

Chapter 27 Cash Management

- Reasons for Holding Cash
- Determining the Target Cash Balance
- Managing the Collection and Disbursement of Cash
- Investing Idle Cash
- Summary & Conclusions

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Reasons for Holding Cash

- Transactions motive
- Compensating balances

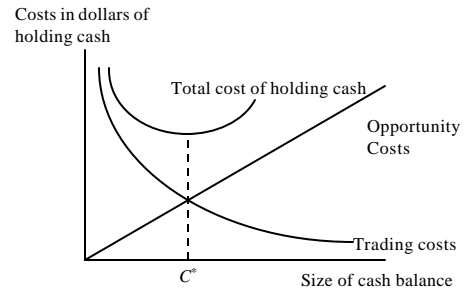
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Determining the Target Cash Balance

- The Baumol Model
- The Miller-Orr Model
- Other Factors Influencing the Target Cash Balance

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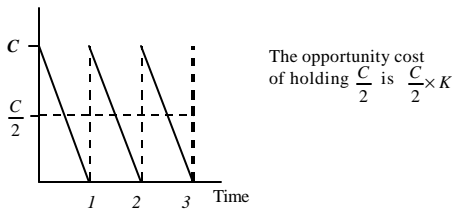
Costs of Holding Cash



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The Baumol Model – Opportunity Cost

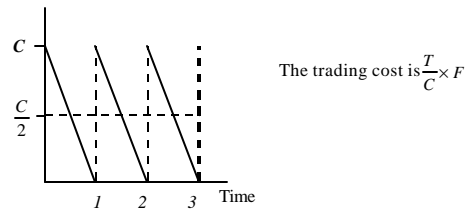
F = The fixed cost of selling securities to raise cash
 T = The total amount of new cash needed
 K = The opportunity cost of holding cash: this is the interest rate.



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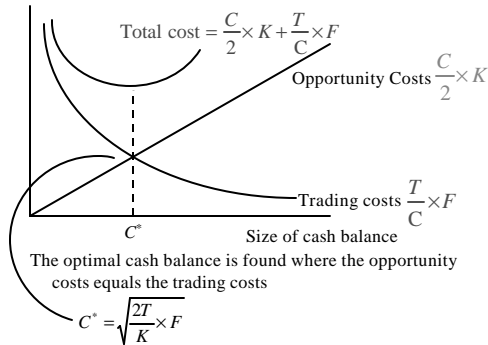
The Baumol Model – Trading Cost

F = The fixed cost of selling securities to raise cash
 T = The total amount of new cash needed
 K = The opportunity cost of holding cash: this is the interest rate.



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The Baumol Model



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The Baumol Model

The optimal cash balance is found where the opportunity costs equals the trading costs

$$\text{Opportunity Costs} = \text{Trading Costs}$$

$$\frac{C}{2} \times K = \frac{T}{C} \times F$$

Multiply both sides by C

$$\frac{C^2}{2} \times K = T \times F \qquad C^2 = 2 \times \frac{T \times F}{K}$$

$$C^* = \sqrt{\frac{2TF}{K}}$$

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Baumol Model Example

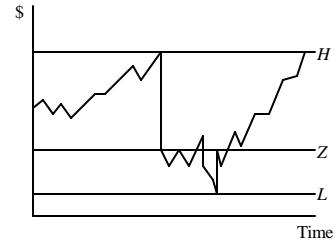
$$C^* = \sqrt{\frac{2TF}{K}}$$

- Assume Stetson Corp. has fixed costs of selling securities of \$800, cash outflows exceed inflows by \$50,000 per week, and the interest rate on marketable securities is 8%. Calculate their target or optimal cash balance.
- Answer:**

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The Miller-Orr Model

- The firm allows its cash balance to wander randomly between upper and lower control limits.



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The Miller-Orr Model Math

- Given L, which is set by the firm, the Miller-Orr model solves for Z and H

$$Z^* = \sqrt[3]{\frac{3Fs^2}{4K}} + L \qquad H^* = 3Z^* - 2L$$

where σ^2 is the variance of net daily cash flows.

- The average cash balance in the Miller-Orr model is

$$\text{Average cash balance} = \frac{4Z^* - L}{3}$$

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Implications of the Miller-Orr Model

- To use the Miller-Orr model, the manager must do four things:
 - Set the lower control limit.
 - Estimate the standard deviation.
 - Determine the interest rate.
 - Estimate the trading costs.
- The model clarifies the issues of cash management:
 - The best return point, Z, is _____ related to trading costs, F, and _____ related to the interest rate K.
 - Z and the average cash balance are _____ related to the variability of cash flows.

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Miller-Orr Model Example

Assume Stetson Corp. has fixed costs of selling securities of \$800, standard deviation of daily net cash flows is \$5,000, and the interest rate on marketable securities is 8%. The lower cash balance is \$5,000. Calculate their target or optimal cash balance (return-cash point) and upper limit.

Answer:

$$Z^* = 3 \sqrt{\frac{3Fs^2}{4K}} + L$$

$$H^* = 3Z^* - 2L$$

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Other Factors Influencing the Target Cash Balance

- Borrowing
- Compensating Balance

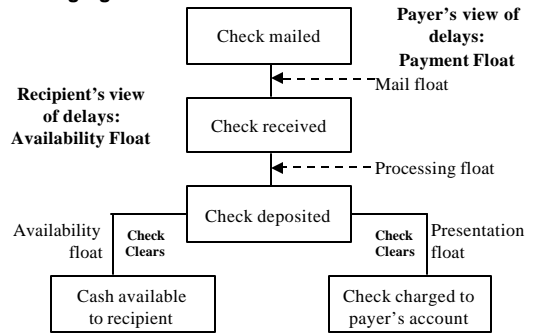
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Float

- The difference between bank cash and book cash is called *float*.
- Float management involves controlling the collection and disbursement of cash.
- How have you seen float personally?

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Managing Float



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Managing the Collection and Disbursement of Cash

- Accelerating Collections
- Delaying Disbursements
 - Disbursement Float
 - Zero-Balance Accounts
 - Drafts
 - Ethical and Legal Questions

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Wire Transfer Example

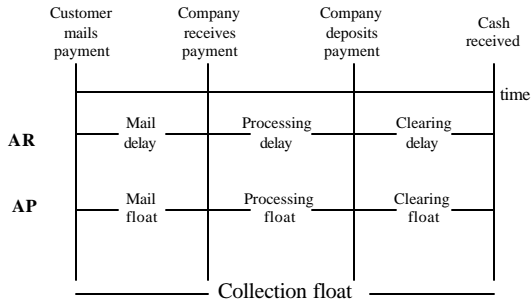
Assume daily interest rate is .02% and wire transfer saves 2 days of float, but costs \$10 more than a depository transfer check. How large a transfer is necessary to justify a wire transfer?

Answer:

-
-
-
-
-

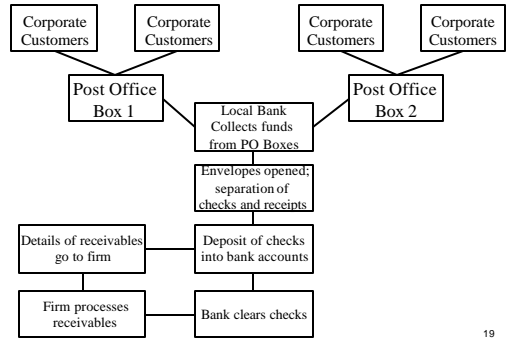
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Accelerating Collections



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Overview of Lockbox Processing



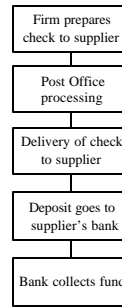
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Lockbox Example

Avg. no. of daily payments to lock box = 150
 Avg. size of payment = \$1,200
 Rate of interest per day = .02 %
 Saving in mailing time = 1.2 days
 Saving in processing time = .8 day
 Bank charges \$ 0.26 per check plus \$10,000 per year
 What is savings of LB, what is cost of LB?
Answer:

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Delaying Disbursements



1. Write check on a distant bank.
2. Hold payment for several days after postmarked in office.
3. Call supplier firm to verify statement accuracy for large amounts.
4. Mail from distant post office.
5. Mail from post office that requires a great deal of handling.

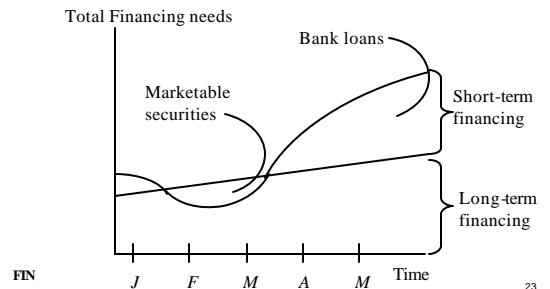
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Investing Idle Cash

- A firm with surplus cash can park it in the money market.
 - Money market mutual funds.
 - Sweep accounts
- Firms have surplus cash for three reasons:
 - Seasonal or Cyclical Activities
 - Planned Expenditures
 - Different Types of Money Market Securities
 - T-bill, T-notes, CDs, Federal Agency, Repros, Commercial Paper

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Seasonal Cash Demands



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