


Essential Learning for CTP Candidates

Carolinas Cash Adventure 2018 – Session #CTP-09

Carolinas Cash Adventure – 2018: CTP Track
Cash Forecasting & Risk Management
Session #9 (Tues. 9:15 – 10:15 am)



❖ **ETM5-Chapter 14:**
Cash Flow
Forecasting


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As a prep course for the CTP exam, significant portions of these lectures are based on materials from the *Essentials* text.

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Overview of Chapter 14 Topics


- Introduction
- Purpose of Cash Forecasting
- Issues and Opportunities in Forecasting
- Types of Forecasts
- The Forecasting Process
- Forecasting Methods
- Best Practices For Cash Forecasting



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Purpose of Cash Forecasting

- Managing Liquidity
- Maximizing Returns
- Controlling Financial Activities
- Meeting Strategic Objectives
- Budgeting Capital
- Managing Costs
- Managing Currency Exposure
- Complying with Regulatory Requirements




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More on Cash Forecasts

- Issues & Opportunities in Forecasting
 - Simplicity
 - Collaboration and Communication
 - Consistency
- Types of Forecasts
 - Purpose
 - Predictive vs. Analytical
 - Forecasting Horizon
 - Short, Medium or Long-term
 - Update Frequency
 - Static vs. Rolling
 - Projected Closing Cash Position



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Projected Closing Cash Position




- A treasury professional arrives at the projected closing cash position by taking:
 - The day's opening available bank balance(s)
 - Adding the expected settlements in the collection (lockbox, wire and ACH) and concentration accounts,
 - Deducting the projected disbursement totals
- Information about checks in the process of collection and ACH credits is available from prior day balance reports
- Lockbox and controlled disbursement totals are reported on a same-day basis
- Other clearings must be estimated
- Estimated closing position determines surplus or deficit for the day

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Daily Cash Position

- Responsibility to determine and manage the daily cash position.
 - Info is obtained through TMIS or bank balance reporting systems
 - Closing cash position takes into account opening balance and anticipated cash inflows and outflows



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Forecasting Methods

- Short-term Methods
 - Accounts receivable balance pattern forecast
 - Distribution forecast
 - Receipts and disbursements (cash budget)
- Medium and Long-term Methods
 - Developing pro-forma statements with the percentage of sales approach
- Statistical Forecasting
 - Time-series forecasting
 - Simple moving average vs. exponential smoothing
 - Correlation & Regression

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A/R Balance Pattern Forecast

- Used to forecast collections from credit sales.
- The A/R pattern is used to determine a collection pattern which can forecast cash inflows.
- The objective is to use forecasts of sales revenues and the pattern of collections to determine the receipts side of the R&D forecast.

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Data for A/R Pattern Forecast

INTERVAL SINCE SALE	PERCENTAGE OUTSTANDING AT END OF MONTH	PERCENTAGE COLLECTED IN MONTH
Month 0 (current month)	95%	5%
Month 1	55%	40%
Month 2	20%	35%
Month 3	5%	15%
Month 4	0%	5%

FORECASTING CASH INFLOWS FROM CREDIT SALES			
MONTH	SALES	MAY COLLECTIONS FORECAST	MAY COLLECTIONS FORECAST
January	\$350,000	$350,000 \times 0.05 =$	\$17,500
February	\$400,000	$400,000 \times 0.15 =$	\$60,000
March	\$500,000	$500,000 \times 0.35 =$	\$175,000
April	\$300,000	$300,000 \times 0.40 =$	\$120,000
May	\$425,000	$425,000 \times 0.05 =$	\$21,250
Collections Forecast for May			\$393,750

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Distribution Method Forecast

Example
 A company has used regression analysis to estimate the proportion of dollars that will clear on a given business day. It has determined that this proportion depends on the number of business days since the checks were distributed. The estimated proportions are given below.

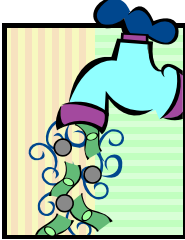
Business Days Since Distribution	Percentage of \$ Expected to Clear
1	13%
2	38%
3	28%
4	13%
5	8%
Total	100%

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Distribution Method Forecast

- Provides estimates of the cash flow effect of a single event, on a daily basis over a specified interval based on historical patterns.
- The distribution method is particularly appropriate for short-term forecasts.



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Distribution Method Forecast

Therefore, if \$100,000 in checks are distributed on Wednesday, May 1, the checks are estimated to clear according to the schedule below.

Date	Business Days After Distribution	Day of the Week	% of Dollars Clearing	Forecast Dollars Clearing
May 2	1	Thur.	13%	\$ 13,000
May 3	2	Fri.	38%	\$ 38,000
May 6	3	Mon.	28%	\$ 28,000
May 7	4	Tues.	13%	\$ 13,000
May 8	5	Wed.	8%	\$ 8,000
Total			100%	\$ 100,000


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Receipts and Disbursements (R&D) Forecasting Method



- Why forecast receipts and disbursements?
 - Determine borrowing requirements
 - Establish debt repayment schedules
 - Formulate investment strategies
- Receipts and disbursements forecast
 - One of most common methods
 - Predicted cash inflows and outflows lead to excess (deficit) forecast
 - Also known as the cash budget

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Receipts & Disbursements Forecast



- Fundamental to short-term cash forecasting
- Separate receipts & disbursements schedules
- Both prepared on a cash basis
- Method can be accurate in the short-term and near medium-term, especially when based on accounts receivable and accounts payable data.

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Receipts & Disbursements Forecast

\$ Amounts in \$1,000	Week 1	Week 2	Week 3
Cash Receipts	\$ 1,000	\$ 1,000	\$ 950
Cash Disbursements	(870)	(1,350)	(1,000)
Net Cash Flow	\$ 130	\$ (350)	\$(50)
Beginning Cash Balance	\$ 100	\$ 230	\$ (120)
Ending Cash Balance	\$ 230	\$ (120)	\$ (170)
Minimum Cash Req.	50	50	50
Financing Needed		(\$ 170)	(\$ 220)
Investable Funds	\$ 150		


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Pro-Forma Financial Statements



- Medium and long-term forecasting methods primarily involve generating pro-forma financial statements
- One of the primary approaches for developing pro-forma statements is the percentage-of-sales method
- This method involves projecting financial statements based on the historical relationship between sales and liquid balance sheet accounts that tend to change in value along with sales
- Cash, A/R, inventory and A/P are the most important accounts, followed by fixed assets

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Three Steps to the Percentage-of-Sales Method



- 1) Forecast the income statement and balance sheet based on the relationships between revenues and balance sheet items
- 2) Calculate projected ending cash balance by determining how the forecasted income statement and balance sheet values impact cash
- 3) Compare the projected ending cash balance with the company's target cash balance and adjust the pro-format statement to show the source of funding for a cash shortfall or the investment of a cash surplus

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Five-Period Moving Avg Forecast

Day	Actual Cash Flow (X _t)	Forecast (N = 5)	Error (Act - F)
1	890,000		
2	812,500		
3	775,000		
4	754,000		
5	716,000		
6	748,500	789,500	- 41,000
7	1,009,000	761,200	247,800
8	824,000	800,500	23,500
9	874,000	810,300	63,700
10	955,000	834,380	120,620

Moving Average Forecast for Day 7 is:
 $(812,500 + 775,000 + 754,000 + 716,000 + 748,500) / 5 = 761,200$
 Which results in a forecast error of: $1,009,000 - 761,200 = 247,800$

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Forecast with Exponential Smoothing

Day	Actual Cash Flow (X _t)	Forecast (α=0.40) (F _t)	Error
6	\$ 748,500	\$ 789,500	- \$ 5,400
7	\$ 1,009,000	\$ 773,100	\$ 235,900
8	\$ 824,000	\$ 867,460	- \$ 43,460
9	\$ 874,400	\$ 850,076	\$ 24,324

$F_{t+1} = \alpha X_t + (1 - \alpha)(F_t)$


The exponential smoothing forecast begins with the Day 6 Forecast of \$789,500 based on the moving average forecast.

Then, the Day 7 forecast using exponential smoothing is:
 $F_7 = 0.40(748,500) + (1 - 0.40)(789,500) = \$773,100$
 This results in a forecast error of: $\$1,009,000 - \$773,100 = \$235,900$

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Correlation & Regression Analysis


- Correlation calculations involve a statistical identification of the degree of association between a cash flow and another variable
- This can be used in the building of a forecast
- Regression analysis is a statistical method that assesses the impact that multiple variables (or causes) have on a value or an outcome
- Linear least squares method is the most commonly used



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Best Practices for Cash Forecasting

- Use appropriate detail
- Disclose assumptions
- Use the appropriate platform
- Invest the appropriate amount of resources
- Validate the forecast
- Cooperate and communicate
- Ensure the forecast is useable




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Session Wrap-up
Session 9: Cash Forecasting

- *What did we learn in this session?*
- *What topics do we need to learn more about?*



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Cash Forecasting

End of This Session

We will reconvene at 10:30 am Today.

The topic will be:

More Key Concepts
Risk Management

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