

FA Module 5: The Cash Flow Statement – practice problems

(The attached PDF file has better formatting.)

Cash flow statement: indirect method

Financial statements show income statement entries and balance sheet entries. If the cash flow statement uses the direct method, the cash entries are shown as well. If the firm derives operating cash flow by the indirect method, the cash entries are not shown.

The textbook shows how each cash entry may be derived from the income statement and the balance sheet: that is, how to convert the indirect method to the direct method. The accounting relations are more easily understood by starting with cash entries.

- Non-cash transactions, such as credit transactions, change the working capital entries on the balance sheet. Most current assets and liabilities are working capital entries.
- Cash flows + changes in working capital give the income statement entries.

The practice problems for Module 6 have extensive exercises on the indirect method.

Exercise 5.1: Net revenue

A firm collects 100 from customers in 20X2. One customer buys 10 of goods on credit. What is net revenue?

Solution 5.1: The sale of 10 on credit causes an increase in accounts receivable of 10.

Total sales = 100 in cash and 10 on credit = 110 of net revenue.

Net revenue = cash collected + increase in accounts receivable = $100 + (+10) = 110$.

Exercise 5.2: Net revenue

A firm sells 10 of goods in 20X1 on credit. In 20X2, it collects 100 from customers, including the 10 from the credit sale in 20X1. No goods are sold on credit in 20X2. What is net revenue in 20X2?

Solution 5.2: The collection of the 10 credit causes a decrease in accounts receivable of 10 in 20X2.

Total sales in 20X2 = 100 of cash collection minus the 10 of the 20X1 credit sale = 90 of net revenue in 20X2.

Net revenue = cash collected + increase in accounts receivable = $100 + (-10) = 90$.

Exercise 5.3: Net revenue

A firm collects 100 from customers in 20X2, including 10 for goods to be delivered in 20X3. The firm retains all responsibility for ensuring that the goods are delivered properly in 20X3. What is net revenue in 20X2?

Solution 5.3: We assume that the goods to be delivered in 20X3 are not included in the 20X2 net revenue. The cash of 10 for goods to be delivered in the future increases deferred revenue by 10.

Total sales = 100 in cash minus 10 for goods not yet sold = 90 of net revenue.

Net revenue = cash collected – increase in deferred revenue = $100 + (-10) = 90$.

We generalize the formula:

Net revenue = cash inflow + $\Delta(\text{non-cash assets}) - \Delta(\text{non-cash liabilities})$

Accounts receivable is a balance sheet asset; deferred revenue is a balance sheet liability. They are non-cash items affecting net revenue.

Application to insurance

Exercise 5.4: Motor insurance

An insurer sells an annual term motor insurance policy for 120 on September 1, 20X2. What is the GAAP net revenue in 20X2. (The GAAP accounting for property-casualty insurance is similar to the accounting for non-financial firms in the textbook. IFRS 17 accounting for insurance is more complex.)

Solution 5.4: The insurance protection for the last four months of 20X2 is delivered in 20X2; the insurance protection for the remaining eight months of the policy term is delivered in 20X3. The deferred revenue increases by $8/12 \times 120 = 80$. The net revenue = $120 + (-80) = 40$.

The deferred revenue for insurance premium is called unearned premium reserve. The net revenue for insurance premium is called earned premium.

Exercise 5.5: Motor insurance

An insurer sells an annual term motor insurance policy for 120 on September 1, 20X2. By December 31, it has collected 60 in cash; the other 60 is still due from policyholders. What is the GAAP net revenue in 20X2?

Solution 5.5: The insurance protection for the last four months of 20X2 is delivered in 20X2; the insurance protection for the remaining eight months of the policy term is delivered in 20X3. The deferred revenue increases by $8/12 \times 120 = 80$.

The premium of 60 that is still due from policyholders is an account receivable. The net revenue = cash + $\Delta(\text{accounts receivable}) - \Delta(\text{deferred revenue}) = 60 + 60 + (-80) = 40$.

Exercise 5.6: Accounts receivable

A firm's sales are all on credit. In 20X2:

- net revenue = 600
- cash received from customers = 580
- receivables turnover = 5

A. What are accounts receivable at December 31, 20X1?

B. What are accounts receivable at December 31, 20X2?

Part A: Let Z = accounts receivable at December 31, 20X1.

Net revenue = cash received from customers + Δ (accounts receivable), so

Δ (accounts receivable) = Net revenue – cash received from customers = 20 \Rightarrow

accounts receivable at December 31, 20X2 = $Z + 20$.

Receivables turnover = credit sales / average accounts receivable = 5 \Rightarrow

average accounts receivable = $600 / 5 = 120 \Rightarrow$

$$\frac{1}{2} \times (Z + Z + 20) = 120$$

$$2Z + 20 = 240$$

$$Z = 110$$

Part B: Accounts receivable at December 31, 20X2 = $Z + 20 = 130$.

Exercise 5.7: Accounts receivable and accounts payable

In 20X2, a firm pays 300 to suppliers for purchases of inventory and its gross profit margin is 40%. All sales are on credit. The balance sheet entries for 12/31/20X1 and 12/31/20X2 are

	<i>December 31, 20X1</i>	<i>December 31, 20X2</i>
Accounts receivable	50	40
Inventory	62	79
Accounts payable	65	72

For 20X2:

- A. What is the amount of inventory bought during the year?
- B. What is the cost of goods sold during the year?
- C. What is the inventory turnover for the year?
- D. What is the net revenue during the year?
- E. If all goods are sold on credit, what is the receivables turnover for the year?
- F. What is the cash received from customers during the year?

Part A: The amount paid + the increase in accounts payable = the inventory bought.

If the firm buys inventory with cash (not on credit), the inventory bought = the money paid.

- If the firm has accounts payable of zero at the beginning of the year and of 25 at the end of the year, the cash paid is 25 less than the inventory bought.
- If the firm has accounts payable of 25 at the beginning of the year and of zero at the end of the year, 25 of the cash paid in the current year is for inventory bought in the previous year. The cash paid is 25 more than the inventory bought.

The inventory bought = payments to suppliers + increase in accounts payable = $300 + (72 - 65) = 307$

Part B: The inventory bought can be divided into two parts:

- If the inventory is sold to consumers, it is cost of goods sold.
- If the inventory is not sold to consumers, it increases the inventory asset.

The inventory bought = the cost of goods sold + the increase in the inventory asset, so the cost of goods sold = the inventory bought – the increase in the inventory asset. For example,

- If inventory bought = 20, and the inventory asset increases 20, the cost of goods sold = 0.
- If inventory bought = 0, and the inventory asset decreases 20, the cost of goods sold = 20.

Cost of goods sold = inventory bought – $\Delta(\text{inventory}) = 307 - (79 - 62) = 290$

Part C: The inventory turnover = the cost of goods sold / the average inventory held during the year. Annual financial statements gives beginning and end of the year values, so we use the straight average of the two:

$$290 / \left(\frac{1}{2} \times (62 + 79) \right) = 4.11348$$

Part D: The gross profit margin = $1 - \text{the cost of goods sold} / \text{net revenue}$, so

$$\text{net revenue} = \text{cost of goods sold} / (1 - \text{gross profit margin}) = 290 / (1 - 40\%) = 483.3333$$

Part E: The receivables turnover = credit sales / average accounts receivable during the year.

- If all goods are sold on credit, receivables turnover = net revenue / average accounts receivable.
- If 60% of the goods are sold on credit, receivables turnover = 60% × net revenue / average accounts receivable.

The amount of goods sold on credit is not shown in the financial statements, but it can sometimes be inferred from the notes to the financial statements. In this exercise, all sales are on credit, so receivables turnover =

$$483.3333 / (\frac{1}{2} \times (50 + 40)) = 10.7407$$

If only 70% of sales were on credit, the receivables turnover would be

$$70\% \times 483.3333 / (\frac{1}{2} \times (50 + 40)) = 7.5185$$

Question: Are credit card sales considered credit sales or cash sales?

Answer: A credit card sale is a cash sale. The credit card company immediately pays the supplier – minus a fee for credit card sales. The credit card company bills the consumer and charges interest for late payments, but the supplier does not wait for its cash. A credit sale means the supplier does not receive cash until some time after the sale.

If the consumer pays by check, the supplier gets the money when it cashes the check (sometimes plus a short period for the check to clear).

Part F: The money received from customers during the year = the net revenue – the change in accounts receivable = $483.3333 - (40 - 50) = 493.333$. Cash includes checks and credit card payments.