

# ACCAspace

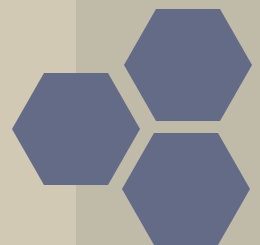
**Provided by**  
**ACCA Research Institute**

## ACCA F9

**Financial Management**

**财务管理**

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## Part D investment appraisal

1

Investment decisions without DCF

2

Investment decisions with DCF

3

Payback period





主要知识点回顾：

重点：将所有的cash inflow及cash outflow都贴现到现在，  
和期初投资作对比

Discount rate：cost of capital

如何决策：NPV>0 accept the project  
NPV<0 reject the project

难点：辨别出和项目相关的现金流

## 复杂的NPV计算：

### 1 ) Inflation

Real interest rate 已剔除通胀因素

nominal interest rate 包含通胀的影响

### 二者关系：费雪理论

$$(1 + i) = (1 + r)(1 + h)$$

Where  $h$  = rate of inflation

$r$  = real rate of interest

$i$  = nominal (money) rate of interest

简化： $i=r+h$

Real cash flows (cash flows in current prices) should be discounted at a real discount rate, which is a return ignoring inflation.

Nominal cash flows (the actual expected cash flows at future prices) should be discounted at a nominal discount rate, which is a rate relating to current market rates of return.



## 2) Tax

Payments of tax, or reductions of tax payments, are cash flows and ought to be considered in DCF analysis

在计算NPV时考虑到tax的问题:

- The assumption of tax: pay in current year or pay in arrears
- Net operating cash flows from a project should be considered as the taxable profits

## Tax on depreciation:

折旧虽然不是cash flow，但是在计算税收时，depreciation expense有帮助减少tax，因此有一项cash inflow

There are two possible assumptions about the time when tax-allowable depreciation starts to be claimed.

- (a) It can be assumed that the first claim occurs at the start of the project (at year 0).
- (b) Alternatively it can be assumed that the first claim occurs later in the first year.

关于discount rate:

When taxation is ignored in the DCF calculations, the discount rate will reflect the pre-tax rate of return required on capital investments.

When taxation is included in the cash flows, a post-tax required rate of return should be used.





Red Co is considering the purchase of a machine for \$2,190,000. It would be sold after four years for an estimated realizable value of \$790,000. By this time tax-allowable depreciation of \$1,450,000 would have been claimed. The rate of tax is 30%. What is the cash flow arising as a result of tax implications on the sale of the machine at the end of four years?

- A. Inflow of \$15,000
- B. Outflow of \$50,000
- C. Outflow of \$459,000
- D. Outflow of \$15,000



## NPV计算的格式：

	<i>Year 0</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>
Sales receipts		X	X	X	
Costs	—	(X)	(X)	(X)	—
Sales less costs		X	X	X	
Taxation on profits		(X)	(X)	(X)	(X)
Capital expenditure	(X)				
Scrap value				X	
Working capital	(X)			X	
Tax benefit of tax dep'n		X	X	X	X
	(X)	X	X	X	(X)
Discount factors @					
post-tax cost of capital	X	X	X	X	X
Present value	<u>(X)</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>(X)</u>



## Working capital: 多数情况下可回收

When working capital is recovered at the end of the project it has a different nominal value to the working capital that was invested at the beginning. The nominal value of the investment should be inflated each period to maintain its real value.

Year	0	1	2	3
Working capital	(500,000)	(25,000)	(26,250)	551,250

The details of an investment project are as follows:

Life of the project	10 years
Cost of asset bought at the start of the project	100,000
Annual cash inflow	20,000
Cost of capital, after tax	8% each year

Corporation tax is 30% and is paid half in the year and half in the following year, in equal quarterly instalments. The instalments are in the 7th and 10th months of the year in which the profit was earned and in the 1st and 4th months of the following year. Tax allowable depreciation of 25% reducing balance will be claimed each year. What is the present value of the cash flows that occur in the second year of the project?

- A 17,622                      B 18,426  
C 20,193                      D 22,764





Tax allowable depreciation in year 1 =  $\$100,000 \times 25\% = \$25,000$

Tax saved in year 2 =  $\$25,000 \times 50\% \times 30\% = \$3,750$

Reducing balance of asset at beginning of year 2

=  $\$100,000 - \$25,000 = \$75,000$

Tax allowable depreciation in year 2 =  $\$75,000 \times 25\% = \$18,750$

Tax saved in year 2 =  $\$18,750 \times 50\% \times 30\% = \$2,813$

Annual cash inflow	20000
Tax on inflow @30%	(6000)
Tax saved (year 1)	3750
Tax saved (year 2)	2813
total	20563
discount@8%	0.857
PV	17622





Thank You!

