THE STANFORD BANK GAME

VERSION 12 PLAYERS' MANUAL

Executive Edition

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PREFACE

The Stanford Bank Management Game, Version 12, is an outgrowth of an earlier version of the Stanford Bank Management Simulator developed by the late Professor Alexander A. Robichek. A pioneer in the use of computer simulation for the teaching of bank management, Professor Robichek was the A. P. Gianinni Professor of Finance and Banking at the Stanford Graduate School of Business until 1978. The author is greatly indebted to him for his original work.

The Stanford Bank Game, Version 11 reflects some of the more noteworthy developments and trends in banking:

- CAPITAL ADEQUACY. Capital adequacy is calculated based on risk. Different amounts of capital are required for each asset (including off-balance sheet activities) in the bank, depending on the risk involved. The capital adequacy ratio of each bank also influences funding costs and stock price.

- COST OF FUNDS. Traditional bank deposits have been declining as a source of bank funding. Banks have replaced these deposits with purchased funds, for which they pay market, and, more recently, risk-related rates of interest. In the Stanford game, banks also rely heavily on purchased funds whose costs are affected by profit and risk factors.

- HEDGING . Increasingly, banks are using more sophisticated tools to manage risk. Although futures hedging is simplified in the game, it demonstrates some of the dimensions of risk management.

- FEE INCOME. Fees have become an important part of earnings. The Stanford game now includes trust activities, financial services, letters of credit, loan initiation, and loan services fees.

- INCREASING LENDING RISK. As banks exploit new credit and non-credit markets, risk levels (on and off balance sheet) have been increasing. The Stanford game also considers these risk levels in valuing each bank.

Overall, the basic structure and behavior of this computer model reflects bank management issues and problems that are normally encountered in large institutions. We hope these new dimensions will provide a richer learning environment for all participants.

INTRODUCTION

THE STANFORD BANK GAME

The Stanford game provides a stimulating learning experience by giving you the opportunity to make decisions that are similar to those you would make managing a commercial bank. We do not suggest that the relationships among the variables in the model are exact replicas of relationships in the real world. But these relationships do capture the essence of the significant economic and regulatory variables that affect the operation of commercial banks today. You are challenged to make optimal decisions in the context of the relationships in the model.

In the Stanford game, you make short-term operating decisions and, at the same time, consider the implications of these decisions for long-term growth and profitability. Also, your team must recognize that decisions that affect one operating area can have important secondary effects in other areas. For example, service charges can affect both fee income and demand deposit levels. The simulation emphasizes that you need an integrated approach to operational decision making. In a very real sense, you will learn that everything depends on everything else. Because of the degree of complexity of the Stanford game, the number of possible decision combinations is exceedingly large. However, the game is less complex than the real world.

Playing The Game

The Stanford game is operated as a competition. Participants are divided into groups of five or six with each group managing a separate bank. Each bank is identical in its starting position. Over a period of time, the management team of each bank makes decisions that determine the bank's future growth and profitability. An economic environment, representing the external economy, is programmed into the model; it is the same for all banks.

Just as real commercial banks are affected by conditions in the economic environment, banks in the Stanford game are affected by events and trends in the model environment. Although the financial model does not precisely duplicate the experiences of any economic period or of any particular bank, you need to be familiar with general economic and banking trends.

The instructor may operate the Stanford game in one of two ways:

1. **PARTIALLY COMPETITIVE**. Under this option, the banks compete only against the environment. The decisions of any one bank playing the game do not influence the results of the other banks.

2. **COMPLETELY COMPETITIVE**. Under this option, the banks compete against the environment exactly as they would in the non-competitive option, and against each other. Generally the results are similar but one bank can influence the results of others. Consequently, this mode is not used if the results from two separate programs need to be compared.

The game is divided into a series of sequential, nonseasonal periods, referred to as quarters. Each quarter is of identical length and is given a number. Period 1.4 refers to Year 1, Quarter 4; 2.1 to Year 2, Quarter 1; and so on. Teams decide on operating and policy variables before each quarter of play. The simulation program computes the operating results for each quarter of play using the economic environment, the team's previous position, and decision inputs.

Every participant is furnished each quarter with a computer printout which includes the following information:

- The balance sheet for the bank for the current period and the previous one

- The quarterly income statement for the current period and the previous one
- Detailed breakdowns of the major balance sheet and income statement accounts
- A listing of the decision input that generated the above results
- A summary of the economic environment conditions, along with information about the next period's economic conditions
- A synopsis of performance by all the banks playing the game

After studying this printout to become thoroughly familiar with the financial position of their bank, each team makes decisions for the coming quarter based on its overall goals and policies, and records them on the decision form.

Preparing for the Simulation

In the Stanford game, you usually work as part of a five- or six-member bank management team. To manage your bank well, each member of your team must focus attention on a different area of the bank; you must specialize when you are gathering data and analyzing each quarter's results. But when you make the quarterly decisions, you must all work together as a team. You cannot make a decision for one area of the bank without knowing what is happening in other areas. So for the team to function properly, everyone on the team must clearly understand the overall bank.

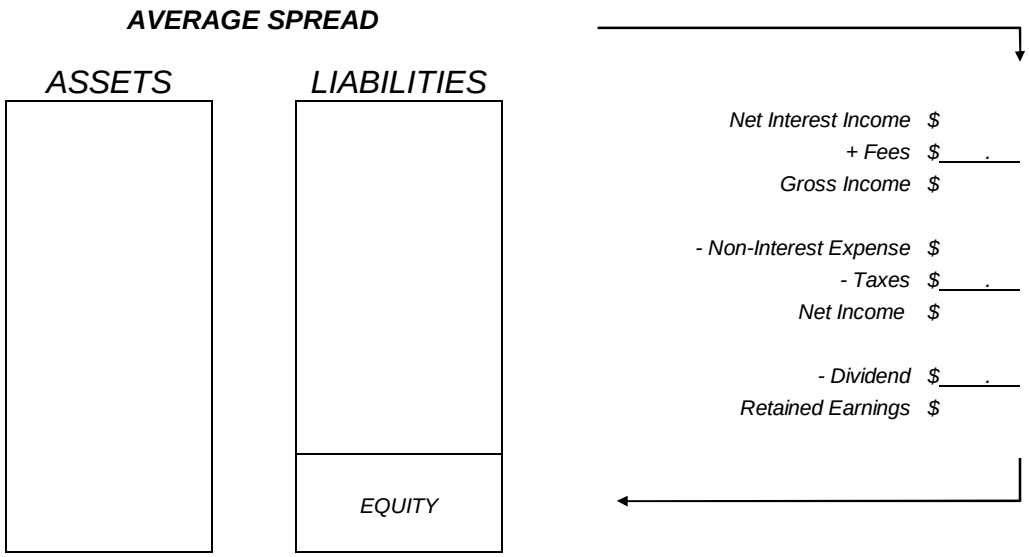
To help you understand your bank, the first section of this manual provides you with a very simple model of how a bank functions. There may seem to be an overwhelming amount of information in the manual. However, if you understand how the basic model works, you will be able to digest the information about the Stanford Bank Game and use it effectively.

FUNDAMENTALS OF BANK PROFITABILITY

Bankers must evaluate the risk (or exposure) involved in each transaction; they must balance all the different assets and liabilities with their varying prices and terms to maturity. To make a profit, bankers must work successfully with five factors that influence their banks' profitability: spread, equity, taxes, non-interest expenses, and fee income. In order to explore how each of these factors affect the bank, we will utilize a model.

The Bank Profitability Model

The balance sheet of a bank reports the various account balances and the income statement reports income and expenses over time. We can create a highly simplified model that combines the essential elements of both documents as follows:



Net interest income is the difference between the interest cost of liabilities and the interest earnings on assets. The average spread is the average difference between interest rates on assets and liabilities. Any fees the bank might earn are added to net interest income to calculate gross income. Non-interest expenses and taxes are deducted from gross income to derive net income. After stockholders are paid a dividend, retained earnings flow back into the equity portion of the model.

Equity is a special part of total liabilities and is shown separately. Since regulators dictate the minimum relationship between equity and assets (or a higher standard is set by management), this relationship, for all practical purposes, is unchanging or fixed. Because the equity/asset relationship is fixed, the equity/other liability relationship is also fixed. Therefore, the model is a predefined set of relationships, and any change or manipulation of any of its parts has a predictable impact on the other parts. Because it has so few parts, the model provides us with a simple way of looking at bank profitability.

We will make extensive use of this model later, but let's begin by discussing some of the dynamics of assets and liabilities that can affect the average spread which creates net interest income.

Spread Issues

If interest rates were always the same from year to year, bankers would have an easy time determining how much to charge for loans and how much interest they could afford to pay for liabilities. But bankers operate in an environment that is rarely the same for any fixed period of time. The economy, the regulatory and policy constraints imposed by the government in an attempt to control the economy, and the activities of competitors in the marketplace all affect prices and interest rates and the bankers' ability to make profitable decisions.

The Time Value Of Money

Money is actually a commodity like gold or real estate or steam shovels; like other commodities, money has a price. If you make a loan of your money for some specified period of time, then you would expect to be paid for the use of your money over that time period. That payment reflects the interest rate and represents the time value of money. In a dynamic economy, the time value of money (the interest rate) is continually changing, just as the prices of other commodities are changing.

When the time value of money is higher, borrowers pay a higher interest rate on loans. Because borrowers receive the funds from savers, the interest rate paid to savers will also be higher. Conversely, when the time value of money decreases, borrowers pay a lower interest rate and savers receive a lower rate.

To make matters more complex, the relationship between time to maturity and price is not always fixed. Logic would tell us that short-term loans should be less expensive than long-term loans. In a modern economic environment, this is not always true because shortages of sources of short-term funds can make short-term loans more expensive. To complicate matters further, shortages of intermediate-term money can result in intermediate-term money carrying the highest price.

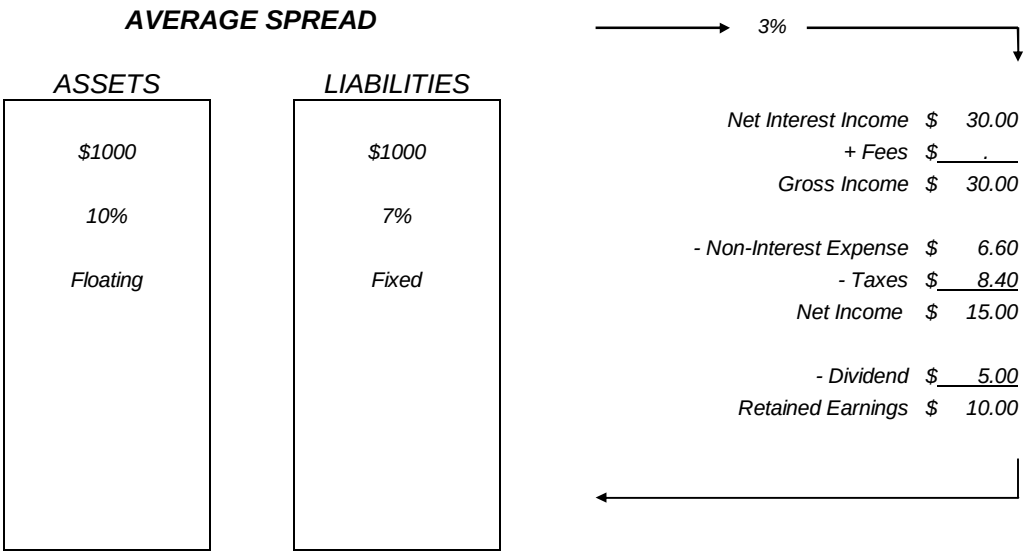
Because of these considerations, banks are exposed to risk when they make decisions about their asset and liability portfolios in two major areas: 1) fixed vs. floating rates on assets and liabilities and, 2) the term (or maturity) structure of their portfolios.

Fixed Rate vs. Floating Rate Exposure

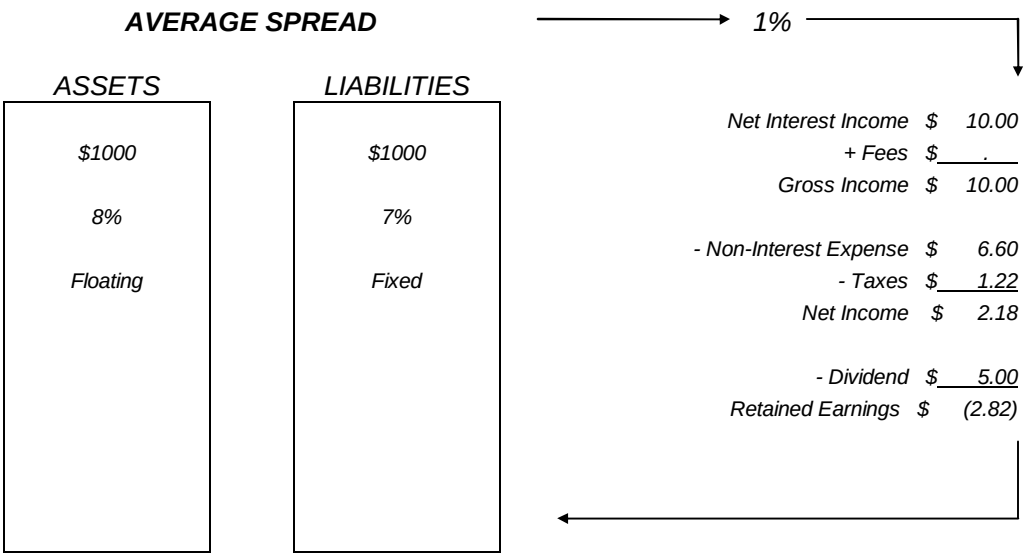
A bank can loan or borrow money at fixed or floating interest rates. The bank may take a risk either way; if interest rates change as the bank expects, it can make a profit, and if rates change in the opposite way, the bank can, of course, lose. This can be illustrated by a couple of examples.

First, imagine a bank accepts one-year deposits and promises to pay a fixed rate of 7%. If the bank then makes one-year floating rate loans with these funds, it will generally ask the borrower to pay a rate that is based upon some formula consisting of market interest rates plus a margin that represents enough extra to cover the bank's non-interest costs plus a profit. Depending upon the agreement with the borrowers, floating rate loans can be repriced daily, weekly or monthly. In any case, the interest rate on the loan will change based upon changes in the time value of money in the market, so it is called a floating rate loan.

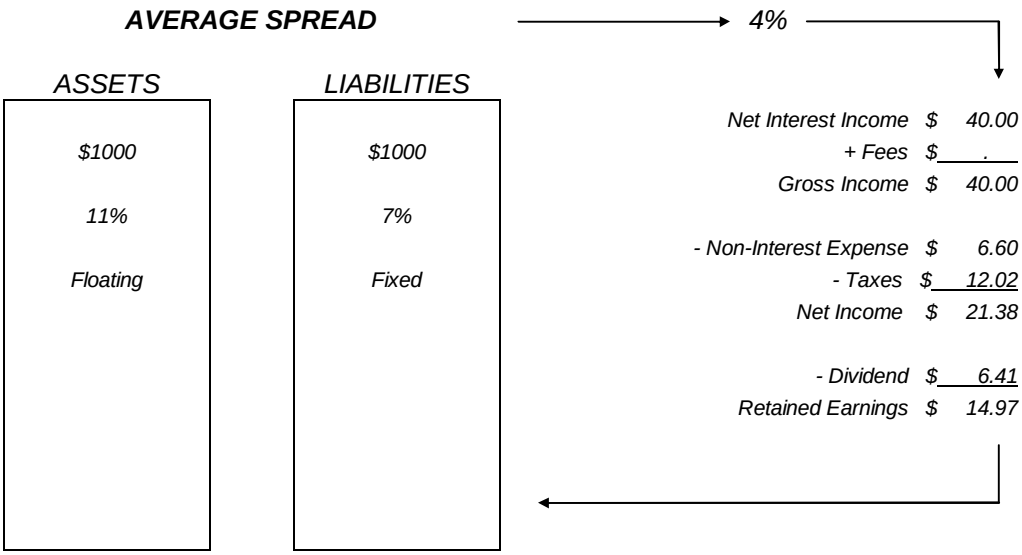
Let's say, for example, that the bank originally lends the money at a 10% floating rate. The 3% difference between the loan and deposit (10% minus 7%) covers expenses and earns a small profit. If the interest rate on the loan did not change for a year, the bank would have a profit as indicated in the following diagram. (For purposes of this example, we have arbitrarily selected an expense figure of $6.60 and taxes of $8.40, or approximately 36%.)



But if interest rates in the market fell, the rate on the loan would fall from 10% to, let's say, 8%, while the cost of funds (the interest expense) on the deposit would remain unchanged (fixed by contract) at 7%. This would narrow the spread and, as shown in the chart below, the profit on the loan would drop from $15 to $2.18 because the spread has been reduced from 3% to 1%, and non-interest expenses have remained fixed at $6.60.



Conversely, in a rising interest rate environment, the spread will widen as the floating rate on the loan increases. For example, if interest rates in the market rise so that the rate on the floating loan increases to 11% instead of the original 10%, the bank will realize an additional profit since the cost of the deposit used to make the loan remains at 7% (by a fixed-rate contract) and non-interest expenses are unchanged. (Taxes and dividends would be higher on the increased earnings.)



The opposite scenario could also occur (a fixed rate loan and floating rate one-year liability) with exactly reversed financial consequences. This means that the bank borrows funds at a floating rate and then lends them at a fixed rate. Suppose after the bank lends the money at a fixed rate of 10%, the price of money rises; if the bank has to pay 13% to borrow before the loan matures, the bank will clearly lose money. This scenario has produced problems in the savings and loan industry in recent years. We will discuss later how financial intermediaries try to avoid these interest rate exposures because, although the profits look attractive, the possible losses can be great.

Term (or Maturity) Exposure

The second area of risk, that of mismatched term (or maturity), also results from economic fluctuations. One type of mismatch can occur when a bank plans to fund a long-term loan with a series of short-term deposits. For example, a bank makes a five-year loan, planning to use deposit dollars that it gathers in the three-month certificate of deposit (CD) market. (A CD is a fixed-rate, fixed-term, fixed-amount deposit.) If the cost of these short-term deposits rises, or if for some reason this type of deposit is not readily available over the five-year life of the loan, the bank may need to pay higher rates to replace the maturing short-term deposits. The bank has promised to make the loan for five years, so it must continue to support the loan with liability dollars irrespective of their cost. The reverse of this is also a possibility. The bank could agree to pay a depositor a fixed interest rate for five years and plan to make a series of one year loans. However, market conditions could change, and the bank may find that it still has the deposit but can't renew the loans or find other assets that have rates high enough to earn a profit. Generally, a bank is said to be mismatched if the repricing dates on the assets and liabilities are not matched.

Spread Management

To increase earnings, the bank's management may try to increase the rates earned on the bank's assets—its loans and securities—and thus increase interest income. Or management may reduce the rates paid on the bank's liabilities, thereby reducing the bank's interest expense. This process is generally referred to as spread management.

In general, bankers are aware of the average spread required to generate a profit. In other words, if one-year money costs 7%, bankers know that one-year loans require an additional rate of 3% or 4% in order to cover costs and generate a profit. If it were this simple, bankers would need only to take market rates on deposits of different maturities and add a spread to calculate rates for the loans.

But bankers must consider several other factors. Just to start, different types of loans have different loss rates. Bankers usually can handle this easily because they know, from past experience, what the different loss rates are likely to be; bankers cover these loss rates in pricing their loans...

A more difficult factor is that different types of loans have different operating costs. The size of the loan and the amount of time it takes to monitor and manage the customer affect costs. In other words, even though on the average loans are profitable with a 4% spread, some business loans may be profitable at 1% whereas others may require a 5% spread.

Bankers must also consider the customer's total relationship with the bank. For example, a customer may be keeping large balances in a checking account on which the only expenses for the bank are those associated with servicing the account. If the bank has a long-term relationship with this customer and used the deposits profitably, what should the bank charge if the customer wants a one-year loan? As long as the customer doesn't object to the bank's normal pricing formula, the banker won't have a problem. However, today many customers are aware of the value of their deposits and expect some special treatment in return. Even if the customer isn't knowledgeable, the bank may not be wise to exploit a valued customer. A competitor is usually only too willing to explain matters in an effort to acquire the account.

Prior to 1955, bankers were not too concerned with these issues because most of the deposits were stable checking accounts and most of the loans were short-term commercial loans. But changes in the nature and costs of assets and liabilities have made banking more complex today. During the past 15 years, bankers have improved their ability to analyze how operations costs and customer relationships affect profitability. But bankers still tend to divorce non-interest expenses from spread issues, perhaps because it is difficult to find direct relationships between non-interest expenses and a specific asset or liability, or a relationship with a customer.

Gap Management

Even if bankers could analyze the expenses more exactly, they would still have problems managing the spread. Bankers need to satisfy their customers and, as we have shown earlier, savers and borrowers have different needs which create dislocations or mismatches between assets and liabilities. Today most bankers approach this problem through the use of a tool called gap management. To determine "gaps," a banker rearranges all of the assets and liabilities of the bank into categories based on maturity or repricing date. All of the overnight assets are listed against the overnight liabilities, the one-week assets against the one-week liabilities, and so forth. The differences in the totals represent gaps.

For example, let's consider a bank that has $150 in both assets and liabilities. Overall, it is in balance as it should be. But the bank's assets and liabilities are not in balance either overnight or by the week as the following chart shows:

	OVERNIGHT	ONE WEEK
Assets	$100	$ 50
Liabilities	$ 50	$100
GAP	+50	-50

Every night, the bank uses $50 of its one-week liabilities (deposits or other money it has borrowed for a week) to fund $50 of its overnight assets (loans that it makes overnight). The liabilities have a fixed interest rate for one week, but the assets supported by those liabilities have a rate that changes daily. If interest rates in the economy start to fall sharply, the assets will earn less interest on a nightly basis; but the liabilities, the funds supporting the assets, will remain at the fixed interest rate for the week; thus, the bank will make less

income. If interest rates rise sharply, the interest the bank is paying on the one-week liabilities will remain the same, but the bank will make more interest on its overnight loans, so the bank's income will increase.

To minimize this interest rate risk, banks try to close these gaps; that's what gap management is all about. In the above example, the bank could purchase an additional $50 of overnight liabilities to close part of the gap. But then the bank would have to place an additional $50 in some type of asset in order to be in balance. (If the bank adds $50 to total liabilities, it must add an additional $50 to total assets.) It may well be that the bank cannot make a one-week loan because none of its customers wants that type of loan, or that other types of assets (like securities) do not earn enough interest to generate a profit. (Keep in mind that the bank would have to pay something for the $50 in overnight money it purchased to close the gap). If the bank could purchase or create the right type of asset, the bank's total assets and liabilities would expand from $150 to $200, assuming the bank has adequate capital for such an expansion in assets.

Swaps

Recently banks, other financial intermediaries, and even corporations have been using swaps to close the gaps and reduce their exposure to changes in interest rates. A swap is not an actual transfer of assets or liabilities but an agreement between institutions that transfers the cash flows and, therefore, the risk (cost) of mismatches.

To avoid a mismatch, the bank in our example appears to need to exchange $50 in overnight assets for $50 in one-week assets (or $50 in one-week liabilities for $50 in overnight liabilities). Notice, however, that it is not the $50 in assets and liabilities per se that is the problem but rather the way the spread or profit can be affected by changes in interest rates. In other words, the problem arises due to the difference between the cash flows on the income earned from the $50 in assets and the expenses associated with the $50 in liabilities. If the bank can find another financial intermediary or large corporation that will swap the cash flow from either the asset or liability, this cash flow swap has the same effect as swapping an actual asset or liability. In a swap, the bank keeps its assets and liabilities, but agrees to pay another institution the interest it makes on $50 of overnight assets for one week (a floating interest rate) in exchange for receiving the interest the other institution makes on $50 of its one-week assets (a fixed rate). Now the bank is no longer mismatched. By converting the income on the $50 in floating rate assets to a fixed rate, the bank will no longer be affected by changes in market rates because it has acquired the equivalent of a fixed-rate liability.

The other institution has exactly the opposite situation.

	OVERNIGHT	ONE WEEK
Assets	$ 50	$100
Liabilities	$100	$ 50
GAP	-50	+50

Each institution is exposed, but to exactly opposite movements in rates. By swapping, they can both neutralize their balance sheets to any movements in market interest rates. In our example, both institutions are in a position to neutralize interest rate risk through a swap contract with each other. Note also that it would have been just as easy to swap the interest expenses associated with the $50 of liabilities to achieve the same result.

Alternatively, an institution could, through the use of swap arrangements, take a risk on the future direction of interest rates. In other words, an institution that was matched with equal term-to-maturity assets and liabilities could create a mismatch by the use of a swap. What is important about the swap is that it is not reported in the bank's published accounting information because it is not an asset or a liability. Yet it is a

financial tool that can transfer substantial levels of risk very quickly. In general, this type of activity, called off-balance-sheet risk, is of major concern to regulators and others especially because it is being used more frequently. We do not have swaps in the Stanford Game but you will use hedges as an Interest Rate Risk management tool.

Spread Management Problems

Although in theory banks can close the gaps to reduce the risks associated with the movement of interest rates, in practice they can't always do this completely. The financial tools banks use to reduce risk always involve some costs which at times may be too high. So most banks operate with some gaps, although the bigger banks have maximum, pre-defined limits they will not exceed. Generally, the management of the bank will increase the gaps slightly when they are confident in their forecasts for interest rates and shrink the gaps as they become uncertain about interest rates.

Today's markets for both loans and deposits are extremely competitive. In a competitive marketplace, customers have expanded options, so the price for an item tends to be as low as possible. In banking, competition has a direct impact on the cost of liabilities and the price for assets.

On the liability side, the bank can either buy its money or somehow acquire demand deposits. The cost for buying money is dictated by the market. If the bank chooses to pay more, it will have to earn more on the loans it makes; otherwise the bank will reduce its spread. The bank could conceivably lower the cost of purchased money by manipulating the maturity of the funds purchased; however, since the bank can't control the maturity of its loans easily, the bank usually has to severely mismatch itself to accomplish this. As we saw earlier, a severe mismatch creates unacceptable levels of risk.

Because of intense competition, demand deposits don't offer much latitude for increasing spreads. In pursuit of deposit accounts, banks may build branches, buy automatic teller machines, add staff, and so on. But because all of these add substantially to non-interest expenses, the new business acquired can be more expensive than purchased money.

Banks would pay more for money if they could lend it profitably, but the lending markets are also competitive. The price a bank charges for a loan depends on the risk associated with the type of loan and the individual customer. The loan markets today are so competitive that any bank that is rapidly growing (increasing the number of) loans or a specific type of loan is immediately suspect. Since people make an effort to obtain the least expensive loan, it is assumed that the bank must be doing something unusual to attract its new customers. If the bank is pricing loans lower than its competitors then the bank can develop a profit problem because, as we saw earlier, the bank has little flexibility on the cost of money. If the bank isn't using low loan pricing to attract customers, then it must be accepting high risk loans by dealing with customers that other banks don't want.

It is true that a small bank can sometimes attract a specialized group in their market successfully through special services. However, even this capability is somewhat limited by competitive forces.

In summation, banks use spread management primarily as a way of reducing risk; as a tool for improving profits, spread management is limited by competitive forces.

Equity and Profitability

Leverage

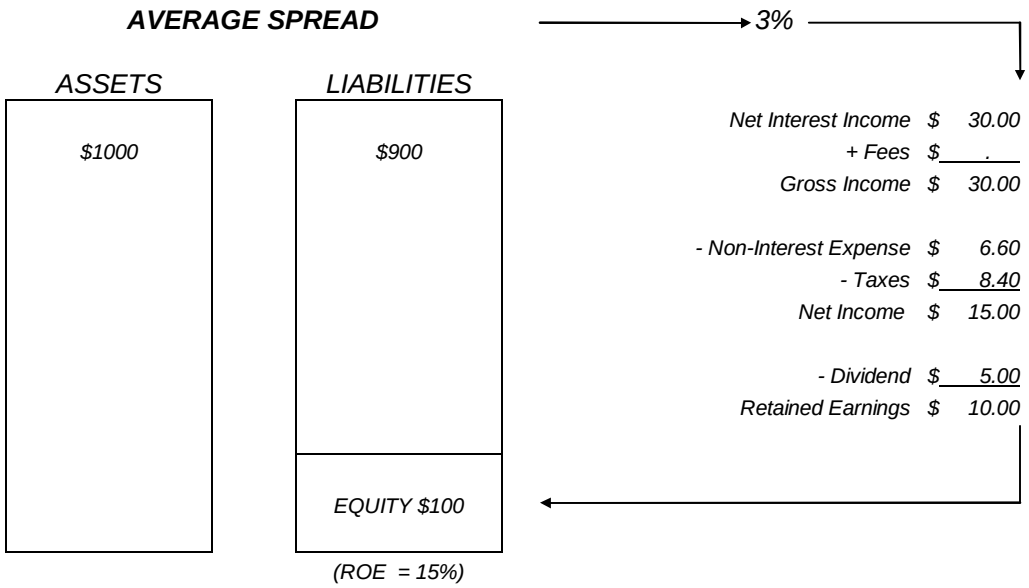
The equity (or capital) of the bank is important because these funds allow the banker to gather deposits and create assets. Leverage, or the relationship between equity dollars and assets, is one of the most important issues in both profitability and regulation of depository institutions.

To explore issues associated with leverage, let's go back to the model of the bank discussed at the beginning of this section and assume it is leveraged at 10:1 and has $100 of equity and $6.60 of non-interest expense.

Let's also assume that the investors would be pleased if management were to achieve a 15% Return on Equity (ROE). (To achieve a 15% ROE, the bank would need to generate $0.15 in after-tax net income for each $1 invested; in this case, $15.)

Since the bank has $1000 in total assets and total liabilities, we can see that if the bank has no fee income, the average spread (the difference between interest rates on the average cost of funds and the average earnings from assets) has to be 3% in order to generate an ROE of 15% in the model.

(To keep our numbers simple, we will be using a tax rate of about 36% throughout all the examples.)



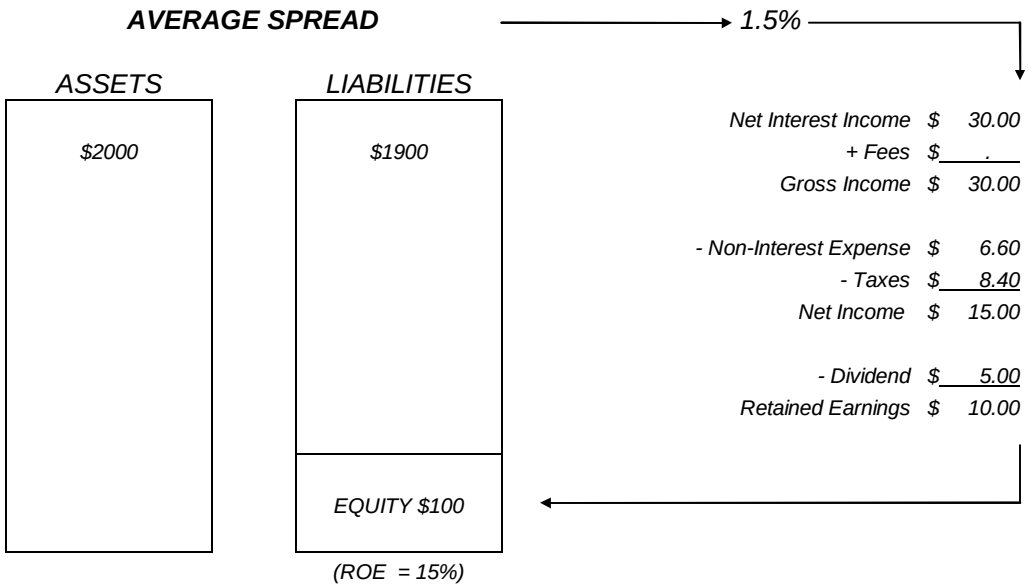
Another way to express earnings is Return On Assets (ROA). ROA is earnings expressed as a percentage of the assets. ROE is of interest to investors because it deals with profit as a return to equity, but ROA is useful to bankers when comparing institutions with different leverage ratios as it tends to reflect spread and non-interest expense issues independent of equity. In the above example, the ROA would be 1.5% ($15 divided by 1000).

Most fractional percentages are commonly converted to basis points. One basis point is .01%; in other words, one hundred basis points equal 1%. So a figure like 1.5% could be stated as 150 basis points, or 1.5%.

Leverage and Spread

With a smaller spread, a bank with a higher leverage ratio could make the same ROE for its stockholders as a bank with a lower leverage ratio.

For example, notice what would happen if we doubled the leverage ratio, to 20:1, and developed assets and liabilities to the limit, but kept everything else (Net Income, Fees, and Non-operating Expenses) the same.



The spread has been cut in half (from 3% to 1.5%), but the after-tax net income is unchanged at $15.00 and ROE is still 15%, because of the increased leverage.

A more highly levered institution can pay more for deposits or charge less for loans than its competitors with lower leverage and still make the same profit for its investors. This is an important advantage not only when competing for customers but also when making new additions to equity.

Anytime competition in a marketplace is intense, prices and profits are reduced to a minimum because business flows to the most efficient operator. Today's loan and deposit markets are so competitive that any bank leverage advantage quickly translates into a market advantage.

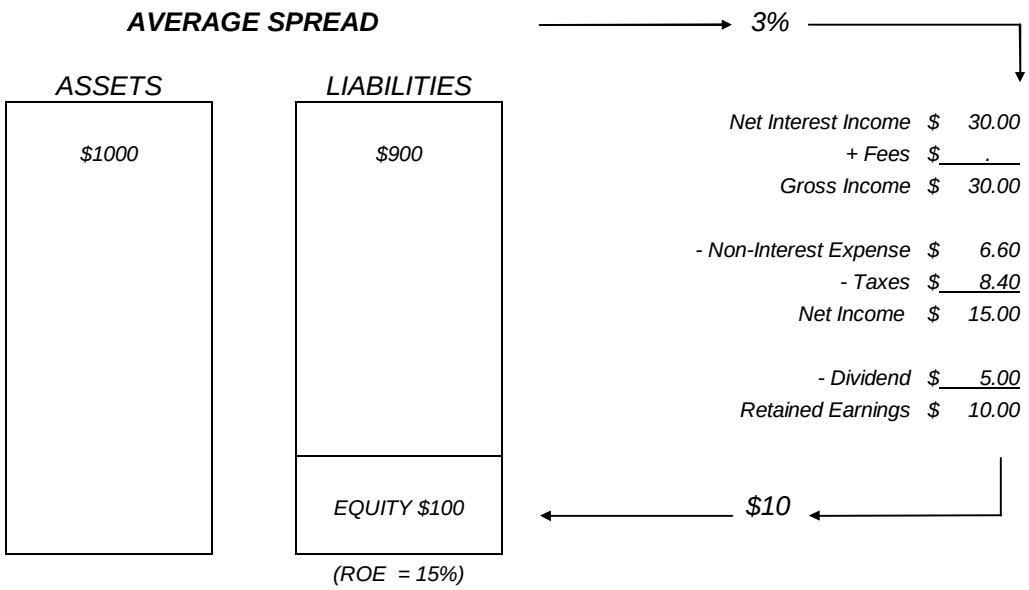
Increasing Equity

The regulators control leverage limits, but the bank can take steps to increase its total equity. If the bank can expand the equity base, it can add both loans and deposits, and presumably this will improve earnings.

A bank has only two ways to increase its equity: (1) retained earnings, and (2) newly acquired capital.

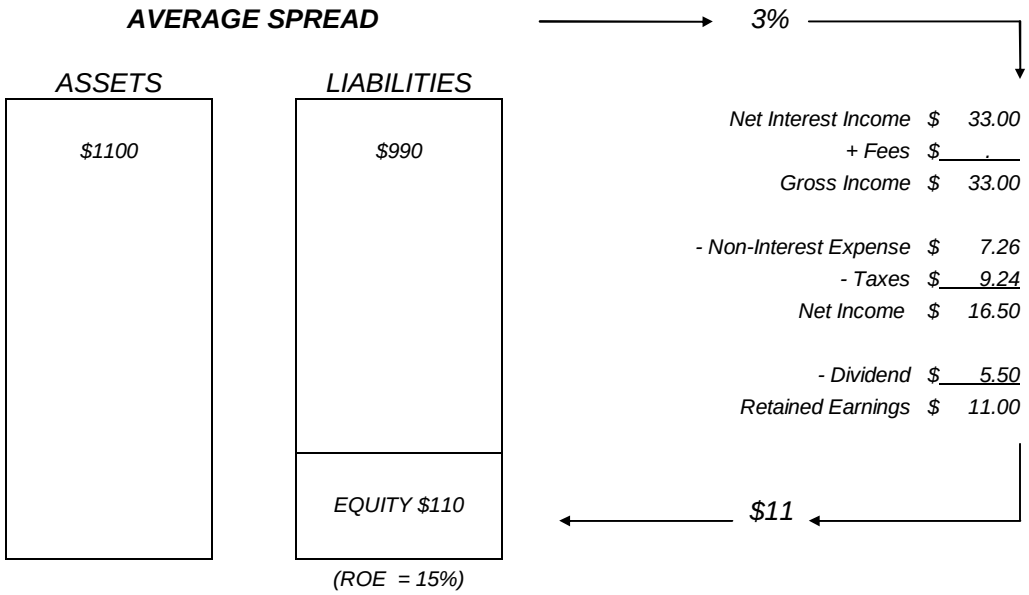
Retained Earnings

Retaining earnings is generally the most desirable way to expand equity because it is usually the least expensive for the current investors. The level of retained earnings is based on overall profit and the percentage of earnings paid out as dividends.



We can see from our model that if ROE is 15% ($15.00) and we pay one third of this in dividends ($5.00), what is left over, the retained earnings, is equal to 10% of equity ($10.00). By adding this money to equity, the bank can then increase assets by 10% (assuming the leverage ratio is still 10:1). The 10% growth rate that is supported by retained earnings is referred to as the sustainable growth rate or sustainable growth.

If the new assets and liabilities continue to earn at a 3% spread, our bank would now look as follows. (Because it is now a slightly bigger bank with increased earnings, the bank's expenses, taxes, and dividend will also increase.)



Although ROE is still 15%, there have been some positive changes from the stockholders' perspective. If there are 10 shares of stock outstanding, the earnings divided by the number of shares have increased from

$1.50 to $1.65 and, if the bank pays out one-third of earnings, the dividend per share increases from $.50 to $.55.

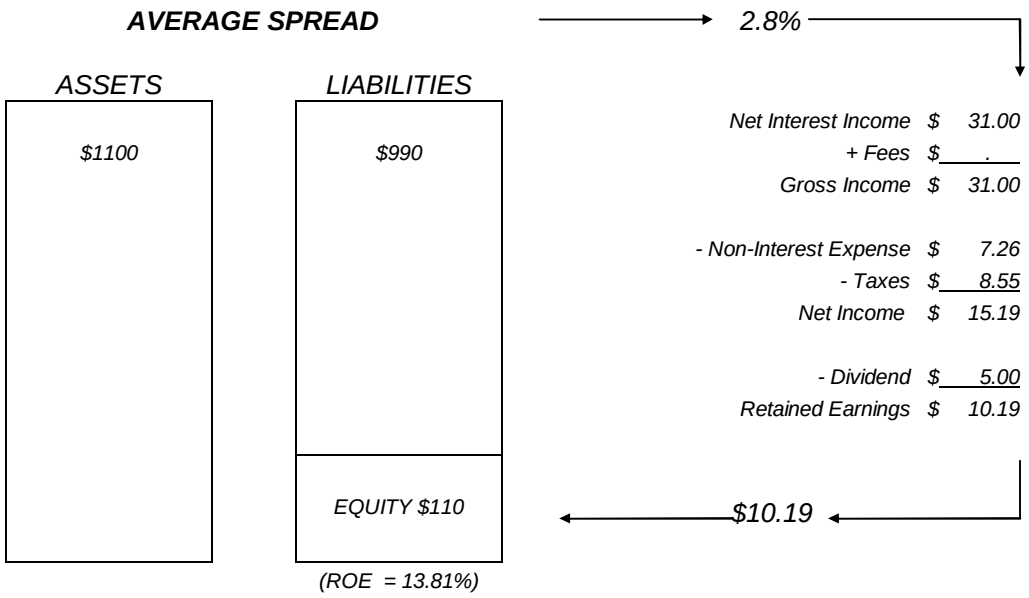
Dividend Payout

We can also see from the example above that if we had not increased the dividend to reflect the increase in net income, we would have reduced the dividend payout percentage. The bank could do this to increase the flow of retained earnings to the equity base. In the above, simply by holding the dividend at $5.00, we would increase the flow to equity from 10% to 10.45% (11.50 divided by 110), and this would then allow a faster growth rate in assets. In a purely financial sense, one would think that if a bank had a high ROE, the investors would prefer management to keep the earnings. This assumes that the investors want to reinvest their profits but cannot improve on the return that the bank earns.

We have previously discussed some of the problems associated with improving overall earnings (ROE). If the bank can't add significantly to equity through increased profit or manipulating the dividend, then it must raise new capital.

Capital Stock

Several problems are associated with issuing new stock as a mechanism for achieving growth and improving earnings. In our examples, we have assumed that the new assets, which were added because of new equity, produced the same average profit. However, the competition in banking today is such that the bank may not be able to achieve growth and maintain the same level of profit. Most banks can handle a small infusion of equity (on a percentage basis) but find it difficult to deal with larger infusions. If the normal sustainable growth rate is 10%, new capital of 10% forces the bank to grow assets at a 20% annual rate. If the bank can't add new assets or if the new assets don't earn the same or a higher spread, the existing stockholder suffers. This can be illustrated by modifying the earnings from the prior example. If, instead of a 3% spread, the bank earns only a 1% spread on the additional $100 in assets, earnings would be $31 instead of $33. Taxes would be a little lower, but non-interest expense unchanged.



Both average spread and ROE are significantly lower. In addition, the bank is making about the same profit as it was before the addition of new equity and assets. The stockholders would not be pleased with these results because the bank now generates a return of only 13.8% instead of 15%, and the stockholders may

now have better investment opportunities elsewhere. This can also have a major effect on the market price of the stock because new investors may not be impressed with the lower return.

The Dilution Effect

Let's assume, for a moment, that in the prior example the $10 addition to equity was not from the prior year's retained earnings, but the result of the sale of one additional share of stock for $10. Instead of 10 shares outstanding, there are now 11. ROE is still $13.8%, but now the earnings on each share of stock drop dramatically from $1.52 per share to $1.38 (15.19 divided by 11), and the dividend will drop from $.50 to $.46 per share. Reductions in earnings or dividends per share which are a result of issuing additional stock are referred to as the dilution effect.

The existing ownership of the bank is represented by the shares of stock. When the total shares are divided into total equity, we get a figure called book value. The book value is what the bank is worth on paper to the current investor. However, the market price of the stock may be rather different from the book value because the market price is determined by what investors are willing to pay. Investors will look at the ROE and compare it to similar types of available investments. If ROE is lower than other types of investments, they may not pay the book value for new capital stock. If the ROE is higher, or there is some special reason to place enhanced value on the future prospects of the bank, the investor may be willing to pay a premium (something in excess of book).

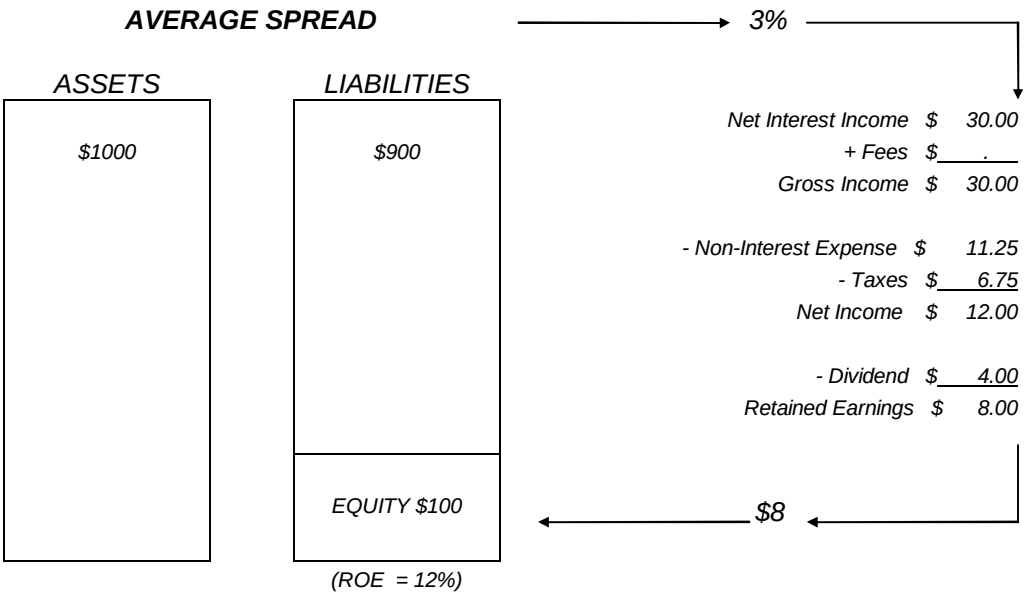
We saw what happened to earnings per share (EPS) and dividends when the $10 of equity was received from the sale of one share of stock and the share's value ($10) was equal to the prior book value of the bank ($100 equity divided by 10 shares). However, if new investors are only willing to pay less than book value, then the bank would have to issue more shares to raise the same amount of equity. This would exaggerate the dilution effect even further because the same earnings would be divided by an even greater number of shares. Because of this, when the market price is below book, the bank will issue new stock only if forced to do so by bank regulators.

If a bank is to maintain both the quality of assets and the spread, it cannot usually exceed its sustainable growth by very much. For this reason, the larger institutions will not generally risk a significant addition to capital unless it is going to be used to 1) meet new regulatory requirements, or 2) acquire existing business (i.e., another bank). When buying another bank or business, the new equity is used to support assets that already exist, and the bank is not faced with the problems associated with rapid growth.

During the last decade, the larger U.S. banks provided a good example of the difficulties banks can face when they encounter earnings and equity problems.

The ten largest banks in the U.S. are generally referred to as money center banks. Their total assets are roughly 40% of the total assets of all U.S. banks. As a group, they began to experience problems with equity growth in the mid-1970's because their overall profits were equal to a 12% ROE. After one-third of this was paid to the stockholders, their retained earnings equaled 8% of equity.

These banks were also under unusual regulatory pressures. The U.S. regulators allowed money center banks to operate with equity that was equal to about 3% of assets in the mid-70's. Today they are required to have Risk-based equity of 8%. This reduction in leverage prevented the larger banks from expanding assets and liabilities significantly even though equity was increasing. If we change a few numbers in our simplified model, we can see the problem a little more easily.



With leverage fixed and equity growing at an annual rate of only 8%, assets can grow at only an 8% rate. If regulators start increasing equity requirements, then retained earnings normally used to support asset expansion may be sufficient only to satisfy the new regulatory requirements. Without new assets and liabilities, the bank's problems with profitability are exacerbated because it has no new loans to generate new income. If the bank is expanding equity because of higher equity requirements without increasing income, ROE declines because a larger number of shares are divided into the same earnings. This can also have a negative influence on stock price.

The common stock of U.S. money center banks was trading at or below book value during most of the 1980's; this effectively prevented them from issuing new common stock because earnings equaled a ROE of 12% to 15%. Also, note in the model that even if regulators do not increase equity requirements, if the ROE of 8% does not exceed the overall inflation rate, the bank will begin to lose market share because asset growth can't keep pace with money supply growth. The model clearly demonstrates that because there are so few variables and because these are so interrelated, a problem in any part of the bank quickly becomes a complication for the whole bank.

The Other Profit Variables

Up to this point, we have seen that although the banker can improve earnings through improving the spread and manipulating equity-related issues, neither of these offers much opportunity for dramatically improving profits. Our model has three other variables that we have held constant throughout the discussion: taxes, non-interest expenses, and fee income.

Taxes

Occasionally, governments pass tax laws that make it advantageous for banks to engage in activities they might not normally pursue. Overall, tax issues always play some part in management decisions, but the earnings advantages from this source are highly limited and subject to constant changes.

Non-Interest Expense

The non-interest expenses of a bank are an area of major focus because management can control these directly. However, as mentioned before, it is not always easy to determine how these expenditures might affect the spread. Take, for example, salaries, which are one of the biggest non-interest expense of the bank. If a bank hires higher-priced talent, will it necessarily lead to reduced loan losses, the ability to acquire funds at a lower cost, or even a higher price on loans? Hard factual data on what a bank should spend in the area of non-interest expenses is almost non-existent.

Generally, all bankers can do is compare their banks to others to measure their effectiveness and efficiency in these areas. As banks compete more, especially with other types of firms, it will become increasingly important to understand the dynamics of non-interest expenses and profits. It is one of the few areas in which bankers are not completely subjected to market forces and can exercise some control.

Technological change has already had a substantial impact on banks' non-interest expenses and is one of the prime reasons for the large number of mergers.

Fee Income

Today many bankers believe that the most important area for improving bank profit is fee income. As we have shown, banks clearly are limited in the amount of profit they can generate by manipulating other variables. However, many fees are based not on adding assets or liabilities but on a service of some type. By generating income from services, banks can frequently avoid most of the regulatory issues and problems created by leverage constraints. This is exactly what banks are attempting to do today.

Any activity or service that does not require an addition to liabilities or assets permits banks to improve earnings without adding to capital. (Though the activity may involve increases in expenses, it does not usually increase the need for equity.)

Most regulators are concerned with overall economic health and the public's confidence in the safety of financial intermediaries. Many fee-generating activities create additional risks, and as these activities increase, so does the potential for more bank failures. Increasingly, regulators are requiring capital for fee-based services that increase risk.

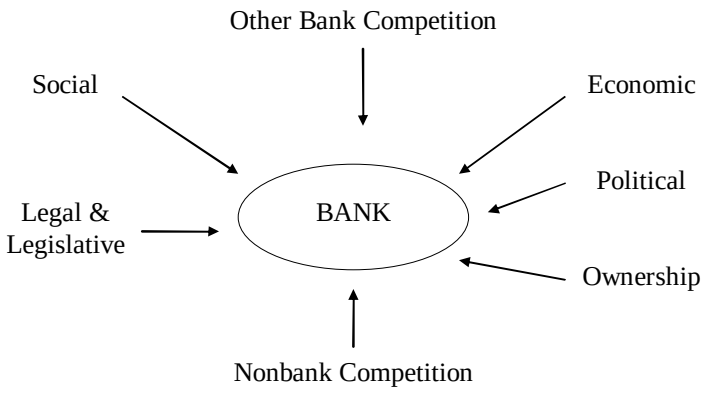
With competitive forces creating narrower spreads, banks today rely heavily on fee-based income. Many banks would show operating losses if they depended only on their spread.

MANAGING YOUR BANK

In its simplest form, a bank is an institution that accepts money from one source and makes it available to another; thus the term financial intermediary. In order to operate effectively, the institution must have the confidence and trust of the lenders and borrowers of funds; that is, the intermediary must be able to meet all commitments even in worse-case situations. When the intermediary makes commitments, it accepts the dislocation risks in the supply and demand for funds.

The Banking Environment

Banks in the U.S. perform other types of functions and services which are related to basic gathering and lending of currency. Banks outside the U.S. can generally engage in a much wider scope of activities in order to meet their profit objectives. Although their scope of activity differs, U.S. and foreign banks face many of the same problems achieving profits. All banks operate in a multifaceted and complex environment in which many forces influence management decisions.



The Bank Simulation

In the simulation, your bank will be affected by all of the forces that affect a normal bank. They fall into four broad categories:

1. The economy

2. The regulatory environment

3. The marketplace

4. Competition

In the Stanford game there are simplified and realistic economies. The instructor selects the level of difficulty that is appropriate for the student group

The regulatory environment is defined in the section on “The Regulatory Environment.” Some regulations change when the government tries to implement changes in economic policy. It is most important for you to understand the various regulations and their profit implications. Frequently, players overlook this area.

The marketplace in which the bank operates is determined by the structure of the computer program. As in the real world, within the model you must constantly probe and test to determine marketplace reactions to products, services, and prices, and to find your best profit opportunities.

Competition is much simpler in the model than in the real world, but it does affect your bank. Although you may be competing against the other teams participating in the simulation, your primary competition throughout is the market place or “All Banks in the Economy.”

Controlling Your Bank

You control the profits of your bank through seven basic mechanisms:

1. Product pricing
2. Credit policies
3. Financial structure
4. Securities transactions
5. Use of personnel
6. Advertising and promotion
7. Premises

Generally, you decide either to incur expenses in order to generate new business or to invest funds in order to create assets. You always take at least some risk. A complex set of mathematical equations evaluates the level of risk against the amount of profits to generate the stock price of the bank.

By simplifying a number of factors, the simulation provides insights into a very complex and dynamic situation.

Strategies: Wholesale or Retail

In the Stanford game, you can move the bank more heavily into retail banking by expanding branches or into wholesale b by closing branches. But because you can open or close a maximum of only two branches each quarter, you are limited in the degree to which you can emphasize either strategic posture.

If you choose to be a wholesale bank, you will probably end up with a smaller bank that has fewer core (that is, inexpensive) deposits. If your bank is smaller than your competitors', you must have either a better spread or lower expenses than the competition to have the same or better earnings. You can partially achieve this through the savings in operating expenses that a wholesale bank usually has. You must accomplish the rest through lower purchased money funding costs, which in the Stanford game require higher earnings and capital ratios compared to the competition. Your earnings and capital levels become extremely important if you select a wholesale strategy.

By contrast, the retail bank is expensive in terms of capital and operating expenses, so it must price its business to offset these higher expense levels and to utilize its “market muscle” effectively. For example, if you expand your bank, you also need to increase advertising expenditures, in order to be effective. Because of this, retail banks almost always need higher net interest income than wholesale banks.

In the Stanford game, the accounts that represent commercial customers (prime and high loans, commercial checking, financial services, and credit card processing) tend to be somewhat more sensitive to decision variables such as price and officer time allocation (service). Those accounts that represent retail customers (real estate, consumer, credit card, medium grade loans, money market savings, and regular checking) tend to be more sensitive to advertising and branching.

The computer model is impartial to the strategy your team selects. The emphasis in the model is on how well you manage all of the various details, and on how attentive you are to the overall implications of being a larger or smaller bank. You can also maintain the bank's current structure or make only minor modifications and still do as well as a bank which aggressively pursues a wholesale or retail strategy.

Perhaps the single biggest mistake teams make when they select a strategy is to believe that if they emphasize a particular market segment, they need to increase their volume of business in that area. In fact, if a bank emphasizes a market segment, often the bank will achieve approximately the same amount of business, but at a higher profit.

The second biggest error teams make is to ignore completely a market segment because it isn't part of their primary strategy. Even when you are losing business in a market segment because of your strategic orientation, you must still be attentive to the profit levels of the business that remains.

Because you generally manage your bank only for two simulated years, you should select your strategy immediately. Otherwise, you may not have time to implement it properly. Also, if you agree on a strategy for your bank, you narrow your focus and so reduce the workload for everyone on the team.

You will generally redefine the goals of your bank each quarter. As you learn more, you set your goals more easily and define them more precisely. You cannot set goals well early in the program—you do not know enough. But you must still try because that is the way you learn in a simulation: through experience.

Usually, most teams need about four decision periods before they can control their bank and make it work the way they want. From that point on, managing the bank becomes a fine-tuning exercise; the team focuses on the smaller details that combine to produce high profits.

But do not lose sight of the main objective: to learn. Competition should just add a bit of spice to the experience and help you have some fun.

AN OVERVIEW OF YOUR BANK

All the banks in SBG start in the same position, so all the teams' computer printouts for period 1.4 and 2.1 are identical. Even though they all say Bank 1, they are the same for all of the banks.

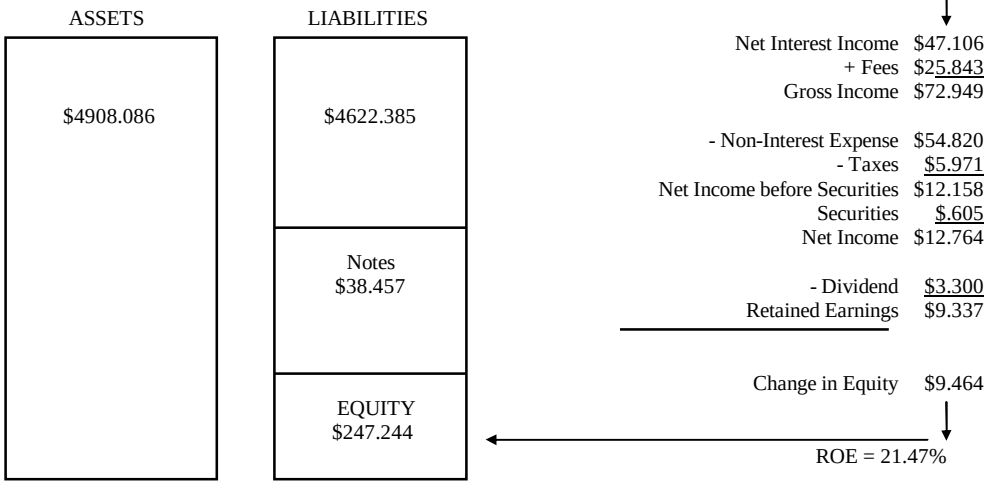
Profitability

Look first at the computer printout that says "Period 1.4" in the upper right corner. We will start by taking some numbers from the first page of this report and putting them into a simple bank profitability model. The first page of the 2.1 printout also gives data from period 1.4. With just a few calculations, and in a short time, we can get a fairly good overview of the bank for both quarters.

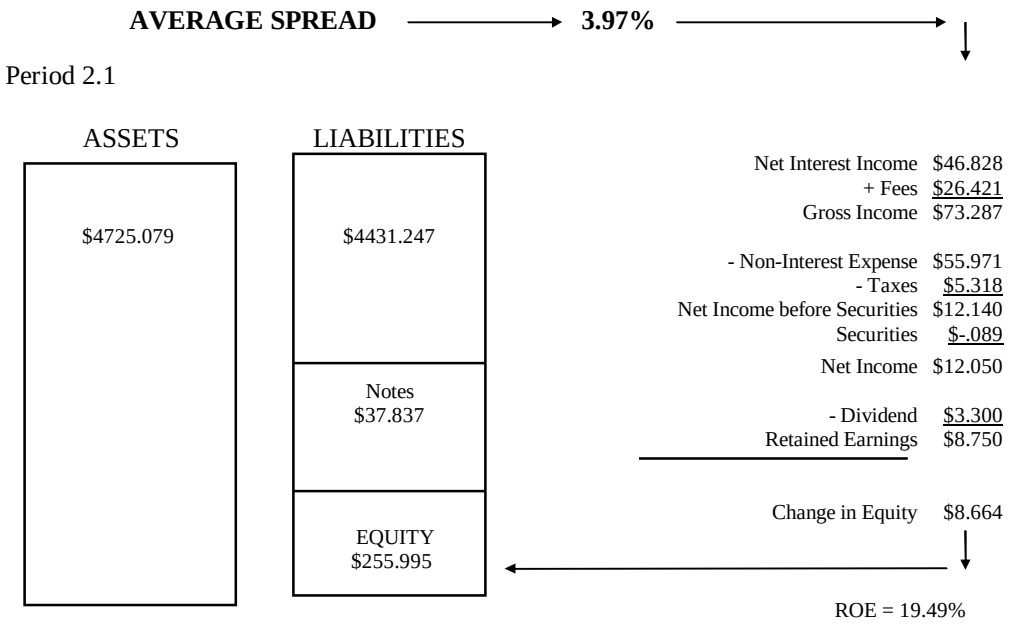
To find the "Average Spread," divide "Net Interest Income" by "Assets"; then multiply by four to annualize. "Net Interest Income" is "Total Interest Income" less "Total Interest Paid." "Fees" are "Service Charge Income" plus "Fees and Other Income." "Non-Interest Expense" includes "Salaries and Benefits" plus "Provision for Loan Losses," "Occupancy Expense," "Business Development," and "Other Expenses." ROE uses Total Equity from period 1.3.

Period 1.4

AVERAGE SPREAD → **3.85%** →



Next, lets look at the same data from the period 2.1 report.



Growth Rate in Total Qualifying Capital = 2.7% (10.94% Annual)

*SBG always rounds figures when it prints. Internally the model works to ten decimal places. It is not unusual to see differences of .001 and in rare cases .002 in printed figures and calculations.

Under “Gain on securities/loans” we report Real Estate sales, defaults on securities, and commissions on security sales. ,The securities portfolio is marked to market each quarter and because interest rates went up during the period and the value of the banks securities decreased by $1.347 million. This loss was offset by a gain on Futures Sold of 1.658.

The "Total Equity" figure does not include capital notes. You will notice that the capital notes position shrank slightly between 1.4 and 2.1 because a small portion of these are repaid each quarter.

At the very bottom of the balance sheet you have "Total Qualifying Capital" and the Capital Adequacy Ratio." In SBG, equity for regulatory purposes includes the bank's equity, its capital notes, and 50% of the bank's loan loss reserves. As a result, the percentage growth in qualifying capital is not entirely based on retained earnings.

By comparing the data from two quarters, we can quickly see that the bank had a slight increase in average spread. Although the bank is currently making a reasonable return based on ROE, it would appear that the trend for the past six months in earnings is moving in the wrong direction. The new management team will be challenged to diagnose and correct this problem.

Note that the dividend payout ratio is currently about 27.5% of Net Income. SBG looks for a payout ratio of 25%, based on the last 4 quarters of earnings. The stock price of the bank is penalized if the dividend is below this standard (stock price improves only slightly if you pay more than 25% of average earnings). The model will penalize any reductions in the dividend for about one year.

Capital Adequacy

The SBG model measures your bank's leverage somewhat differently than regulators but the overall effect is comparable. SBG uses a risk-related approach to capital adequacy; it calculates leverage by using the SBG capital adequacy equation. The equation, which you can find in the "The Regulatory Environment," shows that different levels of capital are required for each asset in the bank, even for some items that do not appear

in the balance sheet. The specific levels of capital for some asset categories are slightly different than regulatory requirements; however, any risk-related approach to capital has the same basic financial implications.

At the bottom of page 1 of the computer printout, you can find the "FRB Capital Adequacy Ratio." This ratio, which reflects the SBG capital adequacy equation, is important because it directly affects both the cost of the bank's purchased money and the share price of its stock. It is the computer model's way of telling you if your capital is adequate for supporting your assets.

Your capital adequacy ratio directly affects the cost of your bank's funds. A capital adequacy ratio of 1.0 allows the bank to purchase money at the going market price. If your capital adequacy goes higher than 1.0, the price of purchasing money begins to fall a bit below market; if your capital adequacy is lower, the price of purchasing money begins to rise above the market price.

The cost of your bank's purchased money moves exponentially as the capital adequacy ratio moves from 1.0. In other words, if the bank had to pay 3 basis points over the market for having a capital adequacy ratio of .99, for a capital adequacy ratio of .95 the bank would pay more than 15 basis points. The capital adequacy ratio affects the stock price in much the same fashion.

You will note that in the printout, capital adequacy increased from period 1.4 to period 2.1 (i.e., from 1.009 to 1.039). With further improvements in the capital adequacy ratio, the bank will have less expensive funds which should improve the spread in the future.

Return on Equity

At the end of 2.1, your SBG bank has a ROE of 19.49%. You can find this figure at the bottom of page 7 of the computer printout under "Ratios--This Bank and Average for All Banks." Based on investor standards for a real-world bank of this size and structure, your bank is average or slightly above average.

We hope you can begin to appreciate the value of using the bank profitability model. By using a few key numbers from two accounting periods, you can quickly see what is happening to your bank, or for that matter, to any real world bank. If you think of how specific decisions affect the profitability model, you will find many of the more complex issues easier to grasp. When you begin the program, you will discover that you can easily get buried in detail and lose track of the overall picture. The profitability model is a tool you can use to help solve this problem.

THE YEAR 1, QUARTER 4 POSITION

Now that we have taken a quick overview of the bank, let's explore the printout in more detail. Take out the computer printout for period 1.4 and follow it through this discussion. We will eventually explore all the accounts, but we'll start with page 7.

ECONOMIC DATA: PAGE 7

To play SBG well, you must understand the economic information presented in the printout. In the far left column on page 7, you will find all of the accounts and services for which you set the prices. The next column, "All Banks in the Economy at the Start of Qtr," gives the market prices in effect for the entire economic quarter just completed. At all times during the simulation, even in the competitive mode, these prices represent the major competition your bank faces. Your bank's prices for the quarter just completed appear in the next column. (They are also found on page 11, in "Data for the Stanford Game," which recaps all of your management decisions for the current quarter).

The next column, "Average for Banks Playing SBG XI," is a numerical average of the banks playing the game. Use this data with great caution because even if only one bank has deviated substantially, the numbers can be distorted.

The final column, "All Banks in the Economy at Present," shows the prices for the upcoming quarter. In the real world, bankers do not guess about prices. They always know with some precision how their competition is pricing; this is public information, which bankers monitor very closely. Also, bankers typically review their prices every week and adjust their policies according to what is happening in their marketplace. By contrast, in SBG you make decisions for a full economic quarter. Because bankers don't play guessing games on prices in real life, we do things a little differently to simulate this properly in SBG. In SBG, all of the economic data (like prices) are held constant for the duration of an economic quarter. For example, under "All Banks in the Economy at Present," the price for a prime loan is 10.05%. This will be the market price for prime loans for all of period 2.1.

Even if rates are generally rising or falling, the amount of prime loans you acquire in period 2.1 will depend, to a considerable extent, on how your bank's price compares to this average. If your rates don't compare well to the rates of "All Banks in the Economy," you can lose significant business whether in the competitive or non-competitive mode of the program. In the competitive mode, the computer model still makes this comparison first. But then, the model also compares the prices of all the teams in the simulation. If, in this second comparison, your team had the highest price among the banks, you could lose a small percent of the loans the computer model had assigned to you (based upon the comparison to the market rate). However, because the model also analyzes all the other decision variables among competing teams, and because of limitations set in the model, a bank almost never loses a significant amount of business just because the model is operating in the competitive mode.

What then is the point of having a competitive mode to the program? Even though you can't lose a significant amount of business as a result of being in the competitive mode, you can sometimes gain quite a bit. If you acquire a small percent of the business from 4 other banks (in a game with 5 teams competing), your loans could grow substantially.

In general, you cannot easily take business away from your competitors by pricing alone and still maintain your bank's profits. For example, if you priced your prime loans for 2.1 at 9.05%, a full percentage point below the market rate, you would take some business away from the other banks. However, all of the prime loans you acquired in 2.1 would earn at 1% less than the other banks. If you have to fund the loans at the same price as your competition does, your profits, relative to other banks, would suffer because you would have a lower average spread.

The competitive mode of the program becomes significant only when one team has a strategy that is significantly different from the others. For example, in a game with five banks competing, if four banks begin to close branches and emphasize commercial banking, the one team which opens branches and emphasizes retail banking will experience higher levels of success than normal. Four banks, by closing down their branches, are in effect pushing extra customers to that one bank.

SBG uses a variety of economic scenarios. When you make loan and deposit pricing decisions for the next quarter, you don't need an economic forecast; you can rely on the data stated on page 7. However, as with most of SBG, there is one exception: The "Federal Funds Rates" for borrowing (purchases) and lending (sales) are not constant through the quarter. The rate for fed funds in any quarter is the average between the rate at the "Start of the QTR" and the rate "At Present." For example, in period 1.4, the actual interest rate for fed funds borrowing (purchases) was 8.36% ((8.06 + 8.65)/2).

If you want to know the interest rate for fed funds borrowing in period 2.1 (the next quarter), you need to make an interest rate forecast. The actual interest rate will be the average between 8.65 and the quote that will appear in the 2.1 printout. This latter figure may be higher or lower depending upon the movement of interest rates in the economy. Your bank will almost always have some fed funds because the computer model uses fed funds (and 90-day CD's) to balance your bank (You cannot both buy and sell fed funds in the same quarter).

A bank's beta or risk index is the return required above long-term risk-free bond yields to compensate for the specific risk taken by purchasing an individual bank's common shares. A beta of one (1.00) indicates that the bank's common share returns matched the swings in the market as a whole and hence entail the same degree of risk as the market. A beta greater than one means that the bank's common share returns typically exaggerate market movements and are judged by investors to be riskier than investing in the overall market. A beta less than one means that the bank's common share returns typically dampen market movements and are judged by investors to be safer than investing in the overall market.

Weighted Average Cost of Capital, WACC, is your banks beta times .059, plus the 10 year government note rate, times Total Qualifying Capital less Capital Notes, plus, 52% of the rate for issuing 25 million in capital notes times Capital Notes divided by Total Qualifying Capital.

Corporate Rate of Return is the bank's Net Income After Taxes, plus 52% of the Capital Note Interest Expense, plus half of the quarterly change in the Provision for Loan Losses multiplied by 400 .

The economic indicators are found in the top right portion of page 7. The economies are non-seasonal and do not duplicate real world scenarios.

Gross Domestic Product	2120.0
Index of Industrial Production	123.7
Index of Housing Starts	109.4
Consumer Price Index	110.9
New Reserves in Banks ($ millions)	160.0

The Gross Domestic Product (GDP) is the total market value of goods newly purchased by the whole economy. It includes the following:

1. Investment spending on capital assets

2. Government spending on goods and services

3. Consumer spending on goods and services

4. Net imports

GDP is one of the best overall economic indicators; it is real (adjusted for inflation) and annualized. The quarter-to-quarter changes in GDP indicate what the annual growth rate of GDP would be if the current quarter GDP growth continued at the same rate for four quarters. When the gap between predicted GDP and actual GDP, or between the forecasted high and low GDP widens, economists are uncertain over economic trends.

The **"Index of Industrial Production"** measures the level of total output in manufacturing, mining, and utilities. In a growing economy, the index typically increases because these industries are usually very sensitive to economic conditions. The Index of Industrial Production can be an important figure for the banking industry. When it rises, capital borrowing and spending, retail sales, and employment usually increase.

The **"Index of Housing Starts"** indicates the start of construction on new residential units. Because in the U.S., economic recovery is sometimes led by the consumer sector of the economy, an increase in housing starts can be one of the early indicators of recovery. New construction stimulates supporting industries and the durable goods sector. However, this indicator is also affected by consumer spending, savings, and employment.

The Consumer Price Index ("CPI") sets a base price value on an "average" market basket of goods and services purchased by urban clerical and wage-earning families. When this base price changes, it indicates that the prices of living essentials in urban areas changed. As this figure rises, consumer purchasing power is reduced unless their wages increase. Consumer purchasing power can affect housing starts, industrial production, and inventory turnover.

Inflation is indicated by the percentage change in the Consumer Price Index (CPI) from quarter to quarter. If the CPI rises from 100 to 103, then the inflation rate is 3%. The quarter-to-quarter changes in the CPI have been annualized in order to make direct comparisons with other annualized values.

"Net Reserves in Banks" indicates whether banks have excess reserves or a shortage of reserves, depending on whether it is a positive or negative number. It is a general measure of bank liquidity that is directly related to Fed Funds rates. Reserve requirements for each bank are calculated on a moving average basis. When the demand for loans increases in the marketplace, banks tend to be short of their required reserves at some point. Each bank must correct its shortage. In a given time period, a large number of banks with a shortage in reserve deposits can result in a large negative net reserve figure. As negative net reserves increase, fed funds rates rise until the economic cycle achieves its peak.

Federal Reserve Bank Regulations also influence the economy. When the Fed increases reserve requirements, banks must keep a greater proportion of their customers' deposits held as cash; the banks have less of each deposit dollar available to make loans or invest in securities. When the Fed wants to stimulate economic activity, it reduces reserves. Then the bank has more funds available to loan or invest, and usually the cost of funds decreases.

The **"Rediscount Rate"** is the rate charged by the Fed to banks on moneys the banks borrow from the Fed "window." Banks use this "borrowing of last resort" only when they are in difficulty and do not have access to money market funds or when they have exhausted their access and are in an extended position. The rediscount rate is different than the rate for Fed Funds borrowings, which are funds depository institutions buy and sell among themselves.

"DD Reserve Requirement" refers to the percentage amount of your bank's reserves and are based on last quarters account balances. The Federal Reserve Bank requires that banks keep a percentage of their total demand deposits as cash reserves. This percentage may change; the percentage for the upcoming quarter is listed under "At Present."

The quantity of Fed Funds and CD's available to your bank next quarter is indicated next. This is followed by the interest rates for securities you might consider purchasing next quarter. Rates for 180-day and 10-year government securities are quoted even though you cannot purchase these. The "Capital Notes Rates" are benchmarks you can use to estimate your cost if you issue capital notes. The cost of capital notes and CD's is based on the overall health and performance of your bank.

The "Yield on Government Securities" each quarter can give a graphic presentation of economic change. The change in short-term rates from quarter to quarter indicates how fast the economy is moving. Changes in long-term rates indicate whether rates are expected to continue in the same direction (either rising or falling).

The "Average Bank Stock P/E Ratio in Economy" is an economic forecast of the P/E (price/earnings) ratio for all banks in the economy next quarter. The Actual P/E Ratio next quarter may be higher or lower. You are not provided with the exact P/E ratio the model uses for all banks. This forecast can be used to help make decisions regarding the sale or purchase of stock. Using a complex set of equations, the computer model calculates the degree of risk for each bank playing the game. It evaluates capital adequacy, dividend payout, and many other risk-related issues to adjust the P/E ratio for each bank up or down relative to the economic P/E. As you can see in the "Performance Measures--This Bank and Average for All Banks," immediately below this figure, your bank has a P/E ratio of 6.8 at present. To compare your bank to an approximation, use the forecasted P/E from the prior quarter. High-earning banks typically have low P/E ratios, because they generally take higher risks to produce good earnings. The model computes your stock price by multiplying your P/E ratio by earnings per share (times 4 to annualize). However, the earnings figure the model uses, only for the purpose of computing share price, is a modified number discussed a little later. Each bank's share price is shown on page 9 of the printout.

In SBG, you have total control of your bank's earnings through the decisions you make; the model calculates your stock price based on your earnings and the level of risk in your bank. Since stock price is a combination of most of the critical issues, it is usually used at the end of the game to measure performance. However, in the early stages of the program, your bank's stock price relative to others is not necessarily a good measure of success. Many of the teams will be making mistakes or restructuring their banks in some way. This can have short-term negative effects on the P/E ratio that disappear within 2 or 3 quarters. The best measure of performance in the early stages is earnings.

Definitions of Performance Measures

Net Interest Margin = (Total Interest Income - Interest Expense) x 4 / Earning Assets

Earning Assets = Fed Funds Sold + Securities + Loans

Profit Margin = Net Income / Gross Operating Income

Asset Utilization = (Gross Operating Income x 4) / Assets

Return on Assets = (Net Income x 4) /Assets

Equity Multiplier = Assets/Equity

Return on Equity = (Net Income x 4) / Equity

Liquid Assets = Cash and Due from Banks + Fed Funds Sold + Government Securities

Net Volatile Liabilities = (10% of Demand Deposits + CD's maturing in 90 days + Fed Funds Purchased + FRB Borrowings) / Assets

THE BALANCE SHEET: PAGE 1

Since we have considered the economic data on page 7, we can now go back and work through the main points of the printout sequentially. First, let's examine how the computer model balances the bank. In the "Balance Sheet" on page 1, you can see that the bank purchased $61.695 million in Federal funds. We calculated the interest rate for "fed funds" purchased (on page 7) to be 8.36%. The actual interest expense for fed funds during the quarter was $1.289 million (page 2, footnote 7). As you can see, on page 2, footnote 10, the bank currently holds $112 million of 3-month CD's and the interest rate for 3-month CD's was 7.96%, (27 basis points lower than fed funds).

Now let's check the amount of CD's the bank ordered. On page 11, you will find the quantity of 3-month CD's the bank ordered on the decision form: $50 million. The bank actually bought $112; that is, $62 more 3-month CD's than the bank requested. What happened?

When the computer model tried to balance the bank, it found $124 million more in assets than liabilities. When the bank needs more liabilities, the model purchases equal amounts of Federal funds and 90-day CD's to bring the bank into balance. If liabilities exceed assets, the computer sells 95% of the excess liabilities as fed funds and holds the other 5% as excess reserves (on which you do not earn interest income).

In this case, the model purchased $61.695 million in fed funds and added $62 million to the 90-day CD's that were requested on the decision form ($62 + $50 = $112 in 90-day CD's). The fed funds were more expensive than 3-month CD's: 8.36% versus 7.96%. Therefore, if the bank had satisfied its funding requirements with CD's, it would have saved $.062 in interest expense ((.004/4) x $61,695,000). To realize this saving, the bank needed to have requested $172 million in 3-month CD's. Keep in mind that the bank had a shortage of $120 million after all of the CD's ordered on the decision input were purchased. So it needed $122 million in addition to the $50 million ordered.

You need to consider a couple of other issues when you are ordering CD's. On page 7, toward the bottom of the page on the right side, you will see "CD Rates (This Bank)" and some quotes. In the middle of the page, you will also note "fed funds Available 784" and "CD's Available 2400." These numbers are important because they represent both the price and quantity of purchased money available to your bank in the next period (2.1). Your bank's rates and amounts may be different from your competitors' because both the price and quantity of purchased money is affected by bank profit levels and capital adequacy. Funding cost can increase and the availability of funds can be dramatically decreased 1) if the bank does not earn money in a quarter (if earnings are negative) or 2) if capital adequacy is substantially below 1.0. (If the bank has a high capital adequacy ratio, the cost of funds will be lowered).

To understand the importance of this issue, consider how much purchased money your bank uses. In footnote 3, on page 2, note that the total CD's purchased is $956.695 million. We saw earlier (on page 1) that the bank also purchased $61.695 million in fed funds. Total purchased funds is $1,018 million. Almost 21% of the total assets of the bank are supported by short-term purchased money (fed funds and CD's). If you couldn't readily replace this money as it matures, your bank would be forced to shrink assets dramatically. If this money costs you even 20 basis points more than it costs your competitors, this would add $.509 million to your interest expense in a single quarter.

Let's look at one more comparison before going on to other areas. We saw that in period 2.1, $784 million in fed funds and $2400 million in CD's would be available. If you review footnote 10, on page 2, you will notice that on the first day of period 2.1, $412 million of the bank's current CD's will mature (112+180+120). The bank will need to replace these funds, and the current fed funds purchased position of $61.7 million, with funding from some source. In other words, the bank needs a total of $473.7 million in funds in period 2.1 to support its current level of assets. If assets remained unchanged and the team did not request new CD's on the decision form, the computer model would buy equal amounts of 3-month CD's and

fed funds in period 2.1: $237 million of each. (It should be noted that technically a banks sells the CD in exchange for funds. In SBG we refer to this as a purchase but some bankers use "sales" as the terminology)

At the bottom of the balance sheet, note that "Total Equity" does not include capital notes. Also notice that the capital notes position shrank slightly between 1.3 and 1.4 because a small portion of these are repaid each quarter.

The last entries in the balance sheet are "Total Qualifying Capital" and the "FRB Capital Adequacy Ratio." In the Stanford game, equity for regulatory purposes includes the bank's equity, its capital notes, and 50% of the bank's loan loss reserves. As a result, the percentage growth in qualifying capital is not based entirely on retained earnings.

Capital Notes and Equity Funds		
Capital Notes	38.457	39.077
Common Stock ($10.00 par shares, Issued: 3.000 & 3.000 million)	30.000	30.000
Surplus	48.519	48.519
Retained Earnings	168.725	159.262
Total Equity*	247.244	237.718
Total Liability & Capital	4908.086	4800.012
*Total Qualifying Capital	297.177	288.199
FRB Capital Adequacy Ratio	1.009	.974

The model measures your bank's leverage somewhat differently than regulators do. The Stanford game uses a risk-related approach to capital adequacy; it calculates leverage by using a special capital adequacy equation. The equation, which you can find in the "The Regulatory Environment," shows that different levels of capital are required for each asset in the bank, even for some items that do not appear in the balance sheet. Any risk-related approach to capital has the same basic financial implications.

The "FRB Capital Adequacy Ratio," which reflects the capital adequacy equation, directly affects both the cost of the bank's purchased money and the share price of its stock.

A capital adequacy ratio of 1.0 allows the bank to purchase money at the going market price. If your capital adequacy goes higher than 1.0, the price of purchasing money begins to fall a bit below market; if your capital adequacy is lower, the price of purchasing money begins to rise above the market price.

The cost of your bank's purchased money moves exponentially as the capital adequacy ratio moves from 1.0. In other words, if the bank had to pay 3 basis points over the market for having a capital adequacy ratio of .99, for a capital adequacy ratio of .95 the bank would pay more than 15 basis points. The capital adequacy ratio affects the stock price in much the same fashion.

The computer model looks for a payout ratio of 25%, based on the last 4 quarters of earnings. The stock price of the bank is penalized if the dividend is below this standard (stock price improves only slightly if you pay more than 25% of average earnings).

To become more familiar with the printout, take some time to note which items in the balance sheet and the income statement show a significant change between periods 1.3 and 1.4. Write the difference between the numbers off to the side.

THE INCOME STATEMENT: PAGE 1

Let's consider the income statement next. Under income, the "Total Interest Income" was up by $4.101 million, or 16.07% (annualized). Under expense, "Total Interest Paid" was up $3.964 million. At first glance, this does not look bad but the annualized increase in interest expense is 28.8%. The cost of funds increased faster than the earnings on assets. To figure out why, we will need to do a little detective work in the printout.

When the bank has more money than it needs SBG sells 95% and the other 5% becomes part of the non earning cash position. The bank is selling money it just purchased. Although securities increased by about $321 million about $231 million was just a change from Cash and Funds sold. There was about $100 million in new securieties. Net income from securieties and funds sold increased by $1.796. The annualized rate on total securieties of $1058.240 million was only 7%. Earnings from "Loans and Mortgages" were up by ($2.303 million) and "Loans and Mortgages" on the balance sheet increased by $28.06 million. The increases in the "Interest Expenses" were a result of increases in "Interest on Deposits," ($2.7 million) and "FRB and Fed Fund Borrowing" ($1.289 million). We can start looking for the cause of our problem--the cost of money rising faster than the interest income--by looking at one of the areas that changed most: securities.

The bank increased securities and funds sold by $101.646 million and loans by $28.06 million. Given this increase of $129.7 nillion in earning assets, interest income should have been higher. If we divide the increase in net interest income of $.104 ($47.073-$46.969) by the increase in assets of $101.646 million, we find the bank earned less than 0.5% annually on the new assets it acquired. The total increase in "Service Charge Income" and "Fees and Other Income" was $.375 million

Let's look at the securities the bank ordered and their yields. On page 6, at the very bottom of the page, you will see "Par Value of Treasury Bills Held" $260.0 million and, "Yield 7.13%." This is the number the game actually purchased and, in some cases, it may be more than was input on page 11, the decision form, as the program automatically buys T-bills to meet the pledging requirement. If we look at the very bottom of the column for government securities on page 6 we can also see the purchases of $40.0 million in 1-year, yield (7.88%), and the $30.0 million of five-year, yield (8.58%). The bank also purchased $24 million in series A and $27 million in series B municipals.

Before we jump to any conclusions about this, we need to consider several other points. First, did we need these securities? Each bank has a pledge requirement that is based on the bank's holding of public deposits and, trust deposits. The public deposits and trust deposits cannot be invested in anything but securities--the bank can't loan these funds. The pledge requirement goes up or down based on the level of these accounts .

On page 2, footnote 4, you will see "Pledged Securities, U.S. Governments," $389.578 million. In period 1.4, the bank had to have at least this amount of U.S. government securities at par value. If total U.S. government securities fell below this level, the computer model would automatically purchase enough to bring the total portfolio up to the pledge requirement. If the bank falls below the municipal pledge requirement, the model adds the shortage to the U.S. government pledge requirement; the model does not automatically purchase municipals.

The Muni Pledge would be calculated as follows:

Public Demand Deposits	(195.732).25 x 1.1	=	53.826
Public Time Deposits	(276.484).25 x 1.1	=	76.033
Footnote 12 requirement		=	229.276
	Total		359.135

If we go back to page 6 and add up the par value of all the Municipals, we find the bank has a total of $423.5 million, about $64 million more than the pledge requirement.

The components of the Government Pledge are:

Shortage in Muni Pledge		= 0.
Public Demand Deposits	(195.732).75 x 1.1	= 161.479
Public Time Deposits	(276.484).75 x 1.1	=228.099
	Total	389.578

If we go back to page 6 and add up all the government securities the bank has at present, we see the bank has totals of $128.000 million in 1-year, $259.000 million in 5-year and $260.000 million in T-bills, for a total of $647.000 million. This is $257 million more than is required for pledging. In a nutshell, $257 million of the T-bills that were earning at 6.81% were not needed. The $51 million in new municipal securities were also not needed. The problem was that to purchase these securities, the bank used a relatively expensive combination of CD's and fed funds, which cost the bank an average 8.22%. The bank paid a higher price for the money than it earned. In addition, the computer model calculates salary expense based on the size and type of the various assets in the bank. Although the bank purchased only a small amount of excess securities, it also had to pay extra salary expenses for this unnecessary expansion of assets.

However, the other long-term government securities purchases may have been a good idea. If you look at the top line of the securities column, you will notice that on the first day of period 2.1, a total of $15 million in 1 and 5-year government securities mature. When this amount is added to the $260 million in T-bills, we see that "Securities Maturing Next Period" equals $275 million. In period 2.1 we find that the bank actually will be under the current pledge requirement (of $390 million)

When the bank bought the longer-term U.S. government securities in period 1.4, it may have anticipated the requirements that would exist in period 2.1. This longer-term positioning can sometimes be profitable. If interest rates had dropped by period 2.1, the bank would be forced to buy lower-yielding securities for regulatory purposes, if they had not purchased some long-term securities earlier. In fact, interest rates are increasing, so the bank would have done better if they had not purchased any long-term securities in period 1.4. By waiting until period 2.1 to make the securities purchases, the bank would have higher yields.

The pledging requirements in the simulation are very important because there are a variety of profit implications that are related to many of the decisions that your team controls.

Toward the end of the income statement the game calculates Income before taxes and securities.. The gain on securities\loans is a combination of a) profit or loss on Real Estate sales, b) any defaults of securities, and c) commissions on securities sales,. Finally, other comprehensive income is the profit/loss on futures and the change in value of securities that are a result of marking the portfolio to market each quarter. To compute Applicable taxes the game subtracts the interest income from municipal securities (this is the only income that is not taxed) and the balance is taxed at the 48% tax rate. The Stanford game stock price calculation may not always use the reported Net earnings per share.. If the total of the items reported after Income before taxes and securities, excluding fees, is positive SBG treats these profits as one time non sustainable earnings and only 10% is used to compute stock price. 100% of the value is used for losses.

FOOTNOTES TO FINANCIAL STATEMENT: PAGE 2

We have already touched on some of the page 2 accounts; let's review some of the others. CD's, in footnote 3, are the sum of the portfolio which is broken down in footnote 10.

In footnote 4, note that required reserves and actual reserves are the same. "Actual Reserves" are a regulatory percentage of deposits; the Fed may change this percentage requirement under certain economic conditions. Also, notice that "Cash and FRB Reserves" in footnote 5 are equal to "Actual Reserves" in footnote 4. These three numbers are the same, except when the bank *sells* fed funds. The computer model will sell only 95% of the bank's excess liabilities in the fed funds market; the other 5% of excess liabilities goes to the cash account and also appears as additional reserves. This is the only time the bank will have "Actual Reserves" in excess of "Required Reserves."

In footnote 5, you also have "Float" and "Due-From-Banks." You have no control over your float in SBG because it is simply a function of the size of your bank. "Due-From-Banks" is a result of correspondent bank activities for which you have an officer time allocation. Notice that under footnote 2, you have "Due-To-Banks" (a liability). When the bank has more "Due-Tos" than "Due-Froms," it can use these funds to create assets.

In footnote 6, "Loan Account Activity," we start with the beginning balance, subtract payments, charge-offs, and (for real estate) loans sold, then add new loans to get the ending balance.

"Loans Refused" is currently .000. An amount will appear here only if the team has placed a limit on new loans (which is a decision your team can make) or if the bank can't acquire money to support its assets. You should never need to place a limit on commercial loans. Your team would need to make several sets of irrational decisions before your bank would be in a position that would require you to limit commercial loans in this fashion. Under normal circumstances, if you need to limit loans, raise your pricing as this method produces more profit.

The model refuses loans only when the bank can't purchase money. If your bank shows a loss (the quarterly earnings are negative), you may have an extremely difficult time acquiring enough funds to support your assets. As a rule this only happens if you have made a serious decimal error on the decision forms. This problem is easy to avoid by filling out the decision form correctly.

The only other time the model refuses loans is when a team limits fed funds purchases (a decision variable) without understanding all of the implications. To avoid this, never limit your fed funds until your team is confident that you understand all of the regulatory issues and the funding requirements of your bank.

As long as you are pricing your commercial loans at anything close to market rates, the principal payments next quarter will be very close to the numbers that appear on the printout ("Princ. Pay Next Qtr."). Very high pricing relative to market tends to increase the level of principal payments; very low pricing decreases payments slightly. Real estate and consumer payments are not affected by your bank's current pricing. Credit card payments are unpredictable; they are a function of consumer behavior and economic issues. We will discuss the "Provision for Loan Losses" and "Non-Accruing Loans--Memo" in detail later when we explore the mechanics of the commercial loans.

Footnote 7, "Interest Accounts," gives the dollar amounts of all quarterly interest expenses and interest income for the various accounts of the bank.

The "Capital Notes Account," footnote 8, shows that all of the current capital notes will mature by year 20 quarter 1. The interest rate on the outstanding balance of $38.457 million is 9.45%. Each quarter the bank pays the interest due and a portion of the principal. If you turn back to the balance sheet on page 1, you will

note that capital notes shrank from $39.077 million to $38.457 million (by $.620 million); this is the principal that was repaid in period 1.4.

Footnote 9, "Service Charge Income," shows the Net Service Charge Income that is generated by the regular and commercial checking accounts of your bank. The "DD (Demand Deposit) Processing Costs" are an expense the bank incurs for these accounts.

In SBG, you make pricing decisions on the charge per item (deposits and checks) for commercial customers and the charge per check for regular customers. As part of your pricing decisions, you also decide on the credit for your commercial and regular checking customers. On page 7, these prices are under "Service Charges," and they are explained in more detail later in the educational materials. The credit depends upon the level of balances the customers keep in their accounts. This credit can be used only to offset the charges incurred. However, you do not have information on your individual customers' account balances or the number of checks they process. If you increase both the charge per item or check, and increase the credit you give the customer, you have no way of knowing if you really increased the cost for most of your customers or not. If you change only one of these two pricing variables (increase or decrease the charge, or increase or decrease the credit), you can tell what you have done.

Generally, if you lower the cost to the customer, you increase your balances and lower your fee income; if you raise the cost to the customer, it has the opposite effect. When you lower costs for commercial customers, be very cautious, and do this in small increments. Lower fees tend to attract those commercial banking customers with a large number of items to be processed (for example, a large grocery store that deposits hundreds of checks written by their customers). Demand deposit processing costs can increase rapidly due to commercial customers' activity. This is not a concern for regular checking customers.

Footnote 11 shows defaults on municipal securities. Defaults are random and unpredictable, and all banks are treated equally. Defaults occur on the first day of an economic quarter and this precedes any sale of the specified security. When a default occurs, it is for a specific municipal issue, and anyone who holds that issue will incur the same percentage loss. If your team ever decides to purchase more than $100 million in municipal securities, you should spread the purchase over two economic quarters. A small percentage default can damage the bank only if the bank holds a very large position in a single maturity.

FOOTNOTES TO THE FINANCIAL STATEMENT: PAGES 3 AND 4

Page 3 details the fee income-generating activities, which are a very important part of the bank's earnings. Several points are worth noting. The bank holds a fairly significant portion of its deposits as a result of its trust activities, which are shown in footnote 12. When you evaluate the real profitability of trust activities, you must consider the value of the deposits. The Pledging Requirement here can be met with Municipal securities.

Under "Real Estate Loans," footnote 13, the "Service Income" comes from the loans the bank has sold but continues to service. A bank can immediately sell off up to 80% of the new real estate loans it makes each quarter, but it continues to service those loans for the investors who purchase them.

The bank receives credit card fee income, shown in footnote 14, for processing merchants' credit card receipts. Because merchants must have a commercial checking account with the bank in order to have their receipts processed for collection, this activity also affects deposits. A lower fee tends to attract deposits while lowering fee income and vice versa. The economy also has an effect on the quantity of receipts (credit card sales) merchants might have for processing.

The financial services, in footnote 15, are broad-based services for wealthier clients. You don't decide directly on the type of financial services, but the bank's branches, advertising, and the officer time allocations, affect the fees you generate from financial services. In turn, regular and commercial checking accounts are also indirectly affected by the bank's financial service activity.

Letters of credit, in footnote 16, are an off-balance sheet activity. With a letter of credit, the bank promises to make a loan under certain pre-defined circumstances. Banks find the fee income from letters of credit a lucrative source of income, but especially in recent years, loan losses due to loans made based on letters of credit have been high.

Loan commitments, defined in footnote 17, will be explored later in conjunction with commercial lending. Footnotes 18 and 19 summarize fee income and expenses. Under footnote 19, Hedging costs are a function of the number of futures contracts and interest rates. Higher interest rates increase the cost of each contract. Under footnote 19, the last entry, "Temporary Employees and Others," is a general expense that is not associated solely with fee income activity. Watch this entry carefully for changes from quarter to quarter. If you make any decision that the computer model considers operationally inefficient, your temporary employee expense will increase rather rapidly.

Footnote 20 provides you with information on your branches. You can open or close up to two branches each quarter. Footnote 20 shows how opening and closing a branch will affect deposits. If you close a branch next quarter, you will lose this much in accounts and so on. When you open a branch, it is about 15% effective in the quarter it's opened, 85% by the end of the second quarter, and 100% at the end of the third quarter. If you open a branch, you can expect to gain deposits roughly equal to the amounts shown in footnote 20 after three quarters. Branches also have an effect on most of the fee activities of the bank and retail lending.

Page 4, footnote 21 gives more information on commercial loans. Study and compare the numbers for the prime loans here with the information in footnote 6, on page 2. Page 4 shows a breakdown of the maturity schedule of the commercial loan portfolio and the spreads at which these loans earn, compared to the market average rate. For the most part, you will use the information on page 4 only when you want to do a pro forma income statement: that is, compute the bank's earnings for the upcoming quarter. However, note that the model remembers the difference between your rates and the average for all banks and it adjusts the actual rate the customers pay accordingly. If you price a loan category 20 basis points below the market rate, all the loans made in that quarter will continue to earn at a rate that is 20 basis points below the current rate until they mature. Current loan pricing policies do not affect loans made in the past.

In footnote 22, you probably won't have any practical use for the consumer and sample real estate loan portfolios. However, this footnote does tell you what portion of your existing real estate loans you can sell. The saleable loans have a current book value of $191.733 million and paid interest to the bank of $4.660 million in the most recent quarter. The current market value of these loans is $186.339 million, or 97.19% of the book value. When you sell loans, you enter the book value, not the market value, on the decision form. If you sold $50 million, the capital loss before taxes would be $1.405 million; (1.00 - .9719) X 50 = $1.405 million.

Static Gap and Hedging Information: Page 5

Static Gap Analysis

The page 5 printout shows a Static GAP Analysis report. In this report, the bank's GAP is measured by the difference between rate sensitive assets (RSA) and rate sensitive liabilities (RSL):

GAP = RSA - RSL

If a bank has a zero gap (that is, RSA=RSL), then it has matched the maturity of its assets and liabilities, and has an almost perfect hedge against interest rate change. In this case, the risk of interest rate change is nearly eliminated. However, if asset and liability rates do not change at exactly the same time, then the change in the value of RSA's may lead or lag the change in value of RSL's. In the Stanford game, there is an Interest Rate Risk Capital Requirement equal to 2% of the Balance Sheet Gap.

If a bank has a positive gap (that is, RSA > RSL and GAP > 0), then a positive change in interest rates will result in a desirable income change, since the net interest margin (the difference between interest income and interest expense) will increase. Declining rates, when the gap is positive, exert downward pressure on the net interest margin. If a bank has a negative gap (that is, RSL>RSA and GAP<0), then a positive change in interest rates is undesirable since the net interest margin declines. When the GAP is zero, changes in net interest income are largely a result of management decisions as opposed to a change in interest rates.

Note that a hedge is put in place when a financial manager takes an original position in the futures market that is equal to an existing, expected, and/or committed position in the cash market. For example, even though the $155.17 million of demand deposits outstanding at the end of period 1.4 (shown in the Static GAP Analysis report under RSL's in the Total column) have immediate times to maturities and are not subject to re-pricing due to a change in interest rates, a certain portion of the outstanding balance is subject to an expected cash flow variation from quarter to quarter. This variation is represented under 1-90 day maturities as 10% of the total outstanding balance of demand deposits.

For purposes of hedging, there are two problems with the information provided in the Static GAP Analysis report. First, the GAP of $189.64 in the 1-90 day maturity range is positive. This positive GAP means that a positive change in rates over 2.1 will lead to a favorable change in the bank's net interest margin. However, the benefits of the positive change in the bank's net interest margin will accrue over time and only a portion of the benefit will accrue during 2.1. The positive change in interest rates during 2.1 will also simultaneously reduce the value of the bank's securities portfolio. This reduction in the value of the bank's securities portfolio, due to the favorable change in the bank's net interest margin, will more than offset the accrual of the positive cash flow during 2.1.

Since a bank's security portfolio is marked to market every quarter, the market value of the bank's security portfolio will be reduced (far greater than the increase in net income from the net interest margin) when rates rise, and the reduction in value of the portfolio will be reflected as a reduction in the bank's retained earnings. Thus, for purposes of hedging, strategies should concentrate on protecting retained earnings as a result of changes in the value of securities due to a change in interest rates.

Finally, the sensitivity of a bond's value to an interest rate change depends on both the size of the bond's cash flows and the time to receipt of the cash flows. If two bonds are identical in all respects, except time-to-maturity, then the bond with the longer time-to-maturity will have a longer average maturity of the cash flows. Therefore, its value will be more sensitive to a change in rates than the shorter maturity bond. Also, holding maturity constant, a bond's average maturity of the cash flows will be higher when the coupon rate is lower. So its value will be more sensitive to a change in rates than a higher coupon bond. The average maturity of a bond's promised cash flows, i.e., duration, serves as a useful statistic of the "effective maturity" of the bond. The Stanford game uses duration as the measure of the weighted average of the times to each cash flow payment promised by the securities held by banks.

Hedging Interest Rate Exposure

The SBG provides one futures contract for hedging a bank's fixed-income security portfolio to interest rate risk. The futures contract matures one-quarter hence and has an underlying five-year, 8% fixed-coupon U.S. Treasury note with a face value of $1 million.

The objective in hedging the bank's fixed-income security portfolio is to protect the future value of the portfolio from interest rate change. The hedge is accomplished by taking a position in the futures contract. In particular, the bank's security portfolio represents an asset and its exposure to interest rate change is hedged by selling futures contracts. The SBG automatically offsets the bank's sale of futures contracts a few days prior to the contract's expiration by buying futures contracts. The bank neither makes payment nor takes delivery on the security underlying the futures contract. Thus, by offsetting the contract, the bank realizes only the positive or negative cash flow from the change in the contract's price.

The information on the bank's security portfolio is provided in the report on the bottom half of the page 5. The "Current Securities Data (excluding T-Bills)" report contains maturity, market value, and duration data for the bank's fixed-income security portfolio

NF Formula: Cross-Hedging Security Portfolio With Futures Contracts

The model determines the number of futures contracts *to sell* that will make the value of the "combined portfolio" invariant to small changes in interest rates. If the bank's security portfolio consisted of the identically same security as the 5-year T-Note security underlying the futures contract, then a naïve hedging model could be used to hedge the security portfolio's value. This naïve model would match the total market value of the portfolio's security to the market value of the futures contract. The naïve model determines the optimal number of futures contracts required to hedge interest rate risk by dividing the adjusted market value of the single security portfolio by the market value of the futures contract. If the bank's portfolio has a market value of $793 million and the futures contract has a market value of $0.974 million, then the optimal NF' naive hedge would be composed of 814.17 (= $793/$0.974) futures contracts.

However, the bank's security portfolio consists of many different Treasury and State & Muni securities, all with maturities (or durations), coupons, and yields different from the security underlying the futures contract. Therefore, the naïve model must be amended to compensate for the above mentioned differences in maturities, coupons, and yields.

The NF cross-hedging model used by SBG amends the naïve model by adding ratios compensating (1) for differences in the weighted duration of the portfolio relative to the duration of the security underlying the futures contract, and (2) for differences in the average weighted yield-to-maturity of the bank's security portfolio relative to the yield-to-maturity of the security underlying the futures contract. These amendments make the cross-hedging model far more effective than the naïve model.

Duration is the average date that cash is received on a bond. If a bond pays coupon income, then the duration of the bond will be less than the bond's time-to-maturity. Given any change in interest rates, a

bond's duration is a superior measure of the bond's price-sensitivity to an interest rate change than is the bond's time-to-maturity. Thus, the Duration Ratio in the NF model, (AWD/DF), compensates for the portfolio's price-sensitivity relative to the futures contract's price-sensitivity due to differences in duration. Yield-to-maturity is the promised return on a bond if the bond is held to maturity and all interim cash flows are reinvested at the current market determined promised yield-to-maturity.

Current Securities Data (excluding T-bills)

The "Time to Maturity" columns show all possible maturity ranges in years, going from 1 to 10 years. The MV column shows the total market values of all securities currently held in the bank's security portfolio for each 1-year maturity range. For example, the table demonstrates that the bank currently holds in the 1–year maturity range total market values of $17.940 million and $146.808 million for State & Muni and U.S Treasury securities, respectively. The total values off $413.349 and $384.891 represent the total current market value of all State & Muni and U.S Treasury securities, respectively, across all maturity ranges.

The WD columns show the average weighted durations of securities currently held in each maturity range. The security's durations for each maturity range are weighted only by the market values of the securities currently held in that maturity range. Thus, the table demonstrates, in the WD columns that the bank currently holds securities in the 1-year maturity range with average weighted durations of 0.8005 years and 0.6928 years for State & Muni and U.S Treasury securities, respectively.

The WMV columns show the weighted market values of securities currently held in each maturity range. The weighted values are determined by dividing the MV of securities held in each maturity range by the total market value of all portfolio securities. For the 1-year maturity range the WMV for State & Muni securities in the 1-year maturity range is .0225 (which is calculated as $17.940/$798.240). Therefore, the State & Muni securities held in the 1-year maturity range comprise about 2.25% of the fixed-income security portfolio's total market value. Note that the sum of the WMVs is equal to 1.0, i.e., 0.5178 + 0.4822 = 1.0, thus, accounting for all market values.

The WPD columns show the weighted portfolio durations of securities currently held in each maturity range. The WPDs are determined by multiplying the WMV of the maturity range times the WD of securities held in the maturity range. The table shows that the WPD of State & Muni securities held in the 1-year maturity range is 0.0180 years (i.e., 0.8005 x 0.0225 = 0.0181). This WPD of 0.0180 years indicates that the State & Muni securities held in the 1-year maturity range contribute 0.0180 duration years to the State & Muni portfolio's average weighted total duration of 2.5068 years.

The total Weighted Portfolio Duration of both State & Muni and U.S. Treasury securities is the sum of the total WPDs . The report shows that the total for State & Muni securities is 2.5068 years and the total for U.S. Treasury securities is 1.0225 years. The sum of these totals, 3.5293 years (= 2.5068 + 1.0225), represents the estimated Weighted Portfolio's Duration for the current quarter.

Determining NF, the Optimal Number of Futures Contracts

The SBG provides all calculations required to calculate NF, *including those adjustments occasioned by a team's policy decisions to purchase and sell securities at the current period's security market prices, such prices prevailing at the end of the current period.*

Hedging Versus Speculating With Futures Contracts

The objective of a hedge in the SBG is to protect the future value of the bank's fixed-income security portfolio from a change in value due to interest rate change. Since the bank's portfolio represents an asset, a hedge requires that a bank sell futures contracts. Irrespective of the actual change in interest rates, any gain or loss on the portfolio will be offset by a corresponding loss or gain, respectively, on the futures

contracts sold. Thus, the net gain or loss of the combined portfolio will be about zero. However this type of cross hedging is far from perfect and rarely matches the exact changes to the banks portfolio of securities.

Instructors determine at the beginning of a game if the speculation decision variable is available

If a bank sells futures contracts, but sells a number of contracts that is greater than or less than the number of contracts required by the NF formula, then, in effect, the bank is speculating. If the bank sells fewer contracts than recommended by the NF formula, then gains in the portfolio's value will not be completely offset by losses on the futures contracts. Thus, for interest rate decreases there will be a net gain from the combined portfolios. However, it is also true that losses on the portfolio's value will not be completely offset by gains on the futures contracts. Thus, for interest rate increases there will be a net loss from the combined portfolio. Also, if the bank sells more contracts than recommended by the NF formula, then gains in the portfolio's value will be more than offset by losses on the futures contracts. Thus, for interest rate decreases, there will be a net loss from the combined portfolios. However, it is also true that losses on the portfolio's value will be more than offset by gains on the futures contracts. Thus, for interest rate increases there will be a net gain from the combined portfolio.

The SBG allows banks to speculate without penalty by selling futures contracts in an amount that is greater than or less than 10% of the number of contracts required by the NF formula. If a bank exceeds this 10% plus or minus limit when selling futures contracts then a speculation capital requirement of 15% of the value of the speculative contracts is imposed. This penalty can have a significant impact on capital adequacy. The maximum speculation allowed is plus or minus 90% of the number of contracts calculated by SBG.

Hedging Cost

Even though no funds are exchanged between the buyer and seller of futures contracts at the inception of the transaction, there are costs associated with hedging. First, there are brokerage and exchange commissions and fees. Second, the futures exchange requires that both buyer and seller post cash or a risk-free bond in the form of a margin account. Thus, the margin account has an associated opportunity cost. In the SBG, both costs is calculated and charged as an expense in the bank's income statement. The hedging expense depends on two variables: the spread between the Fed Funds lending rate and the yield on 90-day U.S .Treasuries and the number of futures contracts bought or sold. The greater the spread and the number of contracts bought or sold, the greater will be the cost. However, the cost is relatively small as compared with the benefits of hedging. For example in the current quarter, if a bank sold a very large number of contracts, say 700, then the total hedging expense would be about $0.873 million; and if the bank sold 400 contracts, then the hedging expense would be around $0. 290 million. The expense is shown on page 3 in Item 19 as part of **Other expense**

Hedging Risk

A perfect hedge is one that achieves perfect price invariance and therefore zero risk exposure. Perfect hedges are the exception and not the rule. You will discover in the SBG that the number of futures contracts will not provide a perfect hedge. There are three types of hedging risk that preclude a zero risk exposure position: *quality risk, timing risk, and quantity risk*.

Quality risk exists when the asset being hedged in not identical to the one underlying the futures contract. The bank's bond portfolio consists of State & Muni and Treasury bonds, the vast majority of which are not identical to the bond underlying the futures contract. Indeed, the portfolio's bonds have different coupons, yields, and durations than the bond underlying the futures contract. Hedging the bank's portfolio with the one futures contract is a *cross-hedge*. Cross-hedging cannot eliminate risk altogether, but can minimize it.

In the SBG, cross-hedging occurs since the entire group of bonds is hedged by one type of futures contract. This is referred to as *macro-hedging*. In practice, banks in most countries do not cross-hedge as it is not permitted by bank regulators.. This procedure is not followed in the SBG since it is not practical to do so.

Timing risk occurs when the delivery date on the futures contract does not coincide with the date the hedged assets need to be purchased/sold or revalued. The difference between the futures price and the spot price is called the basis. The basis tends to narrow as expiration approaches and prior to expiration the basis can vary. In the SBG, a bank's futures contracts are offset at a date *t* prior to the expiration date of the futures contracts. Thus, the basis can vary at time *t* when the futures contracts are offset. Given this basis risk, the hedge will not be perfect. Even so, this timing risk will be very small compared to the quality risk.

Quantity risk occurs because of the standardization of futures contracts. In other words, a perfect hedge may require selling 360.45 futures contracts. However, the market for futures contracts does not allow fractions of a contract to be sold or purchased. Thus, the hedge must be rounded to a whole number and this rounding to a whole number of contracts results in quantity risk. Again, this risk will be small compared to the quality risk.

For the reasons described above, hedging risk cannot be eliminated. Therefore, banks should expect to see variance between the gains (losses) on the bank's portfolio and the offsetting losses (gains) on the futures contracts sold to hedge the portfolio's interest rate exposure. Indeed, the variance can be as large as up to 15% and even larger under some circumstances.

Current Securities Data, page 5 – Portfolio Analysis

The table provides useful and summary information about a bank's fixed-income security portfolio shown on page 6. The data in the table is provided primarily for the purpose of hedging the bank's fixed-income security portfolio against unfavorable changes in interest rates. However, the table also provides useful information for managing the risk and return features of the bank's fixed-income security portfolio to achieve an optimal return-risk trade-off.

First, the table, in the MV and WMV columns, provides an exact distribution of the current market value holdings of securities by type (i.e., State/Muni and U.S. Treasury) and by maturity range. For example, only 40% of the bank's State & Muni securities are in the 1 to 5 year maturity range, while 60% are in the 6 to 10 year maturity range. Therefore the State & Muni portfolio is skewed to longer-term maturities. On the other hand, the bank's holdings of U.S. Treasury securities are distributed like a barbell around the 3-year maturity range with 38.1% and 30.8% of the portfolio's securities in the 1-year and 5-year maturity ranges, respectively. This leaves only 31.1% if the securities distributed across the 2 to 4 maturity ranges and the bulk of these securities are in the 2 and 4 maturity ranges.

Second, the table also shows the exact market value distribution of fixed-income securities across maturity ranges for the entire portfolio of securities. Note that 51.78% (= $413.349/798.240) and 48.21% (= $384.891/$798.240) of the total market value of all securities is distributed between State & Muni and U.S. Treasury securities, respectively. Unlike the distribution of the individual security types, 68.8% and 31.2% of the entire portfolio is distributed across 1 to 5 year and 6 to 10 year maturity ranges, respectively. Thus, the entire portfolio of securities is skewed to the shorter term 1 to 5 year maturity ranges.

Third, the WD columns provide an exact accounting of the price sensitivity of the security types in terms of the security's weighted durations per maturity range. Generally, bond price volatility is proportional to a bond's duration and thus, duration becomes a natural measure of a bond's price-sensitivity to interest rate exposure. The greater the duration measure, the greater is the price sensitivity of a bond to a change in interest rates. Thus, securities in the 6 to 10 maturity ranges with higher durations are more price-sensitive to interest rate changes relative to securities with lower durations in the 1 to 5 year maturity ranges. The least and most price-sensitive securities are those held in the 1-year and 10-year maturity range, respectively.

Fourth, WPD column provide an exact distribution of the duration contribution of security holdings in each maturity range. Thus, as a group, State & Muni securities contribute 2.5068 duration years to the portfolio's total average weighted duration of 3.5293, while U.S. Treasury securities contribute only 1.0225 duration years to the portfolio's total average weighted duration of 3.5293. Thus, the State & Muni portfolio accounts for 71% of the total security portfolio's duration of 3.5293 years, while U.S. Treasury securities account for only 29%. Given any change in interest rates, the State & Muni security portfolio will account for the majority of the change in total portfolio value due to a change in interest rates. Not only is this true because State & Muni securities account for the over 50% of the market value of the total portfolio and account for all holdings of securities in the 6 to 10 year maturity ranges, but also because State & Muni securities with the same times-to-maturity as U.S. Treasury securities will have higher duration measures.

The combination of all these features provides an indication of a portfolio's risk-return trade-off. For example, and generally, longer term securities offer the potential for greater fixed-income and capital gains, but also greater risk of loss due to their higher price-sensitivity as estimated by their higher durations. Hedging provides protection from the price-sensitivity exposure of these higher risk securities.

INFORMATION COMMON TO ALL BANKS: PAGES 8, 9, AND 10

On pages 8, 9, and 10, the "Information Common to All Banks," summarizes selected data from earlier parts of the printout for all the banks playing SBG. At present, you see data only for Bank 1 because every bank is identical. Once the program begins, these pages will show the data for all the banks in the simulation.

Because banks are affected significantly by changing market conditions and economic forces, banks (and regulators) in the real world and in SBG must measure performance against their peers. Banks compare their performance with banks of similar size that service similar markets.

Most larger banks are so different from each other that they also usually compare different parts of their bank to parts of other large banks. Like the analysts in the real world who prepare special reports for senior management to review, you will spend much of your time each decision quarter analyzing your competition. Unless you review every area of your bank and compare it to what the other banks are doing, you will have only a vague idea of how you might improve performance. If SBG is going to be a valuable learning experience, you must do these comparisons and evaluations. Every decision you make is essentially a test of an economic, business, or banking theory. The computer model is the instructor, but it evaluates your decision and expresses the feedback numerically. The model gives precise feedback, but it is not always easy to interpret.

For example, let's say your group decided to lower the costs to merchants for processing their credit card business. When you get your computer report back, you discover that the fee income dropped. Perhaps you thought that by lowering the fee a little, you would have enough of an increase in business so that net fees would rise. Were you wrong? You can't tell until you evaluate what happened to the other banks' credit card fee income and policies. Merchants can supply you with business to process only if they have customers who are using their credit cards to make purchases. If consumers are purchasing less due to economic conditions, your fee income might have dropped even more if you hadn't lowered the processing fee. The only way you can evaluate your decision is by comparing your results to the other banks'.

On page 8, the first set of information is on commercial loan pricing and loan commitments. The rate each bank sets appears here along with the difference between that rate and the market rate. You also find the dollar amount of commitments and the total quarterly percentage growth in commitments for each commercial loan category. In SBG, loan commitments are an essential part of commercial lending. A quarterly growth in commitments of 1.8%, if maintained, translates into 7.2% annual growth in commitments. Because of the way commitments become new loans and because of the mechanics of loan maturities, the actual annual loan growth will be slightly more than one-half the annual growth rate in commitments, if everything remains constant. From this information, you can estimate the size of your competition’s future commercial loan portfolios. Generally, commercial loans are the highest earning assets of a bank.

The second set of data on this page is the information you should consider first when you get a new set of computer reports. You can quickly compare your bank to your competition using the first three numbers here: "Net Interest Income," "Total Other Income," and "Total Oper. Expense."

"Net Interest Income" is the result of the average spread. "Total Other Income" is composed of fees. "Total Oper. Expenses" are non-interest expenses. By comparing yourself to your competition on spread, fees, and expenses, you can usually tell which area of your bank needs the most attention. You can spot a fee problem easily because all of the specific fee income information for all the banks appears next. You can determine which fee area is a problem and then review your policies and those of the other banks to determine the cause. Your expenses include salary, advertising and branches. These may be higher if you are expanding as a retail bank, but if you have higher expenses, you need either higher net interest income or higher fees. If you don't, either you have a pricing problem or you are not handling your expansion properly. You will

probably have the most difficulty tracking down a net interest income problem, because the problem can come from assets, liabilities, or both, and it may be a problem with either pricing or volume. For example, you may have high prices on commercial loans but not enough volume. Typically, banks that focus too much on profits in the early stages of SBG encounter a volume problem. In general, you must work constantly to balance your bank's profit and growth. If you overemphasize either of these, the other suffers, and inevitably this imbalance eventually leads to problems.

The data on page 9 shows most of the decisions each team makes with the exception of officer time allocations, specific assets sales and specific funding decisions. A few other pieces of information like EPS (earnings per share), stock price, and salaries are also included on this page.

The percentage figures under the loan rates indicate loan portfolio distribution. Currently, 18.4% of the bank's loans are prime commercials. With the percentage distribution and some other information, you can determine the dollar amounts of any loan category for any competitor bank. First, find the total number of any type of loan (on page 10 of the printout) by adding "Commercial Loans" to "Other Loans," $1976.8 + $1495.7 = $3472.5 million. Prime loans are 18.4% of total loans; 18.4% of $3472.5 is $638.9 million. The difference between this and the "Ending Balance" on page 2 footnote 7, $635.4, is due to rounding the percentage. Other selected account totals for all banks appear on page 10.

THE REGULATORY ENVIRONMENT

Commercial banks, as well as many other financial institutions, are limited in their operations by governmental regulation. The banks in the Stanford game are no exception. Banks in the game are assumed to be members of the Federal Reserve and can borrow from the Federal Reserve Bank; they must, however, comply with FRB reserve and capital requirements. In addition, banks cannot ignore their stock and bond holders' demands for sufficient capital adequacy, liquidity, and profitability.

Capital Adequacy

Regulators currently use two approaches to capital. A bank must maintain a minimum amount of capital as a percentage of total assets. In addition, the bank's capital must meet "risk-based" standards that include off-balance sheet items. For simplicity's sake, we use a single equation that approximates these two approaches to measuring capital adequacy. In the Stanford game, banks are required to maintain capital to the following extent:

Letters of Credit	2.50%
Commercial Loan Commitments	1.25%
Cash and Due From Banks*	1.50%
Federal Funds Sold	1.50%
Treasury Bills	1.00%
U.S. Government Notes	1.50%
State and Municipal Securities	3.00%
Prime Loans	4.00%
Real Estate Loans	4.00%
High Loans	5.00%
Medium Loans	6.00%
Consumer Loans	8.00%
Credit Card Loan Balances	8.00%
Non-Accruing Loans	50.00%
Other Assets	8.00%
Net Premises	15.00%
Syndicated Loans	4.00%
Speculation Requirement**	100.00%
Interest Rate Risk**	100.00%

* Due From Banks is the amount on deposit with other commercial banks.

** The speculation and interest rate risk capital requirements are reported on page 5 of the computer report.

The sum of these amounts is the required capital of a bank in the Stanford game. Capital that qualifies as capital for purposes of calculating capital adequacy consists of total equity, total capital notes and 50% of the ending provision for loan losses. The ratio of qualifying capital to required capital is the bank's capital adequacy ratio. At any time during the game, if a bank's capital adequacy ratio drops below 1.0, the stock price of the bank, compared to other banks, will begin to suffer. Capital ratios below 1.00 also

have an increasingly negative effect on the cost of the bank's funds compared to other banks'. Total capital and the capital adequacy ratio are printed on the first page of the computer printout.

Capital Constraints

Other capital constraints are automatically enforced by the computer:

- Net premises must be less than or equal to common equity;
- FRB borrowing must be less than or equal to 75% of common equity;
- Capital notes must be less than or equal to 30% of common equity;

Reserves

Banks in the game must maintain required reserves with the Federal Reserve Bank. The amount of required reserves depends on specified percentages of demand deposit accounts. The computer printouts show the actual amount of required reserves for the quarter just ended (on page 2, footnote 4), as well as the percentage of reserve requirements for the coming quarter (on page 7 under "FRB Regulations").

Interest Accounts

Banks in the Stanford game are prohibited from paying interest on checking accounts; however, money market accounts may earn interest at an unregulated rate determined by bank management. As with other rates, the bank's share of the savings market depends on how the bank's rate compares to other rates in the economy and to rates paid by other banks.

Pledged Securities

For a commercial bank to qualify to hold public deposits, it must have government securities to pledge against such deposits. In order to acquire public deposits, the bank must pledge securities representing, at par, at least 110% of the deposits. The securities pledged also must be from the same or higher level of government security. Seventy-five percent of public demand deposits are assumed to be U.S. government deposits, which require a pledge of U.S. government securities. For the rest of the public deposits, either state and local or U.S. government securities may be pledged.

FRB borrowing necessitates a matching pledge of 100% in U.S. government securities. Trust department deposit accounts need a pledge of either state and local or U.S. government securities. In a bank in the Stanford game, approximately 12% of total trust assets are regular demand deposits, and 8% are money market savings deposits

When a team has not allowed for sufficient securities to cover pledging requirements for government and trust department deposits, the computer model purchases additional 90-day U.S. government securities (T-bills) rather than turn away deposits. So pledging requirements may make it impossible for a given bank to sell all the securities it may wish. Keep this in mind when you manage the securities account.

Stock Pricing Factors

In the Stanford game, the stock price represents what investors in the bank's idealized market would be willing to pay for ownership of each bank. The stock price of your bank at the end of the program is also usually the measure of its success.

Except as noted earlier about one time gains, the computer model sets the stock price by multiplying the bank's earnings per share (earnings for the quarter annualized, that is, multiplied by 4) times the P/E ratio (market share price/earnings per share). The P/E ratio covers a wide range of issues that influence prospective investors in bank stocks: in the broadest sense of the term, risk issues. The P/E ratio evaluates the short-term and long-term ability of the bank to take advantage of changing market opportunities and to protect the earnings of the bank from adverse economic developments. All banks start with an economic average P/E ratio, which is then adjusted for each bank to reflect its individual financial position and policies. As in the real world, the determinants of the P/E ratio are exceedingly complex.

Most of the factors in the P/E ratio calculation are spread out mathematically over three economic quarters. They are also weighed to emphasize the last quarter's result. In the early stages of the simulation exercise, teams often make decisions that have a short-term negative effect on the P/E ratio, especially if the team is restructuring the bank in some fashion. At that point, earnings are a better measure of a successful bank.

You can avoid undue negative effects on the P/E ratio by following these guidelines:

- Keep your management policies and practices consistent in the final three quarters of the game;
- Avoid reaching or exceeding regulatory limits as defined in this manual (Capital Adequacy is especially important);
- Set an appropriate dividend payout (The computer model never forgets a reduction in the dividend);

If the bank follows the above guidelines and does not take excessive risks, the final stock price will be primarily a product of earnings.

Remember that this simulation has evolved over a 20-year time period and has been used by thousands of participants; we can assure you that "end-game" strategies will not work.

THE DECISION FORM

PREPARING PAGE ONE OF THE DECISION FORM

Making the Decision

Each quarter, your team makes the decisions that determine how your bank functions. You set interest rates for several classes of loans and deposits, establish service charges for deposit accounts, allocate officers' time for new business development, determine credit and salary policies, and manage your bank's capital structure.

To make the decisions each period, your team should work through several separate steps:

1. Study the printout from the previous quarter until you become thoroughly familiar with the data
2. Estimate how each decision in the previous quarter affected the performance of the bank
3. Forecast economic trends
4. Consider how different decisions could affect your bank's performance in the next quarter
5. Agree on the appropriate values for the input variables
6. Enter these values on the decision form.

The Decision Form

To use the printed decision form correctly, follow these guidelines when you complete the form:

- Write in *pencil* only. If you make a mistake, erase it and enter the correct number, so the instructor can read the decisions easily.
- Fill in every space on the form. The program will not repeat your decisions from the previous quarter automatically; the computer reads blanks as zeros.
- Be especially careful to put the decimal points in the right place.

In the next few pages, we will discuss each decision variable as it appears on the decision form. As you read through this discussion, look at the form. The form is divided into sections. Page 1 first asks for the bank's name and then covers Loans, Service Charges and Fees, CDs, Expenses and Allocations, Percentage Allocation of Officer Effort, the Purchase of Syndicated Loans, and Futures Contacts. Page 2 covers Capital Structure, Securities Purchases, Maximum Limits on Liabilities and Loans, and Securities Sales.

Bank Number and Name

Properly enter the bank's name and number, and the period being played (Group designation is only important in large programs when more than one team has the same bank number).

The Decision Variables

Before you consider the first section on page 1, "Commercial Loans," you need to realize that all the decision variables in the Stanford game interact with one another.

Loans and deposits in the game depend primarily on these factors:

- How the interest rates you charge on loans or offer on deposits compare to the prevailing rates in the economy and, in the fully competitive mode, to the rates charged by other banks in your community
- Your credit policies
- Your loan commitments outstanding
- Your service charges levied
- Your business development expenditures
- The amount of officer time you allocate to develop new business
- Your total number of branches
- Your salary policy
- The financial soundness of your bank
- Economic trends

Each of these factors is a decision variable on page 1 of the decision form except the loan commitments outstanding, the financial soundness of your bank, and economic trends. Economic trends are beyond your control. Financial soundness, of course, depends on almost every decision you make. The volume of your loan commitments outstanding is directly affected by almost everything else on the list: credit policy, loan rates, business development expenditures, and officer time allocations, and economic trends.

Loans

In the first sections of the decision form, you set the interest rates on prime, high, and medium commercial loans, consumer loans, and real estate loans. You indicate if you want to sell existing real estate loans or a percentage of your new real estate loans. You also set a general credit policy and a letter of credit policy. You do not set the interest rate on credit card loans because it is economically driven and not a decision variable. Through these decision variables and several others, you influence the number of loans (and, indirectly, deposits) at your bank.

If your interest rates deviate substantially from current market rates, the model will change your rates to be closer to the market rate.

Commercial Loan Commitments

Although you do not make any direct decisions concerning loan commitments, you do affect the volume of loan commitments your bank has through the other decision variables that affect loans. Loan commitments outstanding, in turn, affect the number of loans your bank actually books.

The commercial loan commitments are for prime, high and medium grade. Approximately 33% of total commitments in one quarter become loans in the next quarter. Under normal conditions, the commitments mature or expire in four quarters.

The bank generates some income directly from loan commitments. The computer model assumes that some of the new customers secure the commitments with new demand deposits and the other customers pay a fee for their loan commitments. The fee level is economically driven and so not a decision variable. (Page 3 of the printout, footnote 17, gives detailed information on commitments each quarter.)

Prime, High, and Medium Commercial Loans

The three classes of commercial loans are prime, high and medium grade. Under normal conditions, approximately 65% of the outstanding loans mature each quarter. No single loan will last more than three quarters.

The volume of loans your bank books depends, to a great extent, on how your rates compare to average rates in the economy as shown in the most recent output. Because the borrower in the Stanford game, as in the real world, will usually look for the lowest real cost, if you set lower prices, you tend to increase loan volume and vice versa.

You can find the market rate information on Page 7 of the printout. All the percentage rates quoted are annual rates.

The rates listed in the column entitled "All Banks in Economy at Start of Quarter" are the rates that were offered in the marketplace for all of the quarter just completed. Your bank's pricing relative to these rates determined your market share for this quarter.

The rates listed in the column entitled "All Banks in Economy at Present" are the rates in the marketplace for the duration of the upcoming quarter. Consider these rates when you set your bank's rates for the next quarter.

If a bank charges average prices (prices at the quoted average for all banks in the economy) and maintains an average business development effort, approximately 33% of its loan commitments outstanding will become new loans. In addition, approximately 65% of the prior quarter's total commercial loan balance will mature. On the other hand, if a bank's pricing and business development effort are different from the economic averages, a higher or lower percentage of loan commitments will become new loans as customers respond to the change in the bank's market posture.

Even if interest rates on loans are generally rising or falling, the amount of loans you acquire will depend, to a considerable extent, on how your bank's price compares to the average rates. If your rates do not compare well to the rates of "All Banks in Economy," you can lose significant business whether in the competitive or non-competitive mode of the program.

In the partially competitive mode, your market share is determined by your pricing relative to the market rates for all banks in the economy. In the completely competitive mode, your market share is also influenced by the rates of the other banks in your community.

In the competitive mode of the Stanford game, the computer model still compares your rates to the market average first. But then, the model also compares the prices of all the teams in the simulation. If, in this second comparison, your team had the highest price among the banks, you could lose a small percent of the loans the computer model had assigned to you (based upon your comparison to the market rate). However, keep in mind that the volume of new loans is influenced by numerous factors—credit policy, service charges, business development expenditures, officer time, branches, salaries, your bank's financial soundness, and economic trends—and by the amount of loan commitments you have outstanding from the previous quarter.

Because the model also analyzes all these other decision variables among competing teams, and because of limitations set in the model, a bank almost never loses a significant amount of business just because the model is operating in the competitive mode.

What then is the point of having a competitive mode to the program? Even though you cannot lose a significant amount of business as a result of being in the competitive mode, you can sometimes gain quite a bit. If you acquire 2% or 3% of the business from 4 other banks (in a game with 5 teams competing), your loans could grow substantially.

In general, you cannot easily take business away from your competitors by pricing alone and still maintain your bank's profits. For example, if you priced your prime loans for 2.1 at 9.05%, a full percentage point below the market rate, you would take some business away from the other banks. However, all of the prime loans you acquired in 2.1 would earn at 1% less than the other banks. If you have to fund the loans at the same price as your competition, your profits relative to other banks would suffer because you would have a lower average spread.

The competitive mode of the program becomes significant only when one team has a strategy that is significantly different from the others.. For example, in a game with five banks competing, if four banks begin to close branches and emphasize commercial banking, the one team which opens branches and emphasizes retail banking will experience higher levels of success than normal. Four banks, by closing down their branches, are in effect pushing extra customers to that one bank.

On the decision form, you enter all interest rates as annual interest rates expressed in hundredths of a percent (basis points). Although you enter a specific interest rate on the decision form for commercial loans, as far as the computer model is concerned, you are establishing a fixed spread between a floating rate, which is the "All Banks in the Economy" rate, and the rate your customer has to pay. Page 4 of the printout provides the information on the volume of loans and the spread from "All Banks in the Economy." All the new loans made in the upcoming quarter will continue to earn at the spread from the current market rate until they mature. The earnings from loans made in prior quarters are not affected by your current pricing policies. The computer model assumes that a certain fixed percentage of the commercial loans you make are short-term, some are 6-month and some are 9-month. Page 4 of the printout report provides information on the quantity of loans in each maturity category.

Because the three commercial loan account categories represent different types of customers, they are different in 1) their sensitivity to incremental changes in rates, 2) their risk of default, and 3) the operating expenses associated with servicing the loans. When you set your rates, however, you must consider not only these factors but also the current position of your bank and your business development strategies.

EXAMPLE: COMMERCIAL LOAN RATES

Prime Loans Interest Rate | 1 | 0 | . | 1 | 0 | %

Prime loan annual rate for the portfolio this quarter = 10.1%.

High Loans Interest Rate | 1 | 0 | . | 6 | 0 | %

High loan annual rate for the portfolio this quarter = 10.6%.

Medium Loans Interest Rate 11.10 %

Medium loan annual rate for the portfolio this quarter = 11.1%.

In the Stanford game, there are maximum allowable interest rates for the three categories of commercial loans. The maximum rate you can charge your customers is calculated based upon the average market rate for that specific category, reported under "All Banks in Economy at Present," on page 7 of the printout.

For the three commercial loan categories, the maximum allowable interest rate levels are the market rate +20 basis points for prime loans, the market rate +30 basis points for high loans, and the market rate +40 basis points for medium loans. The program calculates the maximum rate for each loan category each quarter. If your bank's interest rates exceed the maximum, the model reduces your loan rate to meet the constraints.

Minimum interest rate levels on commercial loans are 150 basis points below the market.

Consumer Loans

In the Stanford game, consumer loans are made for two years (eight quarters) at a fixed rate; that is, they do not float like commercial loans. Thus, high or low rates are "locked in" for the period of the loans. The rate you set is the "true" annual percentage rate, not (as is common practice to state) the finance charge as a percent of the original principal.

Both the interest and principal of these loans are paid off in equal quarterly installments. The interest for each payment (for tax and income reporting purposes) is computed by applying the rate at which the loans were acquired to the outstanding balance.

The volume of loans your bank books is again determined by the interest charge compared to the average rate for all banks, economic conditions, the officer time spent in developing such loans, overall business development, advertising, and the number of branches.

EXAMPLE: CONSUMER LOANS

Consumer Loan Interest Rate 14.40 %

Consumer loan annual rate for loans booked this quarter = 14.40%.

The maximum rate that can be charged on consumer loans is 300 basis points greater than the market rate. The minimum rate that can be charged on consumer loans is 250 basis points less than the market rate.

Real Estate Loans

Real estate loans work the same as consumer loans, except they are floating rate and they mature in 20 years.

EXAMPLE: REAL ESTATE LOANS

Interest Rate 10.00 %

Real estate loan annual rate for loans booked this quarter = 10.0%.

Sale of Real Estate Loans

You may choose to sell off a portion of your bank's real estate loan portfolio and a percentage of the new real estate loans acquired each quarter. These loans are sold to investors at the current market as stated in footnote 22, on page 4 of the printout. When you sell existing loans, they are taken from across the most recent five years of the portfolio on a pro-rated basis For example, if the value of this portion of the portfolio is $150 million and the decision is to sell $50 million, one third of each real estate loan made in the last five years will be sold. When loans are sold, the bank continues to collect interest at the original loan rate, pays the interest to the investor, incurs costs involved with servicing the loan, and collects a fee for servicing the loans. Footnote 13, on page 3 of the printout, shows net real estate servicing income and costs.

On the decision form, you indicate two decisions on real estate loans. For loans already in your portfolio and acquired in the last five years, you can specify a dollar amount (in millions of dollars) of loans to sell. If you sell any, you must sell a minimum of one million in any one transaction, because in the real world, typically an insurance company or pension fund would purchase a large block of mortgages from a bank. From the sale of these portfolio items, your bank may have a small capital loss or gain. All real estate loans are adjustable rate but there is usually a small difference between the market and book values.

Your bank may also immediately sell a percentage of the new real estate loans made in the upcoming quarter. The maximum percentage you can sell is 80%.

EXAMPLE: SALE OF REAL ESTATE LOANS

Sell Old Loans	$ 7 5	million
Sell Current Loans	1 0	%

Sell $75 million real estate loans at par value and 10% of the real estate loans made this quarter.

General Credit Policy

In the commercial loans section, you first indicate your "General Credit Policy." This credit policy applies to commercial loans and also to real estate, consumer, and credit card loans. All banks evaluate, in some way or another, the credit worthiness of potential borrowers. On the decision form, your team specifies how stringent you want your bank's credit policy to be by entering a number: 1) very conservative, 2) conservative, 3) aggressive, and 4) very aggressive.

If you have a more aggressive credit policy, you will make more loan commitments, but your non-accruing loans and loan loss provisions will be higher. You need to consider carefully the negative aspects of a more aggressive loan policy, because of its cumulative effect. Each quarter, approximately 12.5% of your bank's non-accruing loans are automatically put aside as a provision for loan losses in the following quarter. In addition, the computer model may also add additional provisions to losses each quarter without first having them flow through the non-accruing loan account, depending on your credit policy and officer time allocations. Also each quarter, 25% of the beginning loan loss provision balance is charged off as unrecoverable.

EXAMPLE: GENERAL CREDIT POLICY

General Credit Policy [3]

General Credit Policy = 3 (Aggressive).

Letter of Credit Policy

In addition to making commercial loans and loan commitments, your bank guarantees certain financial transactions for a fee; these are represented by letters of credit (LOC). These transactions include activities as diverse as import/export financings and municipal bond guarantees. The specific fee is market-driven and not a decision variable.

In the Stanford game, you set your "Letter of Credit Policy," as you do the "General Credit Policy," by selecting a number: 1) very conservative, 2) conservative, 3) aggressive, and 4) very aggressive.

Only a very small amount (approximately 4%) of the total letters of credit are ever drawn down as loans, but a relatively high percentage of these draw-downs (loans made as a result of LOC's) tend to become non-accruing loans. Generally speaking, if you have a more aggressive LOC policy, you will have more new loan guarantees and higher fee income. However, you will also have more loans that are a result of LOC's and more non-accruing loans. LOC account activity is shown in footnote 16, on page 3 of the printout.

EXAMPLE: LETTER OF CREDIT POLICY

Letter of Credit Policy [3]

Letter of Credit Policy = 3.

Service Charges & Fees

In this section, you specify charges for credit card transactions, charges for commercial and regular checking account transactions, and credits against those checking account charges.

Credit Card Service Charges

Banks charge commercial customers a percentage of each transaction for processing their credit card receipts. On the decision form, you specify the average percentage your bank charges commercial customers for this service. The technical maximum is 99.99%, but banks usually charge well under 10%, because this is a percentage of total credit card sales.

Commercial customers are not usually willing to pay a large percentage of their gross sales to a bank for processing credit card transactions. If you increase credit card fees substantially above the average charge in the economy, you will tend to lose both fees and commercial demand deposits, because, in order to have the bank process credit card business, your customer must have a commercial checking account.

EXAMPLE: CREDIT CARD SERVICE CHARGES

Credit Card Fee [3 . 1 0] %

A fee of 3.10% will be charged on merchants' credit card receipt deposits for this quarter.

Checking Account Service Charges

You also charge for servicing two classes of demand deposit accounts: commercial and regular checking accounts. Commercial account customers are business firms, while regular account customers are either very small businesses or, more usually, private individuals.

As in the real world, the charges for the two accounts are based on measures of different activities. For commercial accounts, the charge is levied per item handled (checks drawn and deposits made); but for regular accounts, the charge is levied only on the checks. The earnings credit (which only reduces the activity charge due to the bank) for the two differs: for commercial customers, the credit is based on average account balances; for regular accounts, on minimum balances.

On the decision form, you enter the charge per item handled for commercial accounts and the charge per check for regular accounts in cents and tenths of cents, with a maximum of 9.9 cents. As you might expect, if you raise the charge, you will tend to lose deposits, but increase total earnings from service charges, and vice versa.

You enter the earnings credit allowed on average (or minimum) deposit balances in cents per $100 per month with a maximum of 99 cents per $100. For both commercial and regular accounts, if you increase the credit, your accounts will tend to increase and your earnings decrease, and vice versa.

Be careful about lowering your commercial checking fees below market averages. If you lower the costs relative to market rates (by lowering either the charge per item or increasing the credit), you will tend to attract additional commercial customer deposits. However, some commercial customers, because of the nature of their business, have large volumes of “items” to be processed in their accounts. Typically, these customers are the most sensitive to price. If you attract a significant number of them, your bank’s demand deposit processing costs will rise significantly. The cost of processing regular checking accounts is relatively stable; costs will increase based on the actual number of new customers.

EXAMPLE: CHECKING ACCOUNT SERVICE CHARGES

Commercial Checking

Charge per Item	$ 0 . 0 4 0
Credit each $100 average balance	$ 0 . 3 7

There is a charge of 4.0 cents per item processed this quarter, and a credit against charges this quarter of 37 cents per $100 incremental deposit.

Regular Checking

Charge per Check	$ 0 . 0 6 0
Credit each $100 minimum balance	$ 0 . 1 8

There is a charge of 6.0 cents per check processed this quarter, and a credit against charges this quarter of 18 cents if a $100 minimum balance is maintained.

Certificates of Deposit

In this section, your team indicates the quantity of CD funds to purchase. In the Stanford game, banks may purchase three different maturities of certificates of deposit funds: 90-day, 180-day, and 1-year CD's. On the decision form, you specify how much you want to buy in each category in millions of dollars ($999,000,000 maximum). The base rate for CD's depends on the economy and the time to maturity. Your bank may pay slightly more or less depending on the amount of CD's the bank already holds and the size and financial soundness of the individual bank. Page 2, footnote 10, of the printout, shows the bank's current CD obligations.

EXAMPLE: CD'S

90 Day CD's | | 5 | 0 | million

The amount of 90-day certificates of deposits purchased = 50 million.

180 Day CD's | | 4 | 0 | million

The amount of 180-day certificates of deposits purchased = 40 million.

One Year CD's | | 2 | 0 | million

The amount of 1-year certificates of deposits purchased = 20 million.

The total amount of CD's available to your bank and the price of each maturity for the upcoming quarter are shown on page 7 of the printout. Usually the maximum amount available will equal roughly 60% of current total assets less CD's which will not be maturing in the upcoming quarter, but this amount can be affected by the bank's financial soundness. If a bank's net earnings are less than zero in a quarter, the CD's available are limited to the amount the bank has maturing in the current quarter. In addition, if the capital adequacy ratio of the bank goes below .85, the amount of CD's available will be greatly reduced. *If the ratio falls below .80, no CD's will be available.*

Make sure that the total CD's you try to purchase is less than, or equal to, the amount of CD's available to your bank; otherwise, the simulator will reduce each CD category on a proportional basis until this constraint is met.

If your bank's assets exceed liabilities, the simulator will attempt to balance the bank by borrowing in both the fed funds and the 90-day CD markets in equal proportion. As a general rule, the amount of fed funds available is equal to approximately 20% of current total assets, but this amount is also affected by the financial soundness of the individual bank. If the bank's total net earnings from the previous four quarters are less than zero, the bank will have no fed funds available for purchase. (Additional fed funds limits are discussed in the section "Maximum Limits on Liabilities").

Syndicated Loans

A quantity of syndicated loans can be purchased each quarter. The rate and the amount available are reported in the economic data on page 7 of the printout. All syndicated loans are fixed-rate, two-year maturities that pay quarterly interest. Loan quality is roughly equivalent to the prime loans but is not affected by the bank's credit policy decisions.

EXAMPLE: SYNDICATED LOANS

Bought | 1 | 1 | 0 | million

The bank purchases $110,000,000 of Syndicated Loans.

Futures Contracts

The details on hedging a bank's fixed-income security portfolio to interest rate exposure are provide in detail in the "Year 1, Quarter 4" section of this manual. These instructions should be read before establishing a hedging strategy.

If speculation is available your bank can increase or decrease by up to 90% the number of futures contracts sold by the the SBG calculations for required futures.

EXAMPLE: FUTURES CONTRACTS

Increase or decrease futures by | + | 1 | 0 | percent

The bank increased futures contracts by 10%.

Expenses and Allocations

In this section of the decision form, your team indicates the interest rate for money market savings accounts, the number of branches to open or close, the business development budget, salary policy and percentage of total effort on new business.

Money Market Savings Rates

For retail money market savings account deposits, each bank sets its own rate. The rate is paid on the entire portfolio.

The rate you offer each quarter should reflect current market conditions. As with the interest rates you charge on loans, lowering or raising rates has positive and negative effects. Relative to other banks, if you lower the interest you pay, you will pay out less but have a smaller account balance; if you raise interest, you will gain in account balances but pay out more in interest.

Money market savings account deposits are also affected by changes in short-term securities yields. Savings account deposits have no fixed maturity, so they are volatile and subject to disintermediation. (Some customers may withdraw their deposits to make direct investments in higher yielding alternatives such as Treasury bills). This can occur even if a bank maintains competitive interest rates and business development efforts compared to other banks. If interest rates on government securities rise above the money market savings rate, disintermediation may be quite severe.

On the decision form, you enter the "Money Market Savings Rate" as an annual interest rate expressed in hundredths of a percent (basis points).

EXAMPLE: MONEY MARKET SAVINGS RATE

Money Market Savings Rate | | 7 | . | 7 | 5 | %

The annual money market savings rate for this quarter = 7.75%.

The maximum rate paid for money market savings is 150 basis points greater than the market rate. The minimum rate paid for money market savings is 150 basis points less than the market rate.

Branches

Your bank starts with 34 branches, including 4 regional offices, 1 of which contains corporate headquarters. Teams may decide to open or close branches during the game, depending upon their long-term objectives. Teams may open or close a maximum of two branches each quarter, but they may not both open and close branches in the same quarter. Branches are purchased and sold at market value. Page 3, footnote 20, of the printout shows the short-term effect of closing a branch on specific asset and liability categories.

If a bank does not open or close any branches, its premises are maintained at a constant real level. Premises depreciate each quarter at the rate of 2.9 percent of gross premises at the beginning of the quarter; 150% of the current quarter's allocation for depreciation must be spent on replacement premises to maintain this constant real level. Thus, adding or closing branches may significantly alter the amount required to maintain the premises.

Close

In the Stanford game, when a branch is closed, the bank must take care of its personnel. The bank normally loses some employees through attrition and relocates others to other branches within the bank. But the bank pays closing costs equivalent to one quarter's salaries to the personnel it cannot reassign.

If a bank closes a branch, it is not able to generate as many deposits and loans. While the bank can reassign some regular checking and money market savings accounts to other branches within the geographic area, it loses most of the regular accounts to other institutions. The bank also loses some commercial deposits as some smaller businesses move to other banks as well.

The bank is not able to generate as many new loans, and each loan category is affected differently by a branch closing; for example, medium grade commercial loan growth will be retarded to a greater extent than prime grade commercial loan growth.

Open

When branches are added, the bank incurs miscellaneous start-up expenses. The bank must also increase staff for new branches, so the base salary expense calculated by the model increases.

New branches do not immediately generate loans and deposits as efficiently as established branches, but the new branches are fully operational after three quarters.

EXAMPLE: BRANCHES

Close	
Open	2

Open two branches this quarter. If you leave these fields blank, the computer program will maintain the bank's current net premises by making an automatic adjustment for the depreciation for the quarter.

Business Development Budget

Your bank competes with other banks through its pricing and business development. You set your bank's pricing policy through interest rates, credit policies, and service charges based on the interest rates in the economy. Your business development expenditures, on the other hand, are the money you spend on advertising and promotion. On the decision form, you indicate a dollar amount for your "Business Development Budget." Like opening and closing branches, the business development expenditures affect different customers differently; they tend to have a greater effect on retail customers.

EXAMPLE: BUSINESS DEVELOPMENT BUDGET

Business Development Budget | 1 | 2 | 2 | 5 | thousand

Business development budget this quarter = $1,225,000. This is the total budget for business development in thousands of dollars (maximum $9,999,000).

Salary Policy

Each quarter, the team determines its policy for salaries to be paid to bank personnel. However, the actual amount of salary the bank pays is determined not only by this salary policy, but more importantly, by the actual asset and liability mix in the bank. Each asset and liability account requires a different amount of salary dollars, with retail accounts requiring more salary-expense-per-dollar-balance than wholesale accounts; retail accounts can require two to two-and-one-half times the salary expense, per-dollar-managed, than wholesale accounts. When you set your bank's salary policy, you marginally increase or decrease this base salary expense. On the decision form, you indicate your policy with a number: 0) maintain the base salary plus a cost of living adjustment (COLA), 1) freeze base salaries, 2) give a one-time bonus of 7.5% of base quarterly salary plus a COLA, or 3) give a one-time bonus of 15% of base quarterly salary plus a COLA.

When you set this policy, you must consider your bank's profitability (that is, return on equity) in the previous quarter. If the bank earned a 20% or greater annualized return on equity in the quarter immediately preceding, the employees expect at least a COLA and a 7.5% bonus. On the other hand, if the bank suffered a loss in the previous quarter, the employees are willing to tolerate a salary freeze.

Although the employees are willing to accept a freeze if the bank is having problems, the bank will tend to bring in more business if it pays salaries that do not reduce the real income of its employees. If the employees do not receive adequate salaries, the bank's loans and deposits will not grow as rapidly.

Salaries represent the major non-interest expense of most banks. Because of this, you should be mindful of the effect that bonuses have on current quarter earnings. The computer model calculates the appropriate

cost of living increase based on the current consumer price index, which is found on page 7 of the computer printout.

EXAMPLE: SALARY POLICY

Salary Policy [2]

0 = Base salary + COLA 2 = 7.5% bonus + COLA
1 = Freeze base salary 3 = 15% bonus + COLA

Salary policy = 2.

Percentage of Total Effort on New Business

Your bank's personnel spends a portion of their time on the development of new business and the remainder on maintaining the accounts already in the bank. If they spend more time on new business, your bank generates more new business. But if you devote an excessive percentage of your officers' time to new business development, your loan losses and the temporary employee portion of other expenses (shown in footnote 19 on page 3 of the printout) increase because your bank is not paying enough attention to its existing accounts.

EXAMPLE: EFFORT ON NEW BUSINESS

Percent of Total Effort on New Business [5 | 0] %

Officers' time devoted to the development of new business = 50%.

This is the fraction of officer time allocated to the development of new business relationships. The maximum is 99%. (The remaining percentage is employed to maintain the business already in the bank).

Allocation of Officer Time

In this section, you indicate what percentage of your officers' time you want to devote to each of 15 different areas: 2 service, 7 liability, and 6 asset categories. The total officer time must add up to 100%; if it does not, the program will adjust all allocations proportionally.

Bank Services

1. *Trust Services*—The bank generates income and deposits from the management of separate trust assets. The bank holds approximately 8% of trust assets as money market savings deposits and 12% as regular demand deposits. Footnote 12, on page 3 of the printout, gives information on trust assets. ("The Regulatory Environment" explains the constraints the bank has for investing those funds.)

2. *Financial Consulting Services*—The bank offers a variety of services such as estate and tax planning for individuals. If the bank manages financial services appropriately, this group cannot only provide fee income, but also have a positive effect on deposit balances.

EXAMPLE: OFFICE TIME ALLOCATION - BANK SERVICES

Trust		2	%
Financial Services		2	%

Of the total 100% of available officer time, 2% is allocated to trusts and 2% to financial services.

Liabilities

1. Commercial Demand Deposits—non-interest-bearing demand deposits of business firms;

2. Regular Demand Deposits—non-interest-bearing deposits of small businesses and private individuals;

3. Public Demand Deposits—non-interest-bearing deposits of state and local governments and agencies, and of the U.S. Treasury tax and loan accounts;

4. Due to Banks—non-interest-bearing deposits of correspondent banks. If you increase correspondent relationships, you would generally expect a positive effect on commercial lending, because correspondents refer loan customers whose demands they are unable to meet;

5. Public Time Deposits—time deposits of state and local governments, subject to irregular maturities;

6. Certificates of Deposit (Private)—time accounts of individuals and organizations held for specific maturities;

7. Money Market Savings Deposits—savings accounts of individuals with no specified maturity;

EXAMPLE: OFFICE TIME ALLOCATION - LIABILITIES

Commercial Deposits		8	%
Regular Deposits	1	5	%
Public DDA's		3	%
Due to Banks		3	%
Public Time Deposits		6	%
CD's		4	%
Savings		9	%

Of the total 100% of available officer time, 8% is allocated to commercial deposits, 15% to regular deposits, 3% to public demand deposit accounts, 3% to due-to-banks, 6% to public time deposits, 4% to CD's, and 9% to savings accounts.

Assets

1. Prime Commercial Loans—corporate customers with multiple bank relationships

2. High Commercial Loans—middle market customers

3. Medium Commercial Loans—small business and single proprietors

4. Real Estate Loans—adjustable floating-rate loans

5. Consumer Installment Loans—2-year, fixed-rate loans

6. Credit Card Loans—Banks participate in a national bank credit card system. Under this system, the bank extends credit to its customers who are billed monthly. Your team does not set the rate your bank charges on credit card loans; it is predetermined by the economy. Page 7 of the printout shows the rate.

EXAMPLE: OFFICE TIME ALLOCATION - ASSETS

Prime Loans	1	4	%
High Loans	1	2	%
Medium Loans		8	%
Real Estate Loans		8	%
Consumer Loans		2	%
Credit Card Outstanding		4	%

Of the total 100% of available officer time, 14% is allocated to prime loans, 12% to high loans, 8% to medium loans, 8% to real estate loans, 2% to consumer loans, and 4% to credit card loans.

The actual interest your bank earns on unpaid balances as shown on page 2, item 8, of the printout is 92% of the rate shown in the economic information, because the national bank credit card system receives 1/12 of the rate set by the sponsoring bank on the unpaid balances. Under normal economic conditions, approximately 30 to 40 percent of all credit card loans are paid off each month. But your bank uses a very complex equation that you cannot duplicate to determine the percentage of the total ending credit card balance on which interest is charged.

Credit card loans are generally a profitable line of business. You can control, to some extent, how many new credit cards your bank issues, but you have little control over how much the cards are used because this is determined mainly by the state of the economy.

Through the allocation of officer time, your team decides how much effort will be spent gathering new credit card customers and encouraging credit card use by existing card holders. This officer time entry affects credit card loans, not credit card fee income; credit card fee income comes from processing credit card receipts for businesses.

PREPARING PAGE TWO OF THE DECISION INPUT FORM

Capital structure

Per Share Dividend

In the game, your team controls its dividend policy. You can declare any dividend which you see fit, up to the amount of your retained earnings. On the decision form, you indicate the quarterly dividend payment per share expressed in dollars and cents. The maximum dividend is $9.99.

The size of the dividend affects the amount of capital you have available for expansion (retained earnings) and your current share price. If you do not pay out a total dividend of at least 25% of the average of the previous four quarters' net income, your stock price will be affected negatively compared to other banks. Also, if you reduce the absolute dividend, your stock price will suffer for several quarters. But your stock price improves only slightly if you pay out more than 25% of earnings.

EXAMPLE: DIVIDEND

Per Share Dividend $ [ ] . [4] [5]

This quarter the bank is paying 45 cents in dividends for each share outstanding.

Stock and Notes

You are permitted to issue capital (common) stock and capital notes (subordinated debentures). In the Stanford game, capital notes are counted as part of equity for the purpose of evaluating leverage (or capital adequacy). If you increase the bank's capital, you will generally improve the bank's capital adequacy, and this usually has a positive effect on stock price and funding costs. If you choose to sell notes, you will increase your financial leverage, but you also take additional financial risk.

In the Stanford game, banks can also repurchase their capital stock and recall bond issues. Although a bank would not usually do this, a team with an undesirable capital structure may find it advantageous.

You must signal your intention to undertake any capital funds transaction one quarter before the actual transaction. For each signal, you are assessed legal and other costs (not recoverable) of $110,000 in the quarter when you signal your intent. In the following period, you decide whether or not to go ahead with the financing plan and then enter the actual dollar amount of capital involved. If you choose not to proceed with a transaction after a signal, leave the dollar amount box blank. You must signal again (incurring another $110,000 cost), if you choose to delay the transaction, or if you want a second transaction.

Stock

On the decision form, you specify two items for each capital stock transaction: 1) the decision intent flag (in the quarter preceding the intended transaction) and, 2) the net amount of the transaction (in the quarter following a flag). A flag of 1 indicates that you intend to issue stock. A flag of 2 indicates that you intend to repurchase stock. Capital stock is issued at the beginning of the period at a discount from the bank's market price: 5% on small equity issues (less than 10% of total current shares) and 10% on larger issues. The amount of new equity you issue may not exceed 20% of total current outstanding shares.

On the decision form, the dollar amount that you enter to issue or repurchase will be the net dollar amount you desire from the transaction, even though your bank pays an additional 4% premium to repurchase outstanding stock. For stock repurchases, you are limited to a maximum of one-third of the amount of

undivided profits or 5% of the number of shares outstanding in any period. The game does not report repurchased shares as Treasury stock, but as reductions in two accounts: 1) common stock (number of shares repurchased times par value) and, 2) undivided profit (the excess of repurchased price over par value).

EXAMPLE: CAPITAL STOCK

Stock

Flag [1]

Indicates the intent to issue capital stock in the following quarter. Incurs a charge of $110,000. Leave the dollar entry blank.

Amount $ [1][0] million

Indicates a capital stock issue of $10,000,000 this quarter. Leave the flag entry blank.

Capital Notes

As with capital stock, for each capital notes transaction you enter two items: 1) the decision intention flag, set the quarter prior to the transaction and, 2) the net amount of the transaction in the following quarter. A flag of 1 indicates a notes issue. A flag greater than 1 indicates a recall.

The flag should indicate the specific capital notes issue being recalled:

2 Recalls the first capital notes issue

3 Recalls the second capital notes issue

4 Recalls the third capital notes issue

5 Recalls the fourth capital notes issue

Teams are limited to four new issues of capital notes during the game, even if issues are subsequently recalled. In addition, capital notes cannot exceed 30% of total equity.

You enter the amount of the transaction the quarter in which the transaction takes place. Your total capital notes may not exceed 30% of total equity at the time of issue. If your team tries to issue more notes than the constraints permit, the simulator will automatically reduce the amount to the maximum permitted. You can recall part or all of an issue.

EXAMPLE: CAPITAL NOTES

Notes

Flag [1]

Indicates the intent to issue capital notes in the following quarter. Incurs a charge of $110,000. Leave the dollar entry blank.

Amount $ | | 7 | million

Indicates a capital notes issue of $7,000,000 this quarter. Leave the flag entry blank.

Capital notes are issued at par and recalled at 104% of par. The interest rate at which capital notes are issued depends upon the economy and the current capital position, liquidity, and overall health of your bank. You can find an estimate of the rate that you would be charged for an issue in the next quarter in the economic and statistical information on page 4 of the printout.

Each note issue has a maturity of 20 years (80 quarters). Sinking fund payments are required quarterly beginning with the quarter of the issue.

Securities Transactions

On page 2 of the decision form, you enter the decisions that affect your securities and investment portfolio. Through these decisions, you control the amounts of the assets in your bank's investment portfolio: treasury bills, 1-year and 5-year maturity U.S. government bonds, and state and local bonds.

The computer printout, page 7, "Yield on Govt. Securities," gives the rates on security investments for the upcoming quarter. The computer printout, page 6, gives the current market value of previously acquired investments. This value is a function of the coupon rates on the date acquired and the current yields in the economy. The magnitude of the rise or fall in market price generally will increase with the time to maturity of the issue. All security transactions occur on the first day of an economic quarter.

Purchases of Securities

U.S. Treasury bills are 90-day (or one-quarter) maturities. Acquired on the first day of one quarter, they mature on the first day of the next quarter. You may also purchase U.S. government bonds with either a 1-year or 5-year maturity and invest in two different maturities of tax-exempt state and local government bonds (munis). Type A munis are 3-year maturities and type B are 10-year maturities.

On the decision form, you enter the dollar amount of the type of security which your team wishes to purchase in the coming quarter. You must make purchases in denominations of $1,000; the maximum amount you can acquire of any security in a given quarter is $999,999,000. The coupon rate on purchases is the annual yield to maturity for that class of securities for the coming quarter (as shown in the computer printout). All purchases are made at par value. Only current quarter issues are available for purchase.

There is no default risk on government bills or notes. Municipal securities occasionally default; the approximate amount of the default, if it occurs, is shown on page 2 of the computer printout.

EXAMPLE: SECURITIES PURCHASES

90 Day $ | | 5 | 0 | . | 0 | 0 | 0 | million

Indicates the purchase of $50,000,000 90-day Treasury bills, which mature the last day of the quarter.

1 Year $ | 1 | 0 | 0 | . | 0 | 0 | 0 | million

Indicates the purchase of $100,000,000 1-year government bonds.

5 Year $ [ ][ ][7] . [5][0][0] million

Indicates the purchase of $7,500,000 in 5-year municipal bonds.

3 Year, A $ [ ][2][5] . [0][0][0] million

Indicates the purchase of $25,000,000 in 3-year municipal bonds.

10 Year, B $ [ ][8][3] . [0][0][0] million

Indicates the purchase of $83,000,000 in 10-year municipal bonds.

Sales of Securities

At your option, you may sell all or part of a specific issue of any type of security held. You must specify the issue and the amount to be sold, as well as the type of security being sold. *You can make a total of only eight sales in any quarter*, and the maximum amount for any single sale is $99,999,000. If you have more than 99,999,000 in a single issue and you want to sell it, you must use multiple entries (e.g., if you had $200 million in 1-year bonds, you would enter two $99,999 thousand sales). On the decision form, you enter the maturity date (year and quarter), the dollar amount to be sold and the type. You specify the type by a number: 1 for 1-year U.S., 5 for 5-year U.S., 8 for 3-year munis, 9 for 10-year munis.

EXAMPLE: SECURITIES SALES

Security Type:	1 = 1 Year U.S.	8 = 3 Year Muni
	5 = 5 Year U.S.	9 = 10 Year Muni

Sale 1 Maturity Year and Quarter [ ][1] . [2]

Amount $ [ ][1] . [5][0][0] million

Type [1]

Sale 2 Maturity Year and Quarter [ ][2] . [1]

Amount $ [ ][ ] . [6][5][0] million

Type [5]

Sale 3	Maturity Year and Quarter		3.4
	Amount	$	9.000 million
	Type		8
Sale 4	Maturity Year and Quarter		10.4
	Amount	$	3.000 million
	Type		9

Issue No. 1 - maturity date: Year 1, Quarter 2
Amount to be sold: par value: $1,500,000
Type: 1-year bond (1 is the code for one-year bonds)

Issue No. 2 - maturity date: Year 2, Quarter 1
Amount to be sold: par value: $650,000
Type: 5-year bond (5 is the code for five-year bonds)

Issue No. 3 - maturity date: Year 3, Quarter 4
Amount to be sold: par value: $9,000,000
Type: municipal bond (8 is the code for type "A" state and local bonds)

Issue No. 4 - maturity date: Year 10, Quarter 4
Amount to be sold: par value: $3,000,000
Type: municipal bond (9 is the code for type "B" state and local bonds)

On the decision form, you may enter the issues in any order of maturity or type (for example, Issue No. 1 could have been the 5-year bond and No. 2 the 1-year). You can leave blank sections between issues (for example, the space for Issue No. 2 could have been left blank and No. 1, No. 3, and No. 4 filled in). You do not need to sell the entire amount of a particular issue.

All purchases and sales take place at the start of the new quarter. In the event of a purchase, the security will earn starting from the first day of the quarter. In the event of a sale, the funds are available to be reinvested in the quarter of the sale. The market value of the issue at the time of sale is as listed in the portfolio section of the computer printout (page 6) for the period just ended.

Commissions on Sales of Securities

Your bank pays a commission on all sales of securities. The commission rate is 0.00003 (30 dollars per million) on T-bills and 0.0015 of par value on government bonds. The commission on tax-exempt securities is 0.005 of par value.

If a team decides to purchase more securities than they have available funds (including borrowing up to the maximum they have set), the program will buy these ordered securities and then resell them, incurring a commission. When the bank is short of funds, the program will first sell Treasury bills, and if still short of

funds, it will sell U.S. government bonds. Commissions will appear in the income statement as reductions in profit or an increase in loss for the current quarter.

Maximum Limits

The limits on liabilities and loans are all expressed in millions of dollars, and the maximum is $999,000,000. Remember the computer model treats a blank on the decision form as a zero. If you leave any of these limits blank, you are instructing the computer model not to borrow money or accept any loans. In other words, during most quarters, you will want to enter 9s in this area of the decision form.

Liabilities

Maximum FRB Borrowing

The model itself places numerous constraints on borrowing from the Federal Reserve that are detailed in the regulatory section. You are able to restrict such borrowing further by your decisions here. To allow maximum permitted FRB borrowing, enter 999. You can borrow at the window only when other sources of funds (fed funds and CD's) are exhausted. The bank must also meet the pledging and equity requirements for window borrowings.

EXAMPLE: MAXIMUM FRB BORROWING

Maximum FRB Borrowing $ | | 8 | 0 | million

Indicates that the maximum the bank may borrow from the FRB rediscount window for the quarter is $80,000,000.

Maximum Federal Funds Purchased

When a bank obtains more assets than its deposit liabilities and capital can cover, the model will purchase both fed funds and CD's in equal amounts to try to balance the bank. So you should never limit Fed funds unless you are positive you can meet the bank's funding requirements through other means.

Fed funds borrowings are limited to at most 20% of a bank's total assets. If your team wants to limit the amount of borrowings to a percentage less than this maximum, you must enter the limit in the Maximum Federal Funds Borrowing block. To specify no limit to borrowing, enter 999.

EXAMPLE: MAXIMUM FED FUNDS PURCHASED

Maximum fed funds Purchased $ | 9 | 9 | 9 | million

Indicates that the maximum the bank may borrow in the Fed funds market for the quarter is $999,000,000, the maximum limit available.

Public Time Deposits

If you want to limit the amount of public time deposits, you must specify the maximum levels of additions to this account. If you do not want to limit these deposits, you can put a very high value for this decision variable on the form; that is, 999. Footnote 3, on page 2 of the computer printout, shows the current amount of total public time deposits.

EXAMPLE: MAXIMUM NEW PUBLIC TIME DEPOSITS

Maximum New Public TD's $ | 5 | 0 | 0 | million

Indicates a limit on maximum new public time deposits booked for the quarter of $500,000,000.

Loans

To place an upper limit for new loans booked on any of the three grades of commercial loans, you must specify the maximum levels of new loans in each category. If you do not want an upper limit, enter a very large amount as the limit. If no maximum is specified; that is, if the columns are left blank or filled with zeros, then no new loans will be made. Approximately two-thirds of your commercial loans mature each quarter, and you will have no new loans to replace these if you leave the limits blank. The limits are expressed in millions of dollars, and the maximum for each account is $999,000,000, which is expressed as 999. Refused loans are shown in footnote 7, on page 2 of the computer printout.

Limit the purchase of new loans only in an emergency. When you refuse loans, your bank's market share suffers for two economic quarters.

EXAMPLE: MAXIMUM NEW LOANS

Maximum New Prime Loans $ | 9 | 9 | 9 | million

Indicates the maximum of new prime loans that can be booked this quarter is $999,000,000, the maximum limit available.

Maximum New High Loans $ | | 7 | 5 | million

Indicates the maximum of new high loans that can be booked this quarter is $75,000,000.

Maximum New Medium Loans $ | | 8 | 5 | million

Indicates the maximum of new medium loans that can be booked this quarter is $85,000,000.

THE NEXT QUARTER: PERIOD 2.1

Now that you understand, at least generally, what the printout tells you about your bank in period 1.4 and the decisions you make, let's go on to period 2.1. You learn the most about your bank and your decisions when you compare one quarter's printout to the previous quarter's printout. If you study carefully the changes in your decisions and the changes that occurred in the bank, you can see how your decisions affected the bank and determine what to do next. If you don't compare each quarter's printout with the previous, you will probably be confused and have trouble contributing to your team and learning from the program

Prior to starting this section, compare the 1.4 and 2.1 reports for footnotes 2,3,5,7,9,18, and 19. On the 2.1 report write down the change from period 1.4. These numbers represent a few of the more significant changes in your bank between periods 1.4 and 2.1. We will use some of them in the discussion that follows For example, on page 2, footnote 2, "Demand Deposit Accounts" (DDA's) the commercial balance was $683.211 million in period 1.4, and $691.801 million in 2.1. Next to the $691.796, you should have written the difference, +8.59 In other words, commercial DDA's increased by 8.6 million dollars from the end of 1.4 to the end of 2.1 (a 5% annualized growth rate).

As you review these numbers, you should realize how much you can learn by comparing the data from one quarter to the next; you will learn even more about your bank by monitoring changes over several quarters.

THIS QUARTER'S DECISION INPUT

In SBG, the significant changes that occur in account balances are primarily a result of your specific decisions. The decisions that created the period 2.1 results are found on page 11 (You should always check these against a copy of your decision form to make sure the data was entered correctly).

On page 11, under the decisions on " Allocations" the bank made only one change from period 1.4: the total budget was slightly increased. When the bank does not change the way it allocates resources, and if it does not change the way it prices products or services relative to market rates, the results from one quarter to the next will not be very different. The economic conditions are the only other variable, and effects of this are across all areas of the bank.

The bank made several changes in pricing policies, which we can see more easily on page 7. Because prices are always changing in the marketplace, you need to consider how the bank's rates compared to market rates. By comparing page 7 of the two printouts, we can see how the bank changed its pricing relative to market:

1. It lowered the rate on medium loans, relative to market, from one basis point above to 7 basis points below market in 2.1.

2. It lowered the rate on real estate loans from 5 basis points above market in 1.4 to 30 basis points below the market rate in 2.1.

3. It lowered the rate on consumer loans by 58 basis points below market by leaving the rate the same as it was in period 1.4

4. It changed general credit policy from “2” to “0.”

5. On money market accounts, the bank went from 10 Basis points below Market to 5 Basis points above.

Overall, the bank is pricing and offering most of its services at, or close to, market rates. In other words, most of the changes in the various accounts of the bank could be considered to be "about normal" for a bank of this size and structure, because most of the pricing is close to the market rates.

DEMAND DEPOSITS

Since the bank did not make any policy or pricing changes that would affect demand deposit accounts, the 2.1 results reflect policies that are in place, not changes that are a consequence of decisions. The most noteworthy of these is the difference between retail (regular DDA's) and commercial. In the latter instance, the bank experienced a 5% growth but the regular DDA's decreased by 24.3 million, 18.4% annualized. A difference of this magnitude cannot be explained as an economic issue. The bank is doing something that is causing it to lose retail customers. There are several areas that could be causing the problem. Pricing on regular checking looks as if it should be a positive element. The bank is offering a credit on balances of 18 compared to a market rate of 17. There are three other decisions that would have a significant effect on retail deposits: 1) Business Development Budget (mostly this is devoted to retail); 2) Percentage Effort New Business (all areas of the bank); 3) Allocation of Officer Effort. We do not have enough information to do anything except formulate a few ideas for testing. Notice that there is almost twice as much officer time on commercial DDA's as on retail. This could be viewed as part of the problem. Or, from a different perspective, maybe it is the reason the bank had good results on the commercial accounts. In an economy with rates increasing we would expect good increases in assets and a few problems with deposits. Notice what happened to the Money market accounts, another retail deposit category. The bank increased what it was paying to customers by 15 basis points relative to market and realized a 3.4% annual growth. Although the advertising budget is certainly suspect, it does look as if more time should be allocated to the retail deposits to see if that will help. This deposit reduction is an important issue because part of the profit problem in 2.1 is buried here. Retail deposits are not free because a lot of the banks expenses are associated with these funds. When you lose balances, without an expense reduction, the cost of the remaining funds is higher. In addition, the bank has to replace these funds with more expensive purchased money.

We know that the bank made no other changes in officer time allocations on demand deposits or in service charges relative to market. You can reasonably assume that if you continued these same policies into period 2.2, you could expect (i.e., forecast) the same demand deposit results in 2.2 as you had in 2.1. But note that even if your numbers were off by 100%, it won't be very significant. If you forecasted that the bank would have a net gain of $5 million instead of a net loss of $5 million, it would not have a material effect on profits because $5 million is such a small percentage of total liabilities.

Although the retail DDA's are a concern because of the percentage change on an annualized basis, fundamentally you gain deposits based on what is occurring in the market at large. For example, you cannot make any combination of decisions that would produce something like $70 million of new commercial or regular demand deposits in a single quarter; all you have to offer the customers is pricing and service. Generally, you will have difficulty growing demand deposits because customers have interest earning options. You might, through a combination of "positive" decisions and economic conditions, be able to achieve annualized growth rates approximating 20%. But you might also find that what you had to do to achieve this growth was more expensive than the value of the deposits. In other words, you need to be aware of two important but somewhat conflicting points: 1) you need to make major changes in your decisions before you will experience major changes in your bank, and 2) you cannot achieve annualized growth rates that your common sense tells you are unrealistic.

However, in SBG, you can make decisions that will truly make your customers angry, in which case you will lose substantial amounts of business in loads or deposits. But you can easily avoid this type of mistake by asking "How would I react if my bank did that to me?" In other words, if you use your common sense, your bank will stay out of trouble.

TIME DEPOSITS

In 2.1, the percentage change in time deposit accounts (on page 2, footnote 3) was quite a bit more than that of demand deposits. For the time deposit accounts, the money market savings and public accounts increased, while the CD's decreased dramatically. As we discussed earlier in this chapter, you control the CD balances directly with the specific purchase decisions you make. You indirectly control the money market savings accounts through several decision variables, but the interest rate is one of the more important. On page 7, we saw that the rate changed from below market rate in 1.4, to 5 basis points above market in 2.1. Some of the $14.837 million in time deposits growth in period 2.1 was based on paying a rate slightly over market, but again we can't tell how much. If we could do period 2.1 again and just change the rate back to the market, we would be able to tell the exact effect of the higher rate. If another bank had been operating in period 2.1, we might be able to judge the effect of our policy by studying what happened to its money market funds. In any case, you need to learn the positive effect of offering a higher rate because by raising the rate relative to the market, the bank paid an extra 15 basis points on $1740.220 million. In other words, it was not just the new customers that got the higher rate but all the existing customers too. This has the effect of lowering the average spread of the bank unless there is some above market pricing on the asset side of the bank. Although 15 basis points does not sound like much it translates into an extra .652 million of interest expense in a single quarter.

RESERVES AND PLEDGING REQUIREMENTS

Required reserves (page 2, footnote 4) dropped because of the drop in deposits. Pledging requirements increased slightly because public time deposits and bank trust accounts increased (footnotes 3 and 12).

COMMERCIAL LOAN MECHANICS

In SBG, the three commercial loan categories react somewhat differently to the various decision variables. The prime customer is the most sensitive to price and to officer time. By contrast, branches and advertising have little impact on the prime customer, but quite a bit on the medium grade.

First, let's compare the percentage of loan commitments that became new loans in 1.4 to those in 2.1. You calculate this by dividing the commitments utilized by the beginning balance. On page 3, footnote 17, 33.2% of the prime commitments were utilized in period 2.1, compared to 32.6% in period 1.4.

In SBG under normal conditions, 33% of loan commitments are utilized. This "norm" is adjusted slightly for economic conditions; it could be as low as 31% or as high as 35%. After the computer model has adjusted the "norm" for economic conditions, it then considers all of the decision variables that can affect a specific loan category and adjusts the percentage of commitments utilized up or down. Loan commitments utilized are the new loans made in the quarter. All of the decision variables that affect new loans also affect new loan commitments. All the loans you make in a quarter have matured one year later. The math on how all of this works together is a little complex but when you lower your price dramatically below the market you will find it does not produce very good results. First, you are lowering your spread. Second, you will discover that because of the way the maturity schedule works with commitments, after the loans are matured you are almost exactly where you would have been if you had not conducted a fire sale on loans.

The SBG economies usually don't change enough from one quarter to the next to have a significant effect on the percentage "Commitment Utilized" in a single quarter. So you can usually forecast the number of new loans for the coming quarter by multiplying the percentage of commitments utilized last quarter by the ending balance of commitments, if you do not change pricing relative to market, officer time, or any other decision variable that could affect a specific loan category. For example:

	Prime	High	Medium
%Utilized in 1.4	32.6	33.8	33.9
%Utilized in 2.1	33.2	34.5	35.5

There were two changes in the decision variables that would have any effect on the loans and we can immediately see the result. Both the Prime and High utilization increased by about .6 (the economic effect combined with the effect from a change in credit policy) but the medium was up by 1.6 as a result of the change in pricing. From this we can determine how many loans we would have had without the price change and evaluate the relative merits of the two positions.

Decision variables, such as price, can have a substantive effect on the percentage of loans utilized--as you can see from the way the medium grade loan commitments change with a small change in price. Anytime you change decision variables, you will find forecasting more difficult, unless you have collected a large data base.

But even with the limited information we have now, we could make a few educated guesses about what could happen to the bank's commercial loans under various circumstances in period 2.2. Since rates are still moving up, we could start with an assumption that we could expect another increase of .5 or .6 in the percentage of commitments utilized. If we also decided to lower the price on medium even more in period 2.2, to 15 basis points under the market rate, we might come up with a forecast of about 37% utilization, or more specifically $418 million of new loans (1130.22 x .37). In the same fashion, we can calculate the other two categories. If we went ahead with this pricing decision, we could find in the 2.2 computer printout that our forecast for medium was off by $15 or $20 million but given the size of the bank that would be a very accurate forecast and the difference would not have any significant impact on profits. Another point is worth noting here: when you base a forecast on a specific rationale and have a precise number, you can usually figure out where you made a mistake and the exact magnitude of your error. Consequently, you gain experience very rapidly and you are able to make better forecasts.

OTHER LOAN ACCOUNT ACTIVITY

The two most dramatic changes in bank pricing policies were in consumer and real estate loans. Consumer loan pricing changed the most. In period 1.4 the bank lost about $5 million but only saw slightly more than $2 million in growth in period 2.1. You do not even need a calculator to determine that the bank gave up a lot of income for a very small change in loans. All $47 million of the new loans earned 58 basis points less and we know we could have had at least $41 million plus at the market rate. If customers do not respond to pricing on the downside it may not be bad to assume they are not price sensitive.

Based on the percentage growth rates in 1.4 and 2.1, we can see that the real estate loans are growing at a very rapid pace. There are a number of significant questions that need to be addressed, not the least of which is the relative profitability of these compared with other assets the bank might acquire. Since capital requirements are different for different assets, the profit implications are different. In other words, the nominal rate on an asset cannot be used to evaluate its profit merits. We already saw there was some loan growth due to economic conditions so the 30 basis point reduction in real estate pricing needs further analysis. Certainly the percentage growth rate increased but we need to know if this was the best deployment of bank capital and other resources. Whether or not this pricing discount was a good or bad decision depends upon the profitability of the real estate grade loans compared to other loans, on what the bank is doing on the liability side, and even, to a certain extent, on overall goals and strategy. We made this same point earlier, but it is worth emphasizing. In banking, you can rarely evaluate policies out of the context of the whole bank because there are so many complex interrelationships.

FEE INCOME

In most of the fee areas on page 3, we can see the bank made very minor improvements. The combined change in Service Charge and Fees (page 1 of the income statement) was $.578 million from period 1.4 to 2.1. There should be some room for improvement in this area.

T-BILLS

At the bottom of page 6, notice that $23.896 million of T-bills were purchased, but no T-bills were requested on the decision form, only $5 million in 1-year and $5 million in 5-year securities. You may recall when we reviewed the pledging requirements in the 1.4 report, it looked like the bank would not meet its pledge requirement in period 2.1. In fact, this occurred in spite of the addition of $10 million in new U.S. government securities. The bank is not penalized when the computer model purchases T-bills to meet the pledge requirement, but you must always check to see if this occurred. The quantity can sometimes be substantial, and if you miss this, you won't be able to balance your sources and uses statement.

FUTURES AND HEDGING

In period 2.1 the bank sold 350 futures contracts that had a value of $35048 million. If we look at the bottom of page 5 we can see the bank had a profit on these contracts of $1.66 million. The loss on the securities portfolio was $1.35 million. Therefore, the period 2.1 hedge offset the loss on the bank's security portfolio. Before proceeding to hedge the bank's portfolio in period 2.2, the instructions and explanations for hedging in the "Year 1, Quarter 4" section of this manual should be read in detail..

SOURCES AND USES

SOURCES AND USES FORECASTING

The sources and uses forecast is the key to managing your bank profitably. There are two slightly different versions that we use: 1) the *actual*, which simply documents actual changes in balance sheet accounts from one quarter to the next, and 2) the other is a forecast based on team decisions you plan to make. When you complete a sources and uses forecast, you determine how your decisions will change specific balance sheet accounts and how this will affect earnings. To plan accurately, your team needs to use sources and uses forecasts each quarter.

To do an actual Sources and Uses, you use the balance sheets from two consecutive quarters. Account balances change only as a result of 1) a team's decisions, 2) changes in economic conditions, or 3) the natural maturing of assets and liabilities.

We forecast Sources and Uses because we need to understand clearly how balance sheet accounts will change in a particular period, because changes in the balance sheet directly affect a bank's profitability. If you can predict a specific change in the balance sheet, you have enough information to compute exactly how the change will affect the income statement. When your management team can forecast balance sheet changes accurately, you will have control over your profits and truly be "managing" your bank.

The sources and uses forecast is a record of the changes in the asset and liability accounts that reflect changes in the way the bank is using its funds. These changes are a result of 1) a net flow of funds into or out of the bank, or 2) "juggling" dollars within the bank from one account to another.

For example, suppose the bank uses a demand deposit dollar to make a loan. Assuming that this was a new deposit dollar, we would view this dollar as an additional source of funds which was being used to create an additional loan (or use of funds). In this case, the bank has experienced a cash infusion.

However, the bank can also acquire funds by reducing total securities. In this instance, the funds are the result not of an infusion, but of liquidating an asset. Since assets must always equal liabilities, if securities are reduced, management can either reduce liabilities (sources) or place the funds in another asset (such as fed funds sold).

In both cases, the bank has funds that will have to be used in some fashion, but the overall economic effect is different. A cash infusion usually indicates real growth for the bank (total dollars increased from the previous period), while asset "juggling" simply reflects a change in the asset mix.

For simplicity’s sake, we refer to both transactions as sources of funds. The following chart may clarify the flow of funds that accompanies specific balance sheet changes.

	Assets	Liabilities	Owner's Equity
Increase	Use of Funds	Source of Funds	Source of Funds
Decrease	Source of Funds	Use of Funds	Use of Funds

Below is a more detailed example of various sources and uses:

Sources	Uses
Increase in demand deposits	Increase in total loans
Increase in time deposits	
Increase in CD's1	
Increase in fed funds purchased	Increase in fed funds sold
Increase in FRB borrowing	
Maturing securities2	New securities

OR

Decrease in total loans	Decrease in demand deposits
	Decrease in time deposits
	Decrease in CD's
Decrease in fed funds sold	Decrease in fed funds purchased
	Decrease in FRB borrowing

These are divided into sources of funds (liabilities) and uses of funds (assets). If you examined the balance sheet of your bank together with the decision input form, you would discover that through the decisions you make, you have different degrees of control over different accounts on the balance sheet. You also have different amounts of information on each.

Let's first consider how much control you have over each account.

Cash and Due From Banks	**No direct control**. Most of the money here is reserves and float. This item will change as a result of total business in other areas.
Federal Funds Sold	**Indirect control**. If you have funds you do not use in other ways, the program will automatically sell 95% of the total in the federal funds market at the prevailing rate. The other 5% goes into the cash account.
	Direct control. Your team decides how much to sell or purchase.
Loans and Mortgages	**Direct Control** through multiple decision factors. You have a high degree of control but through a host of factors such as

1. Although a form of time deposit, CD's should be broken out separately because they have a specific maturity and are usually easy to control by specific decision variables.

2. This is the only area where we suggest that you not use the net change in an account. Maturing securities should be separated from new purchases because you always know the exact amount that will mature, and new purchases are usually the final decision management makes in balancing the forecast.

	credit policies, advertising, officer time, interest rates, branches, and so on. In short, many of the decisions you can make will have an impact on loans but in varying degrees. Economic conditions also affect this account. Loans and Mortgages is one of the most significant balance sheet accounts and one of the most difficult to control properly because of the many variables.
Premises	**Direct control**. Although your team can open or close branches, the total dollar change each quarter is rather small.
Other Assets	**No direct control.** This is a function of total bank operations.
Deposits	**Direct control** through multiple decision factors. This is similar to loans in that it is influenced by many of the decisions you make. It is also a significant account because of its size and the degree of change that can occur.
Federal funds Purchased	**Indirect control**. If management uses more funds than they have available, the program will acquire more funds. It will purchase federal funds and CD's first.
Funds Borrowed from FRB	**Indirect control**. If management uses more funds than they have available, and the program cannot acquire sufficient funds by purchasing fed funds and CD's, it will try to borrow at the Federal Reserve discount window. If there are still insufficient funds, the model will begin to sell assets to balance the bank.
Dividends	**Direct control**. Not a large part of total dollars, so it has a minor effect on total cash flows.
Accrued Taxes	**No direct control**. This is the tax the bank is actually paying, including salary taxes.
Other Liabilities	**No direct control**. It is related to other functions.
Capital Notes & Equity	**Direct control**. Not important considerations unless management is changing the bank's capital position.

Because the purpose of a sources and uses forecast is to evaluate accounts that directly affect profit, we can eliminate items that we cannot control or that are too small to affect profit. We then have a highly simplified balance sheet. On the asset (uses) side, we have fed funds sold, securities (new), and loans and mortgages; on the liabilities (sources) side we have deposits, fed funds purchased and funds borrowed from FRB, and securities (maturing and sold).

In order to simplify further the balance sheet , we can use a "net change" approach; that is, rather than record the totals for each account in the balance sheet, we can record the net changes in each account between two time periods.

THE SOURCES AND USES STATEMENT: PERIOD 1.4 TO 2.1

The following is a Sources and Uses form for SBG that has been completed for period 2.1. It shows the balance sheet changes between periods 1.4 and 2.1.

	SOURCES (Liabilities)			USES (Assets)	
QTR.# 2.1	Proposed Goals	Actual Results		Proposed Goals	Actual Results
Securities Maturing		+275.0	New Securities		+33.9
Securities Sold		0.0	Loans (Spread)		
Commercial DD's		+8.6	Prime (0)		+4.9
Regular DD's		-24.3	High (-.05)		+13.8
Other DD's (Public + DTB)		-0.3	Med. (-.07)		+14.4
			Other Loans		
Money Market TD's		+14.8	Synd. -10.0		
Public TD's		+18.6	R.E. +28.2		
Subtotal		+292.4	Cons. +2.3		
			C.C +4.8		
CD's			Total Other		+25.3
Total New 246					
Less 3 Mo. Mat 112			Subtotal		+92.3
Less 6 Mo. Mat. 180					
Less 1 Yr. Mat. 120					
Total CD's Net Change		-166.0			
Fed funds Purchased (Total 21)		-40.7	Fed funds Sold (Total_____)		
FRB Borrowings (Total_____)					
Ret. Earnings & Other		+8.7	Cash		+1.0
TOTAL		+94.4	TOTAL		+93.3

CHANGES IN SOURCES

The securities maturing figure is from the 1.4 printout at the bottom of page 6, "Securities Maturing Next Period." Immediately above and included in that figure is the "Par Value of Treasury Bills Held." Keep in mind that T-bills here include not only the securities that you ordered, but any that the computer model purchased.

Most of the numbers here are the net change figures you should have written in on your period 2.1 printout. The figures for commercial, regular, and other demand deposits, and money market and public time deposits come from page 2 of the printouts, footnotes 2 and 3.

Although you can find the net change in CD's easily by comparing footnote 3, on page 2 of the printout, please note that we arrive at this differently on the sources and uses form. A bit later, when we forecast (in the "Proposed" column), you will see why we use this more complex approach.

To find total new CD's turn to page 2, footnote 10 of the 2.1 printout, and add the CD's from the bottom line under each maturity. This is the sum of the 3-month CD's maturing in 2.2, 6-month CD's maturing in 2.3, and 1-year CD's maturing in 3.1. This gives you the total CD's bought this quarter. Then turn to the 1.4 printout, page 2, footnote 10, and use the top row to find the amount maturing. When you subtract the CD's maturing from the new CD's, you get the total CD change.

Fed funds purchased, funds borrowed from the FRB, and other (liabilities) are all found in the balance sheet on page 1.

CHANGES IN USES

On the uses side, to find new securities, turn to page 6 of the 2.1 printout, and add the last amount at the bottom under par value for 1-year and 5-year U.S. securities (Municipals are zero) and the number of T-bills held, from the middle of the page. The number of T-bills purchased this quarter may be different from the number ordered (found at the bottom of the page under U. S. securities). Remember that the computer may purchase these 90-day government securities if the bank falls below pledging requirements, so make sure you use the number actually purchased. You can see that in the current quarter, management ordered a total of $10 million U.S. government securities, but the model purchased an additional $23.9 million in T-bills.

Under loans, enter the spread from prime for quarter 2.1 from page 8 and the difference in the amount of loans from footnote #7, page 2 (ending balance minus beginning balance).

Total other (assets) and fed funds sold are from page 1. The only other number you have not calculated already is the net change in cash which is the first item on your 2.1 balance sheet.

The “Sources and Uses” form is just a different format for the items in the balance sheet of the bank. When you do an actual set of results as illustrated above, you will be a little out of balance because in this simple form we have left out some small accounts that typically don't change very much. You could be out of balance by as much as $1 to $3 million. If you are out of balance by more than that, part of the reason could be a change in value to securities which is not specifically part of the form. Note that the actual change in total securities from the computer report is 242.817 but the difference between securities maturing and new securities in the form is 241.1. We did not account for the 1.35 million change in value as a negative source of funds. Reducing total sources by 1.35 would almost exactly balance the form. If that does not account for most of the difference you have most likely made an error.

Forecasting

Perhaps you were able to tell from some of the earlier discussions that many of the decisions your team makes frequently need to be changed when you begin to understand the total bank. You have to start making decisions somewhere, so you want a document where you can record the expected results of a set of decisions; the sources and uses form is the appropriate document. Using this, you can easily determine what you need to change if you don't like the results. You use the sources and uses form first to forecast the proposed outcome of your decisions and then to record the actual results. As you do this through the game, you will learn how your decisions affect your bank, and your forecast will become even more accurate.

The sources and uses forecast is based on the assumption that if none of the bank's accounts or policies change, the bank's earnings will not change either. Generally, market forces keep the spread between the average cost of funds and the average earning rate on assets somewhat constant, even though the spread in certain market segments may change slightly from time to time. But a change in a specific account balance implies a change in earnings; the sources and uses form helps you determine if that change will be positive or negative.

Let's do a forecast for period 2.2, which will be your first decision when you start SBG. We are going to use some of the information and examples that we have already talked about. First, we will keep all of the bank's policies the same in period 2.2 as they were in 2.1, and price loans and deposits the same relative to market rates with the exception of the medium loans; we will price medium loans at 15 basis points below the market rate for period 2.2. The 2.2 forecast then would be as follows:

	SOURCES (Liabilities)			USES (Assets)	
QTR.# 2.2	Proposed Goals	Actual Results		Proposed Goals	Actual Results
Securities Maturing	+63.6		New Securities	+74.	
Securities Sold	0.0		Loans (Spread) (0)		
Commercial DD's	+8.6		Prime	+15.3	
Regular DD's	-24.6		High (0)	+21.4	
Other DD's (Public + DTB)	-0.3		Med. (-.15)	+17.0	
			Other Loans		
Money Market TD's	+14.8		Synd. 0.0		
Public TD's	+18.6		R.E. +35.0		
Subtotal	+80.7		Cons. +3.0		
			C.C +5.2		
CD's			Total Other	+43.2	
Total New					
Less 3 Mo. Mat 12 1			Subtotal	+170.9	
Less 6 Mo. Mat. 200					
Less 1 Yr. Mat. 120					
Total CD's Net Change					
Fed funds Purchased (Total 20.9)			Fed funds Sold (Total_____)		
FRB Borrowings (Total_____)					
Ret. Earnings & Other			Cash		
TOTAL			TOTAL		

The maturing is from page 6 on the 2.1 report. Of the $63.563 million maturing, $23.9 are 90-day T-bills, $28.0 million is one-year governments, $6.0 million is five year and the rest are series A and B municipals ($5.667).

The first thing we need to do is determine the securities pledge requirement for period 2.2. The change in the U.S. government pledge requirement from 1.4 to 2.1 was +$16.3. This was a result of the changes in public deposits and trust. Since we are forecasting that these areas will be the same, we should also expect the pledge requirement from these deposits to increase again by about $16.3 million. Finally, we need to check for a deficiency in the municipal pledge requirement. Due to deposit and trust growth the municipal pledge increased by $16.6 million in period 2.1. If we assume the same increase in 2.2 the requirement would go from $375.7 to about $392 million. Total municipals are $423 and only $5.7 are maturing so there will not be a deficiency that increases the government pledge. However, the bank will need total government securities of about $422 million in 2.2($406 + $16). Total governments are currently about $406 ($118 + $264 + 23.9) and $58 are maturing ($28 + $6 + $23.9) leaving a balance of $348, a shortage

of $74. Even if we don't order enough government securities, the model will buy enough to meet the new pledge requirement. So we entered $74 for securities purchased and $0 for securities sold.

Because we aren't changing any other policies, we will assume we will have the same net changes for all the deposit accounts (except CD's) in 2.2 that we had in 2.1. There is of course a possible problem with this assumption. If we were going to forecast exactly the same results we would be saying that there was not going to be any change in economic conditions.

We will consider loans before we finish sources. When we discussed forecasting new loans in the section on “commercial Loan Mechanics”, we estimated that if we priced medium loans at 15 basis points below market, we would get $418 million in new loans. On page 2 footnote 7, "Princ. Pay Next Qtr." we find that payments for medium loans are forecasted at $390.89 for period 2.2. This would give us a net change of about +$17 million for medium loans next quarter. By using a percentage utilized figure of 33.8 for prime and 35.1 for high grade we would come up with a new loans forecast of $450.6 (1333.271 x .338) for prime and $561.5 (1599.825 x .351) for high. By subtracting the projected maturities we would end up with a net growth of $15.3 in prime and $21.4 in high. On page 7 we can see there are $127 million of syndicated loans available for purchase and on page 5 we have about $110 maturing. If we replace the maturities there would be zero on our Sources and Uses. Since we adjusted the commercial loan numbers for a projected increase in interest rates and loan demand we have also adjusted the real estate, consumer, and credit card loans upward from the 2.1 figures. At this point, these are guesses but when we see the actual results we will be able to forecast these numbers a little better next time. In fact, since we are adjusting the asset figures for a change in the economy we would also adjust the deposit figures downward if we were making a real forecast.

When you reach this point in a sources and uses forecast, you should have completed all of the decisions except those involving CD purchases. In other words, you have filled out most of the *Sources and uses statement and the* decision form. You make entries on the decision form at the same time you make entries and forecast amounts for the sources and uses form. You will find that as you go through the decision process, you will frequently want to redo decisions when you evaluate those decisions in the context of the whole bank.

If we discount an interest rate relative to market on the asset side, we have to find a way to recover this on the liability side; otherwise, the bank's average spread will shrink. In the case of the medium loans, although the sources and uses forecast indicates an increase of +$17 million, we know that we are actually booking $418 million in medium loans at a 15 basis point discount in order to achieve this +$17 million in growth. We can't really tell yet if this decision on medium is good or bad; part of the answer to that will be determined by what we might be able to do about our cost of funds. Even if we find we can't recapture all of the discount (i.e., 15 basis points on $418 million), we might feel that giving up a little short-term profit for growth is worthwhile. Remember that in an earlier discussion we said there was enough information to determine what would happen if we priced the medium loans at the market. Maybe after reviewing that you might decide to discount one of the other commercial loan categories.

We can tell from this preliminary set of totals that loan assets are projected to increase by almost $97 million (a 7.9% annual growth) but deposits will only be up by about $17 million. By necessity, this means that the bank will have to increase purchased funds, or we need to go back and either reduce asset growth by changing some decisions in that area, or increase deposit growth by changing decisions in that area. For example, we could certainly grow the money market funds by offering a price that's more than 5 basis points above market. But the bank has $1740 million of these funds, and if we increase our price an extra 10 basis points here while we reduce 15 basis points on $418 million in prime, the bank's spread is going to shrink even more. However, we can see from the subtotals that the banks total uses of funds ($170.9) exceeds total sources ($80.7) by $90.2 million and the bank will have to acquire the additional funds or make changes to the decisions.

If the team is satisfied with both the quantities in the sources and uses, and their profit implications, we need to decide only how to replace the maturing purchased funds. We can see the bank has a total of $441 million in CD’c and $20.9 million in fed funds maturing, plus the $90.2 million shortage from the preliminary total of the sources and uses. All combined, the bank needs about $552 million.

At this point, you should have an interest rate forecast to help you determine whether to purchase 3-month, 6-month or 1-year money. If you were very sure interest rates would continue up for four more quarters, you might want to purchase 70% to 80% of the funds your bank needs in 1-year CD's. However, if rates go down, the bank would be stuck with a lot of very expensive money and earnings would certainly suffer (the slight decline in the Fed Fund borrowing rate might be a sign of an economic change). Generally, you will find it better to mix your purchases and just shift the emphasis modestly based on your economic forecast.

At present, the bank may be able to realize a savings in interest expense by not purchasing fed funds, because fed funds are usually more expensive than CD's. If you look at the economic data for the past two quarters, you will see that the fed funds have been more expensive than CD's. As a matter of fact, if we could save 20 basis points on $552 million of purchased money, we will more than offset the interest income lost by discounting $418 million of medium loans by 15 basis points.

Even 6-month CD's look like they might not be a bad idea if rates continue to move up. So we might fund the $552 million as follows: $250 in 3-month CD's, $200 million in 6-month, and let the model buy the remaining $102 million in 3-month CD’s and fed funds. We are taking a little interest rate risk here, but long and short-term rates have moved up strongly, and $200 million of more expensive CD's won't break the bank should rates turn down. Our total new CD’s would then be $501 ($250 +$200 + $51) for a net change of +$60 ($501 - $121 - $200 - $120). If our forecasts are correct the model will also buy $51 million in fed funds for a net change of $30 ($51 - $21)

The completed Sources and Uses forecast for period 2.2 would then be as follows. Our bank is in balance except for a few numbers that were rounded off. If we wanted to allow for some retained earnings it would reduce our purchased money figures.

Most of the bank's expenses will be up a little next quarter, but hopefully the growth in earning assets will offset this and perhaps lead to a small improvement in earnings.

After two or three quarters of SBG, when you and your team become more familiar with your bank, you can answer the earnings questions with a high degree of precision by doing a pro forma income statement. Once you can do an accurate Sources and Uses forecast, you can easily do an accurate pro forma.

	SOURCES (Liabilities)			USES (Assets)	
QTR.# 2.2	Proposed Goals	Actual Results		Proposed Goals	Actual Results
Securities Maturing	+63.6		New Securities	74	
Securities Sold	0.0		Loans (Spread) (0)		
Commercial DD's	+8.6		Prime	+15.3	
Regular DD's	-24.6		High (0)	+21.4	
Other DD's (Public + DTB)	-0.3		Med. (-.15)	+17.0	
			Other Loans		
Money Market TD's	+14.8		Synd. 0.0		
Public TD's	+18.6		R.E. +35.0		
Subtotal	+80.7		Cons. +3.0		
			C.C +5.2		
CD's			Total Other	+43.2	
Total New 501					
Less 3 Mo. Mat 12 1			Subtotal	+170.9	
Less 6 Mo. Mat. 120					
Less 1 Yr. Mat. 120					
Total CD's Net Change	+60				
Fed funds Purchased (Total 51)	30		Fed funds Sold (Total_____)		
FRB Borrowings (Total_____)	0				
Ret. Earnings & Other			Cash		
TOTAL	+171		TOTAL	+170.9	

Overall, our Sources and Uses forecast indicates asset growth of about $107 million. (The total under Uses is170.9, but $64 million in new securities merely replaces securities maturing). This growth represents a 9.1% annual growth rate in total assets. (Growth in earning assets is 9.9% because it also excludes cash reserves).

Finally, you want to review how the goals will affect capital adequacy. If earnings are the same in 2.2 as in 2.1, capital adequacy should continue to improve at approximately the same rate that we saw when we first looked at the bank. If earnings improve, capital adequacy will improve even more in period 2.2.

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