Cash Management II

Cash Management Models

Cash Management Models

- Cash management demands

  (i) to have an efficient cash forecasting and reporting systems,

  (ii) To achieve optimal conservation and utilisation of funds.

  The cash budget tells us the estimated levels of cash balances for the given period on the basis of expected revenues and expenditures.

- However, if there are shortfalls and surplus, how should these be arranged and what should be done with surplus, are the questions which are not answered by the cash budget.

- For such issues, there are cash management models. 1. Baumol Model and 2. Miller and Orr model.

Baumol Model (1952) – EOQ Model

- William J. Baumol proposed a model similar to EOQ for cash management too.

- The model helps in determining the cash conversion size which means how much cash should be arranged by selling marketable securities in each transaction.

- This model assumes that cash can be arranged through selling marketable securities which the firms hold in the time of needs.
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- There are two types of cost involved in holding cash.

- Opportunity cost

- Transaction cost also known as conversion cost

- The purpose of the model to minimise the total cost of cash holding which is summation of opportunity cost and transaction cost.

Costs of holding cash

Trading costs increase when the firm must sell securities to meet cash needs.

Total cost of holding cash

Opportunity Costs

The investment income foregone when holding cash.

Trading costs

C^*

Size of cash balance
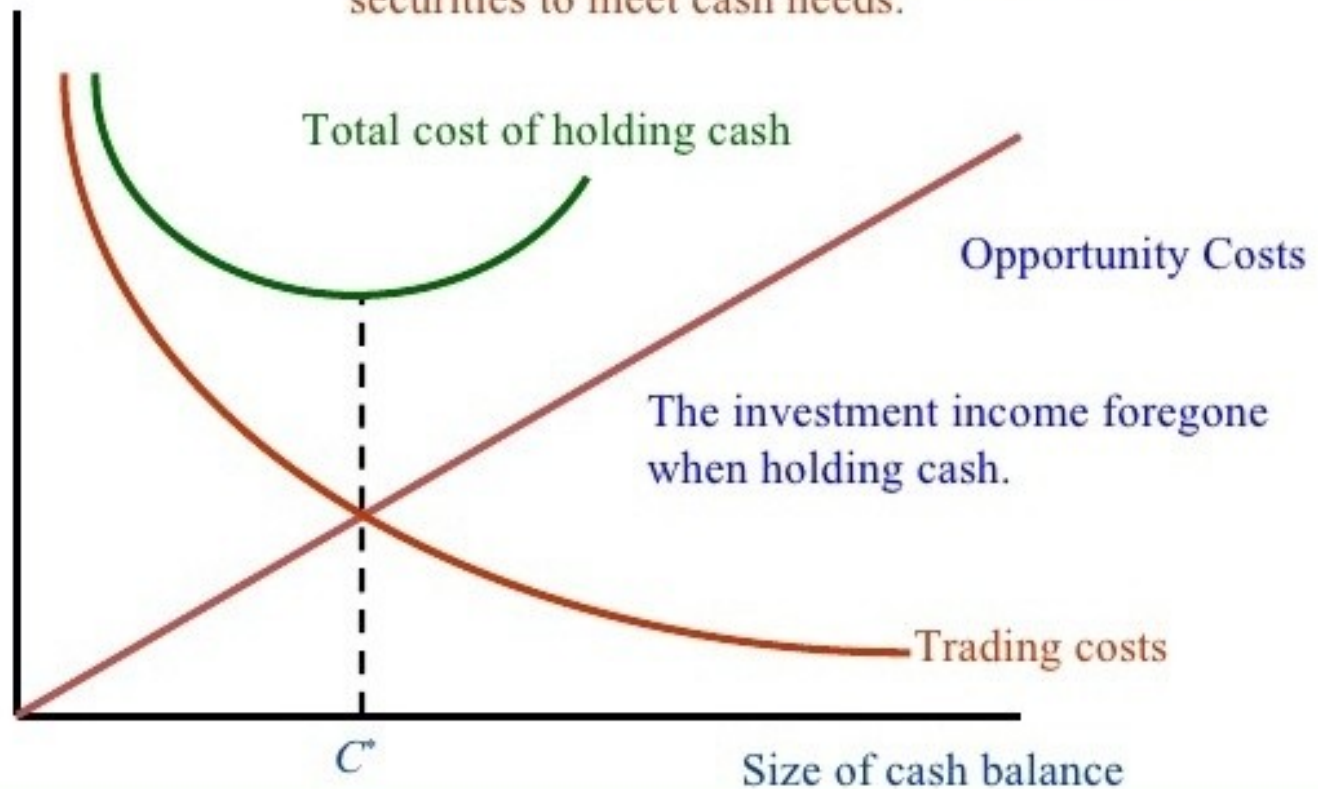
Assumptions of the model

- The requirement for cash for a given period is known.

- The requirement of cash is distributed evenly throughout the period.

- Selling of securities can be done immediately (There is no delay in placing and receiving orders).

- There are two distinguishable costs associated with cash holding: opportunity cost and transaction cost.

- The cost per transaction is constant regardless of the size of transaction.

- The opportunity is a fixed percentage of the average value of cash holding.
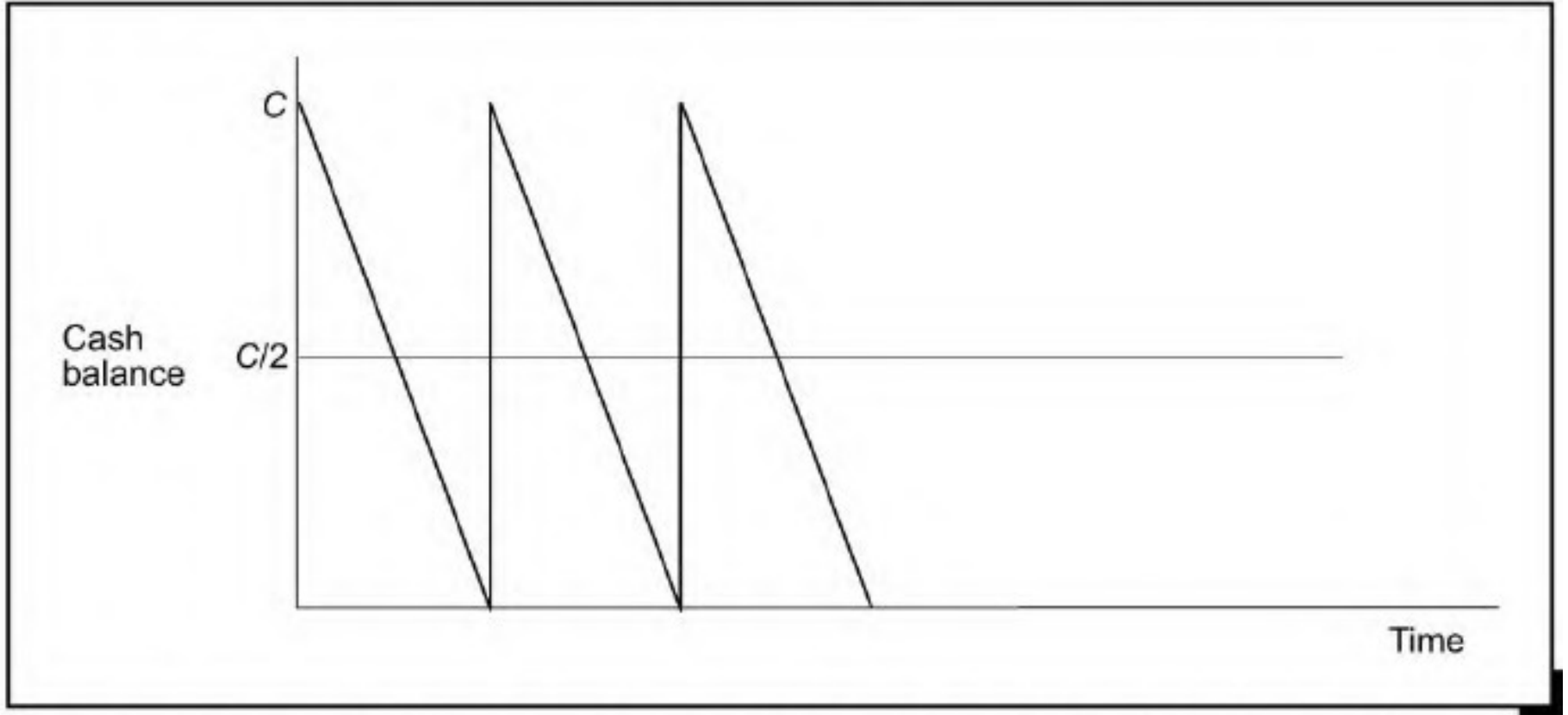
Baumol Model

- C = amount of marketable securities converted into cash per transaction (Economic cash holding size)
- I = interest rate earned per planning period on investment in marketable securities
- T = projected cash requirements during the planning period
- b = conversion cost per transaction
- S = sum of conversion and holding costs

Baumol Model

$$Total\ \cos t = \frac{T}{C} \times b + \frac{C}{2} \times I$$

$$C = \sqrt{\frac{2bT}{I}}$$

An illustration

- Sadaf corporation requires Rs.5 lakh in cash for meeting its transaction needs over the next five months.

- This amount is available with Sadaf Corp. in the form of marketable securities.

- It can earn 18 percent annual yield on its marketable securities. The conversion of marketable securities into cash entails a fixed cost of Rs. 500 per transaction.

- Find the optimum cash conversion size.

Solution

- First of all, we need to calculate I
- = (18/12)*5 = 7.5% which is 0.075 per rupee

$$C = \sqrt{\frac{2 \times 500000 \times 500}{0.075}} = 81649.67$$

- Rounding it off – Rs. 81650 is the optimum transaction size.
- Average cash holding = C/2 = 81650/2 = 40825
- No. of transactions = T / C = 500000/81650 = 6.12 or simply 6
- Average no. of days per transaction (we are assuming 30 days per month) = 150 / 6 = 25 days
- Per day usage of cash = 81650/25 = 3266

Question for you

- Aisharwaya Ltd. requires Rs. 8.5 lakh in cash for meeting its transaction needs over the next four months.
- The firm has sufficient amount of marketable securities to arrange the cash when required.
- It can earn 20 percent annual yield on its marketable securities. The conversion of marketable securities into cash entails a fixed cost of Rs. 600 per transaction.

- Find the optimum cash conversion size and other information. Also find the out the total cost at the optimum cash holding level.

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