

## **Introduction**

Financial statements for banks present a different analytical problem than manufacturing and service companies. As a result, analysis of a bank's financial statements requires a distinct approach that recognizes a bank's somewhat unique risks.

The concept and functions of banks is quite simple. Banks employ cash taken from depositors, stockholders and earnings and lend the funds to creditworthy borrowers and invest the remainder in safe securities at an interest rate higher than the rate paid to depositors and cost of capital. Cash derived from depositors and savers in essence, become the banks inventory.

Profits are derived from the spread between the rate they pay for funds and the rate they receive from borrowers. This ability to pool deposits from many sources and then lend to many different borrowers creates the flow of funds inherent in the banking system. By managing this flow of funds, banks generate profits, acting as the intermediary of interest paid and interest received and taking on the risks of offering credit.

## **Leverage and Risk**

Banking is a highly leveraged business requiring regulators to dictate minimal capital levels to help ensure the solvency of each bank and the banking system. In the U.S., a bank's primary regulator could be the Federal Reserve Board, the Office of the Comptroller of the Currency, the Federal Deposit Insurance Corporation, Office of Thrift Supervision or any one of 50 state regulatory bodies, depending on the charter of the bank. Within the Federal Reserve Board, there are 12 districts with 12 different regulatory staffing groups. These regulators focus on compliance with certain requirements, restrictions and guidelines, aiming to uphold the soundness and integrity of the banking system.

As one of the most highly regulated industries in the world, depositors and investors have some level of assurance in the soundness of the banking system. As a result, they can focus most of their efforts on how a bank will perform in different economic environments.

Below is a sample income statement and balance sheet for a large bank. The first thing to notice is that the line items in the statements are not the same as your typical manufacturing or service firm. Instead, there are entries that represent interest earned or expensed as well as deposits and loans.

<b>Income Statement</b>		
(Dollars in Millions)	Current Period	Prior Period
	Interest Income/ Expense	Interest Income/ Expense
<b>Revenue</b>		
Interest income	\$9,807	\$9,131
Interest expense	\$4,519	\$3,216
Net Interest Income	\$5,288	\$5,915
Non interest income	\$4,658	\$4,157
<b>Total Revenue</b>	<b>\$9,946</b>	<b>\$10,072</b>
<b>Expense</b>		
Provision for loan losses	\$1,003	\$985
Non-interest expense	\$4,849	\$4,479
Total Expense	\$5,852	\$5,464
Income before income taxes	\$4,094	\$4,608
Income tax expense	\$1,339	\$1,507
<b>Net Income</b>	<b>\$2,755</b>	<b>\$3,101</b>

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<b>Balance Sheet</b>		
(Dollars in Millions)	Current Period	Prior Period
<b>Assets</b>		
Federal Funds sold and securities purchased under agreements to resell	\$176,922	\$157,274
Residential mortgage	\$178,359	\$188,846
Credit card	\$98,022	\$92,207
Direct/Indirect consumer	\$119,920	\$105,048
Commercial	\$110,163	\$101,097
Total loans and leases	\$683,386	\$644,472
Other earning assets	\$39,112	\$37,924
Total earning assets	\$722,498	\$682,396
Cash and cash equivalents	\$32,575	\$30,558
Allowance for loan and lease losses	\$79,854	\$80,837
<b>Total assets</b>	<b>\$834,927</b>	<b>\$793,791</b>
<b>Liabilities</b>		
Domestic interest-bearing deposits		
Savings	\$39,056	\$37,275
Now and money market deposit accounts	\$236,564	\$223,376
CDs and time deposits	\$134,799	\$121,456
Total interest-bearing deposits	\$410,420	\$382,107
Federal funds purchased, securities sold under agreements to repurchase and other short-term borrowings	\$128,171	\$116,002
Long-term debt	\$76,037	\$76,934
Total interest-bearing liabilities	\$614,628	\$575,043
Non-interest-bearing liabilities	\$148,101	\$144,901
Shareholder's equity	\$72,198	\$73,847
<b>Total liabilities and shareholders equity</b>	<b>\$834,927</b>	<b>\$793,791</b>

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As financial intermediaries, banks assume two primary types of risk as they manage the flow of money through their business. Interest rate risk is the management of the spread between interest paid on deposits and received on loans over time. Credit risk is the likelihood that a borrower will default on its loan or lease, causing the bank to lose any potential interest earned as well as the principal that was loaned to the borrower. As investors, these are the primary elements that need to be understood when analyzing a bank's financial statement.

### **Interest Rate Risk**

The primary business of a bank is managing the spread between deposits and loans/investments. Basically, when the interest that a bank earns from loans is greater than the interest it must pay on deposits, it generates a positive interest spread or net interest income. The size of this spread is a major determinant of the profit generated by a bank. This interest rate risk is primarily determined by the shape of the yield curve.

As a result, net interest income will vary, due to differences in the timing of accrual changes and changing rate and yield curve relationships. Changes in the general level of market interest rates also may cause changes in the volume and mix of a bank's balance sheet products. For example, when economic activity continues to expand while interest rates are rising, commercial loan demand may increase while residential mortgage loan growth and prepayments slow.

Banks, in the normal course of business, assume financial risk by making loans at interest rates that differ from rates paid on deposits. Deposits often have shorter maturities than loans and adjust to current market rates faster than loans. The result is a balance sheet mismatch between assets (loans) and liabilities (deposits). An upward sloping yield curve is favorable to a bank as the bulk of its deposits are short term and their loans are longer term. This mismatch of maturities generates the net interest revenue banks enjoy. When the yield curve flattens, this mismatch causes net interest revenue to diminish.

### **A Banking Balance Sheet**

The table below ties together the bank's balance sheet with the income statement and displays the yield generated from earning assets and interest bearing deposits. Most banks provide this type of table in their annual reports. The following table represents the same bank as in the previous examples:

<b>Averages Balances and Interest Rates</b>						
<b>(Dollars in Millions)</b>	<b>Current Period</b>			<b>Prior Period</b>		
	<b>Average Balance</b>	<b>Interest Income/Expense</b>	<b>Yield/Rate</b>	<b>Average Balance</b>	<b>Interest Income/Expense</b>	<b>Yield/Rate</b>
<b>Earning Assets</b>						
Federal Funds sold and securities purchased under agreements to resell	\$166,908	\$1,277	3.06%	\$149,649	\$785	2.10%
Residential mortgage	\$168,263	\$2,410	5.73%	\$179,853	\$2,693	5.99%
Credit card	\$92,474	\$2,534	10.96%	\$87,816	\$2,498	11.38%
Direct/Indirect consumer	\$113,132	\$1,712	6.05%	\$100,046	\$1,467	5.87%
Commercial	\$103,927	\$1,362	5.24%	\$96,283	\$1,209	5.02%
Total loans and leases	\$644,704	\$9,295	5.77%	\$613,647	\$8,652	5.64%
Other earning assets	\$38,194	\$512	5.36%	\$36,118	\$479	5.30%
Total earning assets	\$682,898	\$9,807	5.74%	\$649,765	\$9,131	5.62%
Cash and cash equivalents	\$30,731			\$29,103		
Allowance for loan and lease losses	\$80,215			\$81,731		
<b>Total Assets</b>	<b>\$793,844</b>			<b>\$760,599</b>		
<b>Interest-bearing liabilities</b>						
Domestic interest-bearing deposits						
Savings	\$38,043	\$99	1.04%	\$36,598	\$48	0.52%
Now and money market deposit	\$223,174	\$1,147	2.06%	\$209,691	\$653	1.25%
CDs and time deposits	\$127,169	\$1,321	4.16%	\$115,672	\$1,026	3.55%
Total interest-bearing deposits	\$388,386	\$2,567	2.64%	\$361,961	\$1,727	1.91%
Federal funds purchased, securities sold under agreements to repurchase and other short-term borrowings	\$120,916	\$989	3.27%	\$110,478	\$534	1.93%
Long-term debt	\$76,697	\$963	5.02%	\$77,924	\$955	4.90%
Total interest-bearing liabilities	\$585,999	\$4,519	3.08%	\$550,363	\$3,216	2.34%
Non-interest-bearing liabilities	\$134,386			\$138,001		
Shareholder's equity	\$73,459			\$72,235		
<b>Total liabilities and shareholders equity</b>	<b>\$793,844</b>			<b>\$760,599</b>		
<b>Net interest income/yield on earning assets</b>		<b>\$5,288</b>	<b>2.66%</b>		<b>\$5,915</b>	<b>3.11%</b>

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Figure 3: Average Balance Sheet and Interest Rates

First of all, the balance sheet is an average balance for the line item, rather than the balance at the end of the period. Average balances provide a better analytical framework to help understand the bank's financial performance. Notice that for each average balance item there is a corresponding interest-related income, or expense item, and the average yield for the time period. It also demonstrates the impact a flattening yield curve can have on a bank's net interest income.

The best place to start is with the net interest income line item. The bank experienced lower net interest income even though it had grown average balances. To help understand how this occurred, look at the yield achieved on total earning assets. For the current period, it is actually

higher than the prior period. Then examine the yield on the interest-bearing liabilities. It is substantially higher in the current period, causing higher interest-generating expenses. This discrepancy in the performance of the bank is due to the flattening of the yield curve.

As the yield curve flattens, the interest rate the bank pays on shorter term deposits tends to increase faster than the rates it can earn from its loans. This causes the net interest income line to narrow, as shown above. One way banks try to overcome the impact of the flattening of the yield curve is to increase the fees they charge for services. As these fees become a larger portion of the bank's income, it becomes less dependent on net interest income to drive earnings.

Changes in the general level of interest rates may affect the volume of certain types of banking activities that generate fee-related income. For example, the volume of residential mortgage loan originations typically declines as interest rates rise, resulting in lower originating fees. In contrast, mortgage servicing pools often face slower prepayments when rates are rising, since borrowers are less likely to refinance. As a result, fee income and associated economic value arising from mortgage servicing-related businesses may increase or remain stable in periods of moderately rising interest rates.

When analyzing a bank you should also consider how interest rate risk may act jointly with other risks facing the bank. For example, in a rising rate environment, loan customers may not be able to meet interest payments because of the increase in the size of the payment or a reduction in earnings. The result will be a higher level of problem loans. An increase in interest rates exposes a bank with a significant concentration in adjustable rate loans to credit risk. For a bank that is predominately funded with short-term liabilities, a rise in rates may decrease net interest income at the same time credit quality problems are on the increase.

## **Credit Risk**

Credit risk is most simply defined as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. When this happens, the bank will experience a loss of some or all of the credit it provided to its customer. To absorb these losses, banks maintain an allowance for loan and lease losses.

In essence, this allowance can be viewed as a pool of capital specifically set aside to absorb estimated loan losses. This allowance should be maintained at a level that is adequate to absorb the estimated amount of probable losses in the institution's loan portfolio.

Actual losses are written off from the balance sheet account "allowance" for loan and lease losses. The allowance for loan and lease losses is replenished through the income statement line item "provision" for loan losses. Figure 4, below, shows how this calculation is performed for the bank being analyzed.

Prior period allowance for loan and lease losses	\$	80,837
Current period Provision for loan losses	\$	1,003
Updated Allowance for loan and lease losses	\$	81,840
less write offs (calculated amount)	\$	(1,986)
Current period allowance for loan and lease losses	\$	79,854

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Figure 4: Loan Losses

### Conclusion

A careful review of a bank's financial statements can highlight the key factors that should be considered. You need to have a good understanding of the business cycle and the yield curve of banks as both have a major impact on the economic performance of banks.

Interest rate risk and credit risk are the primary factors to consider as a bank's financial performance follows the yield curve. When it flattens or becomes inverted a bank's net interest revenue is put under greater pressure. When the yield curve returns to a more traditional shape, a bank's net interest revenue usually improves.

Credit risk can be the largest contributor to the negative performance of a bank, even causing it to lose money. In addition, management of credit risk is a subjective process that can be manipulated in the short term. Investors in banks need to be aware of these factors before they commit their capital.