EXERCISES-8 (SOLUTIONS)

1.

a. The working capital is equal to 91,524 – 50,596 = 40,928.
b. The noncash working capital is equal to 61,469 + 10,128 – (11,635 + 2,721) = 57,241.
c. Noncash working capital as a percentage of revenues is equal to 57,241/154,951 = 36.94%. As the new automobile factory is on the same line of business we could use this estimate along with the expected revenues of the new factory to estimate the noncash working capital needs of it.

2.

a. It would deduct 1%×1,000 = \$10
b. The effective annual interest rate is $\left(\frac{1,000}{990}\right)^{(365/30)} - 1 = 13\%$

3. The initial investment needed to generate the credit consists of two outlays. The first is the cost of the computerized system for the credit sales, equal to \$20,000. The second is the investment of \$100,000 in accounts receivable. During the 10-year period the firm expects to generate additional operating income as a consequence of the credit sales, but it also expects to generate additional costs in terms of administration costs and bad debts. The firm also expects to receive interest income from the credit sales. The following table calculates the annual incremental cash flow due to credit decision from year 1 to 9.

Incremental pre-tax operating income	50,000
Interest income from credit	0.1×95,000 = 9,500
Administrative costs	-5,000
Incremental pre-tax operating income	54,500
Taxes (at 35%)	-19,075
Incremental after-tax operating income	35,425
Tax benefit from loses in credit sales	0.35×(0.05×100,000) = 1,750
Tax benefit from depreciation	0.35×2,000 = 700
Investment in accounts receivable	-5,000
Incremental cash flow	32,875

At year 10 the incremental cash flow is 35,425 + 1,750 + 700 + 95,000 = 132,875.
The PV of the credit decision is equal to

$$\text{PV} = -120,000 + 32,875 \times \text{Annuity factor}\left(10, 8\%\right) + \frac{100,000}{1.08^{10}} = 146,913$$

The PV is positive, so the firm should offer credit.

4.

a. The current volume of accounts payable is equal to 100(30/365) = 8.219 million. If the period is extended to 90 days accounts payable will increase to 100(90/365) = 24.657 million. Thus, this strategy will release 16.438 million of cash.

b. As already found in (a) this strategy will release 16.438 million of cash. This amount will grow at 4% every year following the growth in purchases. This means that it will release extra cash of 16.438×0.04 = 0.6575 next year and so on. The present value of this is equal to:[1]

$$\text{PV} = 16.438 + \frac{0.6575}{0.1 - 0.04} = 27.397$$

The cost of this strategy is the loss of 2% discount. This gives a $2 million reduction in payments this year. This cost is tax-deductible so the after-tax cost is equal to 2(1 – 0.4) = 1.2 million. This amount will grow at 4% every year. So, next year it will be equal to $1.2 \times 1.04 = 1.248$. The present value of this is equal to:

$$\text{PV} = 1.2 + \frac{1.248}{0.1 - 0.04} = 22$$

The cost of this strategy has a lower value than the benefits, so the increase of accounts payable increases the firm value.

5.

a. The initial cash balance is 0.02×250 = 5 billion. One year from now, the incremental outlay would be 0.06×5 = 0.3 billion. The present value of the yearly incremental outlay is equal to $0.3/\left(0.12 - 0.06\right) = 5$ billion. So, the total decrease in firm value would be 5 + 5 = 10 billion.

b. If the firm can maintain a 1% cash balance of revenues the current cash balance would decrease to 0.01×250 = 2.5 billion. The incremental outlay would be 0.06×2.5 = 0.15 and the present value is equal to $0.15/(0.12 - 0.06) = 2.5$, hence the firm value would increase by $5 billion.

[1] We discount the extra cash released every year instead of the total cash released because what matters for the cash flow calculation is the change in working capital and not the working capital itself.

c. If the discount rate increase to 12.5% the present value is equal to $0.15/(0.125-0.06)=2.31$. So the increase in the firm value would be 2.5 + 2.31 = 4.81.

6.

a. (i) The price of 6-month Treasury bill with a face value of \$100 is equal to $100\left(1-\frac{0.056}{2}\right)=97.2$. Hence the annualized return is equal to $\left(\frac{100}{97.2}\right)^2-1=5.84\%$. (ii) For the commercial paper we have that the annualized return is equal to $(1.0298)^2-1=6.048\%$. (iii) The return of the repo is equal to $(1.0292)^2-1=5.925\%$.

b. The Treasury bill is the less risky security for this reason it offers the lower return. The commercial paper, issued by private corporations, has the highest return as it is exposed to default risk. The repo has a slightly higher return than the T-bill because there is still the possibility of default.

c. I would select the money-market investment according to two criteria. The first is the risk that the firm would like to bear. The second is the cost that we should pay in order to convert them to cash.