



Bank Modeling Program

Step-by-Step Guide

Table of Contents

BANK MODELING	6
ABOUT OUR CASE STUDY	6
CASE STUDY DETAILS	6
BEFORE YOU BEGIN	6
HOW TO SUCCEED IN THIS COURSE	6
INPUTTING THE HISTORICAL BALANCE SHEET (BS)	7
FORECASTING THE BS (NO PUN INTENDED)	7
INVESTMENT SECURITIES	7
GROSS LOANS	7
BEST PRACTICES FOR FORECASTING LOANS	7
LOANS HELD FOR SALE AT FAIR VALUE (LHFS)	8
ALLOWANCE FOR LOAN LOSSES	8
FORECASTING PROVISIONS	9
FORECASTING NET CHARGE-OFFS (NCO)	10
FDIC LOSS-SHARE RECEIVABLE	10
DEPOSITS	11
FORECASTING DEPOSITS	11
LONG-TERM BORROWINGS (LTD)	11
NET INTEREST INCOME (NII)	11
COMMONLY USED NII RATIOS	12
FORECASTING AVERAGE INTEREST-EARNING ASSETS (IEA) AND INTEREST BEARING LIABILITIES (IBL)	13
FORECASTING NIS, ASSET YIELD AND FUNDING COSTS	14
HISTORICAL INCOME STATEMENT (IS)	17
IS FORECASTS	17
FORECASTING SHARES OUTSTANDING	18
FORECASTING DIVIDENDS	18
BALANCING THE MODEL	18
CASH, DEPOSITS WITH BANKS, AND SHORT TERM BORROWINGS	19
MODELING THE BALANCER	19
CIRCULARITY	20
CAPITAL REQUIREMENTS	21
FOOTNOTES	22
VALUATION	24
INTRINSIC VALUATION	24
RELATIVE VALUATION (MULTIPLES/COMPS)	24
COMPARISON OF VALUATION APPROACHES – A CHEAT SHEET	25
BUILDING A DIVIDEND DISCOUNT MODEL	26
OVERVIEW	26
GENERAL DDM ASSUMPTIONS	27
THE 3 STAGE DDM MODEL	27
VALUATION DATE	28
COST OF EQUITY	28
MATURITY PHASE ASSUMPTIONS	28

RETURN ON EQUITY (ROE)	28
RISK-WEIGHTED ASSETS (RWA) GROWTH RATE AND CAPITAL RATIO ASSUMPTIONS	28
THE DDM BUILDUP	29
PROJECTING NET INCOME	30
CIRCULARITY IN THE NET INCOME CALCULATION	30
PROJECTING DIVIDENDS	30
GETTING FROM SHAREHOLDERS' EQUITY (SE) TO TIER 1 CAPITAL	31
DDM PRESENT VALUE - DEVELOPMENT AND MATURITY PHASES	31
MIDYEAR ADJUSTMENT	32
DDM TERMINAL VALUE	32
LONG TERM GROWTH RATE	32
DISCOUNTING TV USING THE EXIT MULTIPLE APPROACH	32
INTRINSIC EXIT P/BV	33
SHARES OUTSTANDING	33
VALUATION	34
SENSITIVITY AND OUTPUTS	34
RESIDUAL INCOME	35
CONCEPT CHECKER: A SIMPLE RI EXAMPLE	35
BUILDING A RESIDUAL INCOME MODEL	36
GENERAL RI ASSUMPTIONS	36
MATURITY PHASE ASSUMPTIONS	36
THE RI BUILDUP	36
PROJECTING NET INCOME	37
CIRCULARITY IN THE NET INCOME CALCULATION	38
PROJECTING DIVIDENDS	38
CALCULATING THE PRESENT VALUE OF RESIDUAL INCOME	38
RI TERMINAL VALUE	39
THE LONG TERM GROWTH RATE	39
SHARES OUTSTANDING	39
VALUATION	40
SENSITIVITY AND OUTPUTS	40
DCF TO EQUITY (DCF E)	41
COST OF EQUITY	42
COST OF EQUITY VS. WEIGHTED AVERAGE COST OF CAPITAL WHEN VALUING A BANK	42
THE RISK FREE RATE	42
THE MARKET RISK PREMIUM	43
BETA	43
PEER (INDUSTRY) BETAS	44
MODELING THE COST OF EQUITY	44
THE FOOTBALL FIELD	45
REFERENCE QUICK GUIDES	47
FORECASTING FINANCIAL STATEMENTS QUICK GUIDE	47
TABLE 1: FORECASTING BALANCE SHEET ITEMS	47
TABLE 2: FORECASTING INCOME STATEMENT ITEMS	48

TABLE 3: FORECASTING NET INTEREST INCOME	49
REGULATORY CAPITAL QUICK GUIDE	51
COMPARISON OF VALUATION APPROACHES QUICK GUIDE	53

BANK MODELING

ABOUT OUR CASE STUDY

- We are going to build an annual forecast model, as well as dividend discount and residual income valuation models for Valley National Bank (ticker VLY).
- VLY is a regional bank with \$14.1 billion in assets, \$2.3 billion in market cap. VLY operates 200 branches through NY/NJ, has 2,700 employees, and is the 40th largest commercial bank in the US. It is considered one of a few remaining banks that can credibly describe themselves as conservative. VLY has had consistent shareholder returns, with focus on credit quality. As a result, VLY had far less bad loans during the recession.
- Some other interesting highlights - deposits represent 73% of the company's liabilities. VLY is considered "well-capitalized" by regulatory standards (the highest rating), and has an affluent, heavily populated, and strong customer base.



Case study details

- We are going to build an annual forecast model for VLY.
- The company reports on a December 31 fiscal year end.
- The latest available reporting period as of printing is 12/31/2010.
- Source document: VLY 2010 10K

Before you begin

1. If you have not already done so, please read the manual titled Bank Modeling Program – Bank Industry Primer. This manual was included with your materials. Once finished, come back here to get started on the modeling.
2. Open VLY's 2010 10K (we have provided you with a specially bookmarked version of the 10K, so use this one instead of going to sec.gov).
3. Open the model template that we have provided you. If you have 2 model templates, open the model labeled 'empty'
4. Download and install the Boost Add-In for Excel at <http://wspanalytics.com/boost/download>

How to succeed in this course

In this guide, we lay out step-by-step instructions for building a forecast model and valuation models for VLY. The instructions are sequential, so follow them in order. It is strongly recommended that you first read and finish a section (section headers are denoted with an UPPERCASE), and then proceed to complete

the modeling exercises prescribed in this section. When you are finished with modeling the exercises described in a section, refer back to this guide and read the next section before getting back in the model.

Good luck!

INPUTTING THE HISTORICAL BALANCE SHEET (BS)

- Input historical BS results (VLY 2010 10K, p.81)
- Insert a balance checker
- Format your BS

FORECASTING THE BS (NO PUN INTENDED)

- Skip cash and due from banks
- Skip Interest bearing deposits with banks

INVESTMENT SECURITIES

- In a separate schedule below the BS, input historical balances for THREE years, as disclosed (on p.57 of VLY's 10K) and calculate the 2009 and 2010 growth rates in investment balances.
- Forecast 5% annual growth in investments throughout the forecast period and calculate the investments in the schedule.
- Caution: Do not link this forecast to the BS yet. Do not link any forecasts to the BS unless explicitly instructed to. We will link all the projections derived in the schedules back up to the BS at the end.

GROSS LOANS

- We skip loans held for sale at fair value, in a separate schedule below investment securities, input historical balances for FIVE years, as disclosed (on p.63 of VLY's 10K) and calculate growth rates from 2007-2010.
- Calculate the 2006-2010 CAGR, and use this rate to forecast growth in gross loans in the schedule.

Best practices for forecasting loans

Forecasting gross loan growth is a challenging, yet critical model driver and is often sensitized in analysis. Loans drive interest income, and loan growth needs to be supported by deposit growth. In the absence of management guidance, loan growth should be forecast in line with industry averages, which are driven by macroeconomic forecasts and a sector specific outlook. Deviations from growth rates in line with industry averages need to be justified (for example, if the analyst believes the bank will gain or reduce market share).

Other factors may be at play as well. For example, a conservative bank may choose to cut back loan growth when demand is high because of shrinking returns. This was the case at VLY at the end of 2010, when the company indicated on the conference call:

Valley National Bancorp Q4 2010 Earnings Call Transcript

Input historical balances for FIVE years, as disclosed on page 70 of VLY's 10K.

Forecasting provisions

Management estimates provisions based on expectations of future charge-offs, as well as the amount of existing reserves. These estimates are driven off performance expectations of the company's specific loan portfolio, in the context of broader macroeconomic factors, as well as historical experience.

An exchange from VLY's Q1 2011 earnings call transcript is instructive about how management thinks about provisions.

Valley National Bancorp Q1 2011 Earnings Call Transcript

Jason O'Donnell - Boenning & Scattergood: "Then, just switching to asset quality. I'm just wondering – this is more of a general question, but just given the improvement in asset quality you're seeing and the potential for further improvement, I'm just wondering what your appetite is to release reserves going forward or potentially take negative provisions down the road?"

Gerald H. Lipkin - Chairman, President and CEO: "Historically it has been our philosophy not to release reserves. We may not add more to the reserve account, but we have never to the best of my recollection ever released earnings coming out of the reserve – build our earnings by pulling money out of the reserve. In fact, we actually built our reserve this past quarter if you see, (indiscernible) of the fact, we actually added more to the loan loss reserve than our losses."

Alan D. Eskow - SEVP and CFO: "That takes into account the fact that we've got loan growth in addition to anything else. So as loans are growing even if credit quality improves, you're still going to have to be mindful of providing for future losses. We're pretty much are bound by the kind of model we use, which takes into account all those various pieces and it takes into account loan growth. So, we're not anticipating at this point any reserve releases. Lower provisions could possibly happen, but that will really as I said depend on credit quality and loan growth."

As such, these estimates are forward looking and subjective, which makes "earnings management" possible. As a result, forecasting provisions for the analyst is difficult. If management guidance is available, this is usually a helpful starting point. In the absence of guidance, a historical review coupled with an analysis of the loan portfolio and thesis on macroeconomic factors serve as drivers.

For VLY, our forecast is as follows:

Year:	2011	2012	2013	2014
Provisions:	30,000	20,000	15,000	15,000

This assumption for reduction in provision reflects continued normalization of credit environment to pre-crisis levels.

REFERENCE QUICK GUIDES

FORECASTING FINANCIAL STATEMENTS QUICK GUIDE

Below we outline forecasting conventions and best practices for a bank operating model. Analysts should remember that these forecasts represent rules of thumbs; many exceptions may apply depending on circumstances and availability of information.

- Table 1: Forecasting balance sheet items
- Table 2: Forecasting income statement items
- Table 3: Forecasting net interest income

Table 1: Forecasting balance sheet items

Line item	Forecast	Additional Comments
Assets		
Cash and equivalents	As a % of deposits	
Federal funds sold / Deposits held with banks	If $A < L + E$: Prior year balance + surplus If $A > L + E$: Prior year balance	This line is the “plug” in the model. If $A < L + E$, our model is projecting larger sources of capital ($L + E$) than we are using. As a result, federal funds sold or interest-bearing deposits held with banks must increase to put the excess capital "somewhere."
Investment securities	Growth rate	Historical growth is usually a guide. Comprised of held to maturity; available for sale; and trading securities. Difficult to project growth rates definitively.
Loans held for sale	As % of gross loans	
Gross Loans	Growth rate of aggregate or by loan portfolio composition.	Historical growth is usually a guide. If analysts have conviction about particular parts of a loan portfolio (residential vs. commercial loans) a more detailed analysis can be performed. This projection drives deposit liabilities
Allowance for loan losses	Prior year balance – NCOs + provision for credit losses (IS)	Project NCOs based on ratio of NCO/prior year provision (IS). NCO are comprised of charge-offs, net of recoveries of previously charged off loans.
Net loans	Gross loans - allowance for loan losses	Balance sheet presentation of loans is on a net basis
Premises & equipment	Prior year balance + capital expenditures (CF investing outflow) - depreciation expense (IS)	
Bank owned life insurance (BOLI)	Straight-line or; Prior year balance + change in surrender value (IS income) - benefit proceeds (CFS investing inflow)	<ul style="list-style-type: none"> • <i>What is BOLI?</i> Due to tax advantages, banks buy life insurance for employees, pay premiums, and collect the payouts. • <i>Forecasting rationale:</i> Straight-lining assumes that future appreciation in surrender value is offset by increases benefit proceeds.
Accrued interest receivable	Straight-line	
Due from customers on acceptances outstanding	Straight-line or historical growth rate	Primarily used in the trade of goods. For example, a manufacturer needs to be paid by a retailer: The retailer's bank, under certain financial conditions between the bank and its customer, accepts to pay for the goods. The bank is substituting its creditworthiness for that of its customer in order to assure the manufacturer of payment after shipping the goods. The acceptance is then sent to the