

Standard Costs and Variances

Everything starts with a budget

Example: Sandy Cove Bank

Sandy Cove Bank

- Sandy Cove is a new small commercial bank in Sandy Cove, Michigan.
- The bank limits interest rate risk by matching the maturity of its assets to the maturity of its liabilities.
- By maintaining a spread between interest rates charged and interest rates paid, the bank plans to earn a small income.

Sandy Cove Bank

- Management establishes a flexible budget based on interest rates for each department.
- The Boat and Car Loan Department offers five-year loans.
- It matches certificates of deposit (CDs) against car and boat loans.

Sandy Cove Bank

- Given all the uncertainty about interest rates, management believes that five-year savings interest rates could vary between 2 percent and 16 percent for the coming year. (*Note: ‘Given’ in this sentence embeds a critical management accounting activity: forecasting.*)
- The savings rate is the rate paid on CD savings accounts.
- The loan rate is the rate charged on auto and boat loans.

Sandy Cove Bank

- Expected new demand for fixed-rate, five-year loans and the new supply of fixed-rate, five-year savings accounts at various interest rates.

Loan Rate	Loan Demand	Savings Rate	Savings Supply
6%	\$12,100,000	2	\$ 4,700,000%
7%	10,000,000	3	5,420,000
8%	8,070,000	4	8,630,000

Loan Rate	Loan Demand	Savings Rate	Savings Supply
9%	6,030,000	5	9,830,000
10%	4,420,000	6	11,800,000

- There are no loans from previous years. Note that the department maintains a 4 percent spread between loan and savings rates to cover processing, loan default, and overhead.

Sandy Cove Bank

- The amount of new loans granted is always the lesser of the loan demand and loan supply.
- For simplicity, this bank may lend 100 percent of deposits.
- In practice, this rate is set by policy makers and regulators not the bank itself.

Sandy Cove Bank

- Although rates are set nationally, the bank may pay or charge slightly different rates to limit demand or boost supply as needed in its local market.
- The Boat and Car Loan Department incurs processing, loan default, and overhead expenses related to these accounts.

Sandy Cove Bank

- The first two expenses vary, depending on the dollar amount of the accounts.
- The annual processing expense is budgeted to be 1.5 percent of the loan accounts.
- Default expense is budgeted at 1 percent of the amount loaned per year.

Sandy Cove Bank

- Again, loans and savings would ideally be the same.
- Overhead expenses are estimated to be \$30,000 for the year, regardless of the amount loaned.

SCB Question 1

1. Calculate the processing, loan default, and overhead expenses for each possible interest rate.

Loan Rate	Loan Demand	Savings Rate	Savings Supply	New Loans
6%	\$12.1 M	2%	\$ 4.7 M	\$ 4.7 M
7%	10	3%	5.42	5.42

Loan Rate	Loan Demand	Savings Rate	Savings Supply	New Loans
8%	8.07	4%	8.63	8.07
9%	6.03	5%	9.83	6.03
10%	4.42	6%	11.8	4.42

SCB Solution 1

Loan Rate	Loan Demand	Savings Rate	Savings Supply	New Loans	Processing Expenses
6%	\$12.1 M	2%	\$ 4.7 M	\$ 4.7 M	\$70,500
7%	10	3%	5.42	5.42	81,300
8%	8.07	4%	8.63	8.07	121,050
9%	6.03	5%	9.83	6.03	90,450
10%	4.42	6%	11.8	4.42	66,300

- Processing is 1.5% of loan accounts

SCB Solution 1

Loan Rate	Loan De-mand	Savings Rate	Savings Supply	New Loans	Processing Expenses	Default Exp
6%	\$12.1 M	2%	\$ 4.7 M	\$ 4.7 M	\$70,500	\$47,000
7%	10	3%	5.42	5.42	81,300	54,200
8%	8.07	4%	8.63	8.07	121,050	80,700
9%	6.03	5%	9.83	6.03	90,450	60,300
10%	4.42	6%	11.8	4.42	66,300	44,200

- Default expense is budgeted at 1 percent of the amount loaned per year.

SCB Solution 1

Loan Rate	Loan De-mand	Savings Rate	Savings Supply	New Loans	Processing Expenses	Default Exp	Overhead Expenses
6%	\$12.1 M	2%	\$ 4.7 M	\$ 4.7 M	\$70,500	\$47,000	\$30,000
7%	10	3%	5.42	5.42	81,300	54,200	30,000
8%	8.07	4%	8.63	8.07	121,050	80,700	30,000
9%	6.03	5%	9.83	6.03	90,450	60,300	30,000
10%	4.42	6%	11.8	4.42	66,300	44,200	30,000

	Loan						
Loan	De-	Savings	Savings	New	Processing	Default	Overhead
Rate	mand	Rate	Supply	Loans	Expenses	Exp	Expenses

- These are the budgeted expenses, this is the foundation of financing plans to make sure that these resources are in place when they are needed.
- In this case it is the deposits that need to be in place for the lending to happen.

Logical flow

SCB Question 2

2. Create an annual budgeted income statement for five-year loans and deposits for the Boat and Car Loan Department given a savings interest rate of 4 percent. Remember to match supply and demand.

Interest income	$\$8,070,000 \times 8\% =$	\$645,600
Interest expense	$\$8,070,000 \times 4\% =$	322,800
Net interest income		\$322,800
Fixed overhead		30,000
Processing expense		121,050
Default expense		80,700
Net income		\$ 91,050

SCB Question 3

3. Table 2 shows the actual income statement for the Boat and Car Loan Department. Included are the actual loans and savings for the same period. Calculate the variances and provide a possible explanation.

	Budget	Actual
Interest income	\$645,600	\$ 645,766
Interest expense	322,800	314,360
Net interest income	\$322,800	\$ 331,406
Fixed overhead	30,000	30,200
Processing expense	121,050	130,522
Default expense	80,700	77,800
Net income	\$ 91,050	\$ 92,884

Logical flow

Figure 1: Logical flow

	Budget	Actual
Loans	8,070,000	\$8,062,000
Deposits	8,070,000	\$8,123,000

SCB Solution 3

	Budget	Actual	Fav. (Unfav.) Variance
Interest income	\$645,600	\$ 645,766	\$ 166
Interest expense	322,800	314,360	8,440
Net interest income	\$322,800	\$ 331,406	\$ 8,606
Fixed overhead	30,000	30,200	(200)
Processing expense	121,050	130,522	(9,472)
Default expense	80,700	77,800	2,900
Net income	\$ 91,050	\$ 92,884	1,834
Loans	8,070,000	\$8,062,000	\$ (8,000)
Deposits	8,070,000	\$8,123,000	\$(53,000)

SCB Solution 3

- Even though loans were lower and deposits were higher than expected, interest income was higher and interest expense was lower than expected.
- The answer can be obtained by calculating the average interest rates earned and paid.

SCB Solution 3

- On \$8,062,000 worth of loans, Sandy Cove earned \$645,766 interest, or 8.01 percent (0.01 percent more than expected).
- Similarly, it paid only 3.87 percent (0.13 percent less) on deposits.

SCB Solution 3

- Therefore, the net interest income variance of \$8,606 is a combination of two effects: the variance in the actual loans and deposits (quantity) and the variance in the interest rates (price).
- The combined effects are a favorable interest income variance, a favorable interest expense variance, and an overall favorable net interest income variance.

SCB Solution 3

- At a savings interest rate of 4 percent, there is an excess supply of deposits over demand for loans.
- The Boat and Car Loan Department lowered the interest rate on deposits to stem additional deposits.

SCB Solution 3

- The increase in the interest rate on loans can be attributed only to an increase in the demand for loans, which resulted in the department charging a slightly higher average interest rate.
- The higher processing expense could be related to the higher number of accounts processed and improvements in the default rate.
- That is, the favorable default expense could be attributed to an improved screening process-related to spending more on processing.

Terminology

Before we dig into understanding variances, we need to define a couple of terms.

Standards vs. Budgets

- Budgeted costs and standard costs are the same thing.
- You can think of a ‘budget’ as the entire financial and operational plan.
- You can think of the ‘standards’ as all of the individual forecasts that go into the budget.
- Though the words are used interchangeably.

Standards vs. Actuals

- Standards are our predictions (generated from our model of costs)
- Actuals are what we observe (generated by reality)

Note that this definition is related to the data selection issue on the mid-term.

Variance:

Total Variance = Actual Cost - Standard Cost

Decomposing Variances

Total Var. into Price & Quantity Vars

- Start with this:

Total variance is equal to actual cost minus standard cost.

Total Var. into Price & Quantity Vars

- Define a few variables:

	Symbol		Subscript
Total Variance	TV	Actual	a
Quantity	Q	Standard	s

	Symbol	Subscript
Price	P	

- *This is all we need to decompose any variance into it's price and volume components.*