

AC 202 Management Accounting

Master Budgeting

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Learning Objectives

- Garrison et. al (2015): Chapter 10
- After studying this topic, you should be able to:
 - understand why organizations budget
 - understand the key components of a master budget and prepare a master budget for a manufacturing company
 - understand the behavioral aspects of budgeting

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The Basic Framework of Budgeting

- A **budget** is a detailed *quantitative* plan for acquiring and using financial and other resources over a specified forthcoming time period.
- It is the initial plan of what the company intends to accomplish in the budget period and includes a set of budgeted financial statements.
- The act of preparing a budget is called **budgeting**.
- The use of budgets to control an organization's activities is known as **budgetary control**.

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Planning and Control



Budgeting is the basis for planning and control.

Planning –
involves developing objectives and preparing various budgets to achieve those objectives.

Control –
involves the Steps taken by management to ensure that objectives are attained.

- Budgets typically have a set time period (month, quarter, year)
- This time period can itself be broken into sub-periods
- The most frequently used budget period is one year

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Advantages of Budgets

- It forces managers to think about and plan for the future.
- It provides information that can be used to improve decision making.
- It provides a standard for performance evaluation.
- It improves communication and coordination.



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The Master Budget



- The master budget summarizes the financial projections of all the company's budgets.
 - *Operating Budget* – A detailed projection of all estimated income and expenses based on forecasted sales revenue during a given period. Operating budget deals with operation decisions (how to best use the limited resources of an organization) → leads to the creation of the *Budgeted Income Statement*
 - *Financial Budget* is based on the Operating Budget and deals with financial decisions (how to obtain the funds to acquire those resources) → leads to the creation of the *Budgeted Statement of Financial Position* and the *Budgeted Statement of Cash Flows*

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The Operating Budget & Supporting Schedules

The steps in preparing an operating budget are as follows:

1. Prepare the Revenues Budget
2. Prepare the Production Budget (in Units)
3. Prepare the Direct Materials Usage Budget and Direct Materials Purchases Budget
4. Prepare the Direct Manufacturing Labor Budget
5. Prepare the Manufacturing Overhead Costs Budget
6. Prepare the Ending Inventories Budget
7. Prepare the Cost of Goods Sold Budget
8. Prepare the Operating Expense (Period Cost) Budget
9. Prepare the Budgeted Income Statement

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The Financial Budget & Supporting Schedules

Based on the Operating Budgets:

- ☒ Prepare the Capital Expenditures Budget
- ☒ Prepare the Cash Budget
- ☒ Prepare the Budgeted Statement of Financial Position (Balance Sheet)
- ☒ Prepare the Budgeted Statement of Cash Flows

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Preparing the Master Budget

Basket, Inc. is preparing budgets for the quarter ending June 30, 20x1.

➤ Budgeted sales in units for the next four months are:

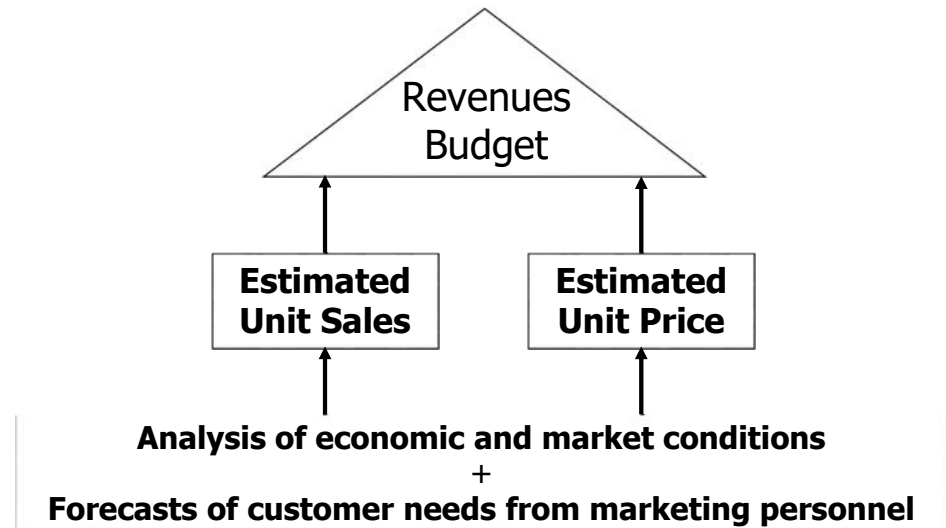
- April 20,000 magnets
- May 50,000 magnets
- June 30,000 magnets
- July 25,000 magnets*

➤ The sales price is \$10 per magnet.

**July is needed for June ending inventory computations.*

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The Revenues Budget



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The Revenues Budget



Basket, Inc.
Revenues Budget
for the Quarter ended June, 20x1

Budgeted Sales:

April (20,000 units x \$10)	\$ 200,000
May (50,000 units x \$10)	500,000
June (30,000 units x \$10)	<u>300,000</u>
Budgeted sales for the 2 nd quarter	<u>\$1,000,000</u>

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The Production Budget

Production must be adequate to meet budgeted sales and to provide sufficient ending inventory.

Budgeted product sales in units
 + Desired product units in ending inventory
 = Total product units needed
 – Product units in beginning inventory
 = Product units to produce

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The Production Budget

Inventory policy:

➤ The management of Basket wants ending inventory to be 20% of the next month's budgeted sales in units.

➤ 4,000 units were on hand March 31.

Let's prepare the production budget.

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The Production Budget

Basket, Inc.
Production Budget
for the Quarter ended June, 20x1

	April	May	June
Budgeted units sales*	20,000	50,000	30,000
+ Desired ending inventory	<u>10,000</u>	<u>6,000</u>	<u>5,000⁺</u>
Total units needed	30,000	56,000	35,000
- Beginning inventory	<u>4,000</u>	<u>10,000</u>	<u>6,000</u>
Units to produce	<u>26,000</u>	<u>46,000</u>	<u>29,000</u>

*June's EFG = 20% x 25,000 July sales units

*From Revenues Budget (Slide 11)

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Material Usage and Purchases Budget

The material purchases budget is based on production quantity and desired material inventory levels.

Units to produce
 × Material needed per unit
 = Material needed for units to produce
 + Desired units of material in ending inventory
 = Total units of material needed
 − Units of material in beginning inventory
 = Units of material to purchase

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Material Usage and Purchases Budget

- **5 pounds** of material are needed for each unit produced. Materials used in production cost **\$0.40 per pound**.
- The management at Basket wants to have materials on hand at the end of each month equal to **10%** of the following month's production needs.
- The materials inventory on March 31 is 13,000 pounds.
- July production is budgeted for 23,000 units.
- Assume no beginning or ending work in process inventories.

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Basket, Inc.
Material Usage and Purchases Budget
for the Quarter ended June, 20x1

	April	May	June
Units to produce (<i>Slide 14</i>)	26,000	46,000	29,000
Pounds per unit	<u>x 5</u>	<u>x 5</u>	<u>x 5</u>
Materials used (pounds)	130,000	230,000	145,000
Desired ending materials	<u>23,000</u>	<u>14,500</u>	<u>11,500</u>
Total Materials needed	153,000	244,500	156,500
- Beginning materials	<u>13,000</u>	<u>23,000</u>	<u>14,500</u>
Material purchases (pounds)	140,000	221,500	142,000
Cost per pound	<u>x \$0.40</u>	<u>x \$0.40</u>	<u>x \$0.40</u>
Total costs	<u>\$56,000</u>	<u>\$88,600</u>	<u>\$56,800</u>

Ending materials = 10% of next month's material needs
June ending materials = 10% x (23,000 units x 5 lbs) = 11,500 lbs.

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Direct Manufacturing Labor Budget

- Each unit produced requires 3 minutes (**0.05 hours**) of direct labor.
- Basket employs employees at a rate of **\$10 per hour**.

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Direct Labor Budget

Basket, Inc.
Direct Manufacturing Labor Budget
for the Quarter ended June, 20x1

	April	May	June
Units to produce *	26,000	46,000	29,000
Hours per unit	0.05	0.05	0.05
Total hours required	1,300	2,300	1,450
Wage rate per hour	\$ 10	\$ 10	\$ 10
Direct labor cost	<u>\$ 13,000</u>	<u>\$ 23,000</u>	<u>\$ 14,500</u>

*From Production Budget (Slide 14)



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Manufacturing Overhead Budget

- VMOH = **\$1 per unit produced**
- FMOH = **\$50,000 per month**
- FMOH includes \$20,000 in *depreciation* which does not require a cash outflow.
- MOH is applied based on *direct labor hours*.



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Manufacturing Overhead Budget

Basket, Inc.
Manufacturing Overhead Budget
for the Quarter ended June, 20x1

	April	May	June
Units to produce *	26,000	46,000	29,000
Variable overhead rate	\$ 1.00	\$ 1.00	\$ 1.00
Variable overhead cost	\$26,000	\$46,000	\$29,000
Fixed overhead	50,000	50,000	50,000
Total mfg. overhead cost	<u>\$76,000</u>	<u>\$96,000</u>	<u>\$79,000</u>

*From Production Budget (Slide 14)



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Ending Inventories Budget

Basket, Inc.
Ending Inventories Budget
for the Quarter ended June, 20x1

Production costs per unit:	
Direct material costs (5 pounds x \$0.40)	\$ 2.00
Direct labor costs (0.05 hour x \$10)	0.50
Manufacturing overhead applied (0.05 hour x \$49.70)	<u>2.49</u>
Total unit cost	<u>\$ 4.99</u>
Units in ending finished goods inventory	5,000 units
Total costs in ending finished goods inventory (5,000 units x \$4.99)	<u>\$24,950</u>

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Manufacturing Overhead Applied

Manufacturing overhead is applied based on *direct labor hours*.

From labor (slide 19) and MOH (slide 21) budgets		
	Labor Hours	Mfg. OH
April	1,300	\$ 76,000
May	2,300	96,000
June	1,450	79,000
Total	<u>5,050</u>	<u>\$251,000</u>

Total MOH for quarter	=	<u>\$251,000</u>	=	\$49.70 per hr.
Total labor hours required		5,050 hrs.		

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Cost of Goods Sold Budget

Basket, Inc.
Cost of Goods Sold Budget
for the Quarter ended June, 20x1

Total units to be produced* (26,000 + 46,000 + 29,000)	101,000
Production costs per unit (slide 22)	x <u>\$ 4.99</u>
Cost of goods manufactured (101,000 units x \$4.99)	\$503,990
Add Total costs in beginning finished goods inventory (4,000 units x \$4.99)	<u>19,960</u>
Cost of goods available for sales	523,950
Less Total costs in ending finished goods inventory (slide 22)	<u>(24,950)</u>
Cost of goods sold	<u>\$499,000</u>

*From Production Budget (Slide 14)

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Operating Expense Budget

- Operating expenses include selling and administrative (S&A) expense
- Selling expense contain both variable and fixed items.
 - Variable items: shipping costs and sales commissions.
 - Fixed items: advertising and sales salaries.
- Administrative expense contain mostly fixed items.
 - Executive salaries and depreciation on company office.

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Operating Expense Budget

- Variable selling and administrative expenses are **\$0.50 per unit sold**
- Fixed selling and administrative expenses are **\$70,000** per month.
- Fixed selling and administrative expenses include **\$10,000 in depreciation** which does not require a cash outflow.



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Operating Expense Budget

Basket, Inc.
Operating Expense Budget
for the Quarter ended f June, 20x1

	April	May	June
Budgeted unit sales *	20,000	50,000	30,000
Variable S&A per unit	\$ 0.50	\$ 0.50	\$ 0.50
Variable S&A expense	\$ 10,000	\$ 25,000	\$ 15,000
Fixed S&A expense	70,000	70,000	70,000
Total S&A expense	<u>\$80,000</u>	<u>\$95,000</u>	<u>\$85,000</u>

*From Revenues Budget (Slide 11)



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Cash Receipts Budget

Assume all sales are on account.

Basket's collection pattern is:

70 percent collected in month of sale

25 percent collected in month after sale

5 percent will be uncollectible

Accounts receivable on March 31 is \$30,000, all of which is collectible in April.

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Basket, Inc.
Cash Receipts Budget
for the Quarter ended June, 20x1

	April	May	June
Budgeted sales revenue*	\$ 200,000	\$ 500,000	\$ 300,000
Receipts from March sales	\$ 30,000		
Receipts from April sales	140,000	\$ 50,000	
Receipts from May sales		350,000	\$ 125,000
Receipts from June sales			210,000
Total cash receipts	\$ 170,000	\$ 400,000	\$ 335,000

April: $.70 \times \$200,000 = \$140,000$ and $.25 \times \$200,000 = \$50,000$
 May: $.70 \times \$500,000 = \$350,000$ and $.25 \times \$500,000 = \$125,000$
 June: $.70 \times \$300,000 = \$210,000$

*From Revenues Budget (Slide 11)



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Cash Disbursements Budget

➤ Costs of material purchases:

- One-half of a month's purchases are paid for in the month of purchase; the other half is paid for in the following month.
- No discount terms are available.
- The accounts payable balance on March 31 is \$12,000, all of which will be paid in April.

➤ Costs other than cost of material purchases are paid in cash

➤ Basket Company pays a \$51,000 cash **dividend** in April

➤ Basket Company purchases **equipment** costing \$143,700 in May and \$48,800 in June.

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Basket, Inc.
Cash Disbursements Budget
for the Quarter ended June, 20x1

	April	May	June
Total cost of DM purchases*	\$ 56,000	\$ 88,600	\$ 56,800
Payables from March	\$ 12,000		
April purchases	28,000	\$ 28,000	
May purchases		44,300	\$ 44,300
June purchases			28,400
Total cash payment for DM purchases in month	\$ 40,000	\$ 72,300	\$ 72,700

$1/2 \times \$56,000 = \$28,000$
 $1/2 \times \$88,600 = \$44,300$
 $1/2 \times \$56,800 = \$28,400$

*From DM Purchase Budget (Slide 17)

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Basket, Inc.
Cash Disbursements Budget
for the Quarter ended June, 20x1

	April	May	June
Cash payments:			
Material budget	\$ 40,000	\$ 72,300	\$ 72,700
Labor budget (slide 19)	13,000	23,000	14,500
MOH budget* (slide 21)	56,000	76,000	59,000
Operating exp. budget* (slide 27)	70,000	85,000	75,000
Dividends	51,000		
Equipment purchases		143,700	48,800
Total cash disbursements	230,000	400,000	270,000

* Excluding depreciation expenses



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Additional Information

Basket Company:

- Has a \$100,000 line of credit at its bank, with a zero balance on April 1.
- Maintains a \$30,000 *minimum cash balance*.
- Borrows at the beginning of a month and repays at the end of a month.
- Pays interest at 16 percent when a principal payment is made.
- Has a \$40,000 cash balance on April 1.

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Basket, Inc. Cash Budget for the Quarter ended June, 20x1

	April	May	June
Beginning cash balance	\$ 40,000	\$ 30,000	
Cash receipts (slide 29) ☑	170,000	400,000	335,000
Cash available	<u>\$ 210,000</u>	<u>\$ 430,000</u>	
Cash payments: (slide 32) ☑			
Materials budget	\$ 40,000	\$ 72,300	\$ 72,700
Labor budget	13,000	23,000	14,500
Manufacturing OH budget	56,000	76,000	59,000
S&A expense budget	70,000	85,000	75,000
Equipment purchases	0	143,700	48,800
Dividends	51,000	0	0
Total cash payments	<u>\$ 230,000</u>	<u>\$ 400,000</u>	<u>\$ 270,000</u>
Balance before financing	<u>\$ (20,000)</u>	<u>\$ 30,000</u>	
Borrowing	50,000		
Principal repayment	0		
Interest	0		
Ending cash balance	<u>\$ 30,000</u>		

Basket, Inc. Cash Budget for the Quarter ended June, 20x1

	April	May	June
Beginning cash balance	\$ 40,000	\$ 30,000	\$ 30,000
Cash receipts	170,000	400,000	335,000
Cash available	<u>\$ 210,000</u>	<u>\$ 430,000</u>	<u>\$ 365,000</u>
Cash payments:			
Materials budget	\$ 40,000	\$ 72,300	\$ 72,700
Labor budget	13,000	23,000	14,500
Manufacturing OH budget	56,000	76,000	59,000
S&A expense budget	70,000	85,000	75,000
Equipment purchases	0	143,700	48,800
Dividends	51,000	0	0
Total cash payments	<u>\$ 230,000</u>	<u>\$ 400,000</u>	<u>\$ 270,000</u>
Balance before financing	<u>\$ (20,000)</u>	<u>\$ 30,000</u>	<u>\$ 95,000</u>
Borrowing	50,000	0	
Principal repayment	0	0	
Interest	0	0	
Ending cash balance	<u>\$ 30,000</u>	<u>\$ 30,000</u>	

Basket, Inc. Cash Budget for the Quarter ended June, 20x1

	April	May	June
Beginning cash balance	\$ 40,000	\$ 30,000	\$ 30,000
Cash receipts	170,000	400,000	335,000
Cash available	<u>\$ 210,000</u>	<u>\$ 430,000</u>	<u>\$ 365,000</u>
Cash payments:			
Materials budget	\$ 40,000	\$ 72,300	\$ 72,700
Labor budget	13,000	23,000	14,500
Manufacturing OH budget	56,000	76,000	59,000
S&A expense budget	70,000	85,000	75,000
Equipment purchases	0	143,700	48,800
Dividends	51,000	0	0
Total cash payments	<u>\$ 230,000</u>	<u>\$ 400,000</u>	<u>\$ 270,000</u>
Balance before financing	<u>\$ (20,000)</u>	<u>\$ 30,000</u>	<u>\$ 95,000</u>
Borrowing	50,000	0	0
Principal repayment			(50,000)
Interest			(2,000)
Ending cash balance	<u>\$ 30,000</u>	<u>\$ 30,000</u>	<u>\$ 43,000</u>

$$\$50,000 \times .16 \times 3/12 = \$2,000$$

Budgeted Income Statement

Basket Company Budgeted Income Statement For the Quarter Ended June 30, 20x1	
Sales (slide 11)	\$ 1,000,000
Cost of goods sold (slide 24)	499,000
Gross margin	\$ 501,000
Selling and administrative expenses	260,000
Operating income	\$ 241,000
Interest expense (slide 36)	2,000
Net income	\$ 239,000

From S&A Expense Budget	
April	\$ 80,000
May	95,000
June	85,000
Total	\$ 260,000

(slide 27)

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The Budgeted Statement of Financial Position

➤ Basket reports the following account balances on June 30, prior to preparing its budgeted financial statements:

➤ Land	\$50,000
➤ Building (net)	\$174,500
➤ Common stock	\$200,000
➤ Equipment (net)	\$192,500
➤ Beginning retained earnings	\$148,150
➤ Dividends paid	\$51,000

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Basket Company Budgeted Statement of Financial Position June 30, 20x1	
Current assets	
Cash	\$ 43,000
Accounts receivable	75,000
Raw materials inventory	4,600
Finished goods inventory	24,950
Total current assets	\$ 147,550
Property and equipment	
Land	\$ 50,000
Building	174,500
Equipment	192,500
Total property and equipment	\$ 417,000
Total assets	\$ 564,550
Liabilities and Equities	
Accounts payable	\$ 28,400
Common stock	200,000
Retained earnings	336,150
Total liabilities and equities	\$ 564,550

25% of
June
sales of
\$300,000

11,500 lbs.
@ \$.40 per
lb.

5,000 units
@ \$.49
each

50% of
June
purchases
of **\$56,800**

\$148,150
+ 239,000
- 51,000

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Incremental Budgeting

➤ Incremental budgeting is budgeting based on slight changes from the preceding period's budgeted results or actual results.

- Simple
- However, It assumes only minor changes from the preceding period, when in fact there may be major structural changes in the business or its environment that call for much more significant budget changes.
- Managers tend to overspend budgeted expenditures, since a drop in expenditures in one period will be reflected in future periods too.
- When the budget is carried forward with minor changes, there tends to be little incentive to conduct a comprehensive review of the budget, so that inefficiencies (or errors) are automatically rolled into new budgets.

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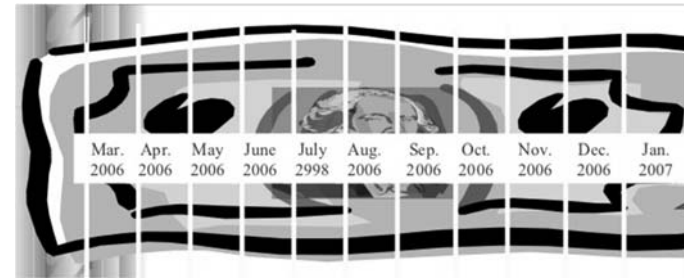
Zero-Based Budgeting

- Zero-based budgeting (ZBB) is a method of budgeting in which all expenses must be justified for each new period, not just changes in the budget from the prior year.
- ZBB starts from a "zero base," and every function within an organization is analyzed for its needs and costs. Budgets are then built around what is needed for the upcoming period, regardless of whether the budget is higher or lower than the previous one.
- Disadvantage → Time consuming

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Rolling Budget

- Also called a continuous budget
- Is created by continually adding a month, quarter, or year to the period that just ended.
- Rolling budgets are updated frequently. The company can incorporate the change into the rolling budget.



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Budgeting and Human Behavior

- The budgeting process may be abused both by superiors and subordinates, leading to negative outcomes.
 - Superiors may dominate the budget process or hold subordinates accountable for events they have no control over.
 - Subordinates may build "budgetary slack" into their budgets
 - *Budgetary Slack* → The practice of underestimating budgeted revenues, or overestimating budgeted expenses, in an effort to make the resulting budgeted goals (profits) more easily attainable

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