

Cash Management

(Relevant to PBE Paper II – Management Accounting and Finance)

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Cash is a vital part of working capital; therefore, in Paper II, of which one of the topics is working capital management, students are expected to demonstrate sufficient knowledge in cash management techniques such as cash budgets and cash mathematical models in order to assist a company to manage its cash properly.

This article starts by introducing the objectives of cash management, followed by a discussion on what a cash budget is and how the cash mathematical model, in particular the Miller-Orr model, can be applied to manage cash. The article then concludes by commenting on how a company can utilize its excess cash by investing in marketable securities.

Objectives of Cash Management

Cash plays a crucial role in a company's operation. It is used to pay wages and salaries, trade debts, taxes and dividends. It not only enables the company to **promptly pay its creditors and suppliers** so as to foster good relations but also lets the company **take advantage of favourable business opportunities**. Most importantly, it keeps the company liquid and **prevents it from insolvency or bankruptcy**.

It is said in academic literature that companies hold cash for the following three motives:

- (i) **Transaction motive:** As mentioned earlier, cash is used to pay bills, especially when disbursements are greater than cash receipts from business. This is the most important reason for keeping cash.
- (ii) **Precautionary motive:** Cash is used for safety reasons as a financial reserve to meet unexpected demand, for example, an unexpected delay in collection of accounts receivable or a sudden increase in costs of materials.
- (iii) **Speculative motive:** There may be unexpected profitable opportunities when doing businesses, like speculative interest rate movements. If a company has excess cash on hand, it may take advantage of such opportunities.

Yet, cash on hand is considered as a **non-earning asset**. It earns no return for shareholders. If a company holds excess cash on hand, it loses the profits that may be earned if the cash had been invested elsewhere.

The objectives of cash management are therefore two-fold: (i) to **have sufficient cash for operation** in order to maintain liquidity; and (ii) to **invest excess cash for a return**. Cash management is not easy. Cash inflows from receipts do not perfectly coincide with the cash outflows for disbursements. Further, some businesses are seasonal in nature so that cash inflows and outflows fluctuate throughout the year. The company therefore needs to manage its cash properly. One of the tools it can use to do this is to prepare a cash budget.

Cash Budget

A cash budget is a statement showing the **estimated cash inflows and outflows over the planning horizon**. Companies can prepare a cash budget on a quarterly, monthly, weekly or even daily basis. The ultimate purpose is to **identify the net cash position** of the company in the future, that is, whether there is any cash surplus or deficit.

Preparation of a cash budget is an indication of good planning. If such a budget is not prepared, the company runs the risk that if unfortunately it is in sudden need of cash, there may be insufficient time for the company to search for alternative source of financing, forcing it to accept funding which is more expensive.

After identifying the net cash position of the company in the future, the next question is then how the company manages its cash surplus or deficit.

Miller-Orr Model

In order to manage its cash balance, the company can employ a mathematical model, one of which is the Miller-Orr model. The Miller-Orr model helps the company to meet its cash requirements at the lowest possible cost by **placing upper and lower limits on cash balances**. The operation of the model is as follows:

- (i) A company should have its **desired cash level**, an upper limit and lower limit on cash balances.
- (ii) When the cash balance **reaches the upper limit**, the company has too much cash. It then should use its cash to **buy marketable securities** in order to bring the cash balance back to its desired cash level.
- (iii) When the cash balance **hits the lower limit**, the company lacks cash. It then **sells its securities** in order to bring the cash balance back to its desired cash level.
- (iv) If the cash balance lies between the upper and lower limits, there will be no transaction in securities.

The Miller-Orr model increases its practicability by incorporating an assumption that **cash balances randomly fluctuate** and therefore are **uncertain**. The formula in determining the desired cash level is as follows:

$$z = \sqrt[3]{\frac{3F\sigma^2}{4r}} + L$$

where z = desired cash level
 F = fixed transaction cost of buying and selling marketable securities
 σ^2 = variance of daily cash flows (which indicates its randomness)
 r = daily interest rate on marketable securities
 L = minimum cash balance

The upper limit cash balance is then determined as:

$$Upper\ limit = 3z - 2L$$

Example:

Sweets Ltd. wants to maintain a minimum cash balance of \$500,000. The estimated variance of the daily cash flows is \$1,200,000 per day and the cost for each transaction of buying and selling marketable securities is fixed at \$10,000. The marketable securities yield 3% per year. Sweets Ltd. wants to use the Miller-Orr model to determine its desired cash balance.

Sweets Ltd.'s desired cash level is:

$$z = \sqrt[3]{\frac{3(10,000)(1,200,000)}{4\left(\frac{0.03}{365}\right)}} + 500,000 = 547,356$$

The upper limit for Sweets Ltd.'s cash balance is:

$$Upper\ limit = 3(547,356) - 2(500,000) = 642,068$$

The decision rule by the Miller-Orr model is then as follows:

- (i) Sweets Ltd. should set the desired cash balance at \$547,356.
- (ii) When the cash balance reaches the upper limit of \$642,068, Sweets Ltd. has too much cash. It then should use its cash to buy \$94,712 (\$642,068 - \$547,356) marketable securities in order to bring the cash balance back to its desired cash level (i.e. \$547,356).

- (iii) When the cash balance hits the lower limit of \$500,000, the company lacks cash. It then sells \$47,356 ($\$547,356 - \$500,000$) of its securities in order to bring the cash balance back to its desired cash level (i.e. \$547,356).
- (iv) If the cash balance lies between the upper and lower limits (i.e. between \$500,000 and \$642,068), there will be no transaction in securities.

(Note 1: The return (r) used in the Miller-Orr model represents daily return. If the given return is annual interest rate, remember to divide it by 365 (number of days in the year) to obtain the daily interest rate.)

(Note 2: The desired cash level and the upper limit of cash balance are affected by three factors: (i) fixed transaction costs; (ii) variance of cash flows; and (iii) interest rate of marketable securities as return.)

(Note 3: Students are advised to visualize the above decision rule graphically.)

It should be noted that the Miller-Orr model is a theoretical model. It however sheds light on how the company can manage its cash balances. Recall that the Miller-Orr model requires selling and buying marketable securities. The next section discusses some of the features of marketable securities.

Investing Idle Cash

It is not uncommon to have cash surplus, especially for businesses with seasonal or cyclical activities. If the company has a temporary cash surplus, it can consider **investing its excess cash in marketable securities in money market**, which is defined as the market for short-term financial assets. Normally, the company needs to take into account the following criteria in determining such investments:

- (i) **Maturity:** Maturity refers to the time period over which interest and principal payments are made. The company should consider the maturity of investments with reference to its cash budget, in particular how long the company has a cash surplus and when the company will need money for its expenditure. Normally, the maturity period for marketable securities will be less than three months.
- (ii) **Default risk:** Default risk refers to the probability that interest and the principal will not be paid in the promised amount on the due dates. The company should avoid investments with high default risks as an investment for its idle cash. The investments should be safe enough to provide cash for future payments.

- (iii) **Marketability:** Marketability refers to how easy it is to convert the financial assets to cash. The company should minimize the amount of time required to convert the securities into cash.

Conclusion

Cash is important to every organization. It is critical for companies to hold cash for payments but at the same time avoid holding excess cash, as this is a non-earning asset. Cash management is therefore a balance between **liquidity** and **profitability**.

Companies are strongly advised to prepare a cash budget to highlight the net cash position in the future and devise its cash management strategies with reference to the Miller-Orr model.

Students are reminded that cash management is a concept within working capital management. The proper management of cash is part of various working capital management methods such as factoring accounts receivables at banks to get immediate cash and offering discounts to customers to encourage early collection. Students therefore need to think broadly and link various concepts together in order to provide a better solution in the examination.