedge (e.g., future contract): fair value
 - In-effectiveness: reported in earnings

Case 4: Cash Flow Hedge of a Unrecognized item

- Without the Hedge
 - Uncommitted but forecasted future transactions: not recognized
 - Leading to so-called “Cash Flow Hedge”
- With the Hedge
 - Hedged Item: Not recognized
 - Hedge (e.g., futures): fair value
 - Effectiveness: reported in equity (by-passing earnings)
 - In-effectiveness: reported in earnings

Example of FAS 133 Problems

- A bank holds
 - \$50 of three-year fixed-rate assets,
 - \$50 of three-year floating-rate assets, and
 - \$100 of three-year fixed-rate liabilities
- Questions
 - what is its net exposure?
 - non-offsetting 50 fixed liab and 50 floating assets
 - What type of swap would hedge its net exposure?
 - a 50 receive-fixed/pay-floating swap
 - what type of swaps would qualify for hedge accounting for its individual exposures?
 - designate \$50 fixed asset as hedged item and use a 50 receive-floating/pay-fixed swap as a fair value hedge

Accounting Challenged by Hedging

- Old tensions new forms
 - Let manager decide versus strict FASB/IFRS guidance
 - Volatility versus more information
- New tensions
 - Future transactions
- Hedging inherently a global practice while accountants' special skill/experience inherently local

Tough Choices to Make

Major Tradeoffs in Financial Accounting

- Fair Value versus Amortized (historical) Costs
 - Financial Instruments
 - Derivatives
- On balance sheet or Off-balance sheet
 - Leases
 - Securitization
 - Forecasted transactions
- Point Estimate versus Sensitivity

Major Tradeoffs in Financial Accounting

- Deferring to managerial discretion
 - AFS
 - Fair value option
 - Hedging designation
- Internal Inconsistencies
 - Recognition
 - OCI stuff
- Accounting for investors or for regulators

Concerns of the Profession

- Playing Catch-up
- Independence
- Accounting Education
- Accounting's comparative advantage
 - Auditing or valuation?

Does Financial Reporting really matter?

- Old story in favor of financial reporting
 - Capital market pricing
 - Corporate governance
- Banking regulation
- Current fighting over Hedge Accounting, Convergence, etc.

Backup Slides

Hedge Accounting Example

What is an interest-rate swap?

- Swaps: exchange of recurring payments between two parties
 - like a series of forwards contracts with lower transactions costs
- Most common form is the “plain vanilla” interest rate swap: one party pays fixed and receives floating and the other the opposite
- Plain vanilla interest-rate swaps can be used to convert fixed-rate exposures to floating or vice-versa

Example: Fair Value Hedge Accounting

- Assume a bank holds
 - \$100 of floating-rate asset paying interest each year at the current market interest rate and principal in 3 years
 - Market Rate: 10% end year 0, 12% end year 1, 11% end year 2
 - \$90 of fixed-rate debt paying interest each year at a 10% rate and principal in 3 years
 - debt experiences gain of \$3.04 when market rate changes to 12% and a loss of \$.8 when market rate changes to 11%
 - \$95 notional principal receive fixed (10%)-pay floating (market) interest rate swap
 - swap experiences loss of \$3.21 when market rate changes to 12% and a gain of \$.84 when market rate changes to 11%
 - swap can be designated as cash flow hedge of floating-rate assets or fair value hedge of fixed-rate liabilities

If swap is designated as fair value over-hedge of fixed-rate debt

	Year 1	Year 2	Year 3
interest revenue on (floating) assets	10	12	11
interest expense on fixed debt (FV)	9	10.43	9.81
interest expense on swap (FV)	0	.39	.09
FV gain on debt	3.04	(.8)	0
FV gain on swap	(3.21)	.84	0
Net Income	.83	1.21	1.1

- See net gains and losses on \$5 over-hedge

Balance Sheet with a fair value over-hedge

	Year 0	Year 1	Year 2	Year 3
Balance Sheet				
(Floating) Assets	100	100	100	0
Fixed Debt	90	86.96	89.19	0
FV of Swap Liability	0	3.21	.86	0
Total Liabilities	90	90.17	90.05	0

- What if there is no swap?

	Year 1	Year 2	Year 3
interest revenue on floating assets	10	12	11
interest expense on fixed debt (AC)	9	9	9
Net Income	1	3	2

If swap is designated as cash flow under-hedge of floating-rate assets

	Year 1	Year 2	Year 3
interest revenue on assets	10	12	11
interest expense on debt	9	9	9
interest revenue on swap	0	(1.9)	(.95)
net income	1	1.1	1.05
accumulated OCI	(3.21)	(.86)	0

- Swap smoothes 95% of the variation in interest revenue on the floating-rate assets

Balance Sheet with a Cash Flow under-hedge

	Year 0	Year 1	Year 2	Year 3
(Floating) Assets	100	100	100	0
Swap Asset (FV)				
Fixed Liability (AC)	90	90	90	0
Swap Liability (FV)		3.21	.86	
sum of two liabilities	90	93.21	90.86	

Hedge Accounting Example: a comparison

- Comparison of hedge accounting methods

	Year 1	Year 2	Year 3
<i>Cash flow hedge of floating-rate loans</i>			
net interest income=net income	1	1.1	1.05
Other Comp Inc (OCI)	-3.21	2.36	.86
effect on owners' equity	7.79	11.25	13.15
<i>Fair value hedge of fixed-rate debt</i>			
net interest income	1	1.17	1.1
gains and losses (debt and swap)	(.17)	.04	0
net income	.83	1.21	1.1
effect on owners' equity	10.83	12.04	13.15