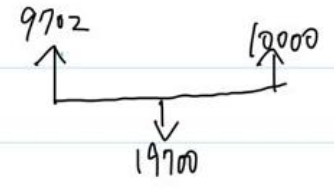


作業二

2023年3月7日 星期二

下午8:21

投資計畫：


$$\Rightarrow f(x) = -19700x + 10000x^2 - 9702.$$

↑
開口向上

① 牛頓法 $IRR = 0.009401, 0.021723$



★ 此時上下界程式碼為

if (Value < 0) { Low = Middle; }

else { High = Middle; }

② 二分法：

Low = 0.
High = 0.015

$\Rightarrow IRR = 0.010137$

Low = 0.015
High = 1.

$\Rightarrow IRR = 0.020411$

Q1. \Rightarrow 經過計算 IRR

{	$Nt = 0.0094$	0.0217
	ss	ss
{	$Bise = 0.0101$	0.0204

\Rightarrow Nt 與 Bise 出來的結果接近相同 *

Q2. \therefore Net 與 $Bise$ 會不會遇到問題: A: 會.

① Bisection Method 問題:

1. 當有多個根時, 若上下界取太寬倒至包含 2 個根

$\Rightarrow f(Low) \times f(High) > 0$ 時, 會無解.

2. 程式石碼中: 需分辨函式圖型為



① 要用
 $If(Value > 0)$

{更換下界}

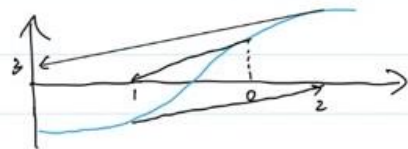


② 用
 $If(Value < 0)$

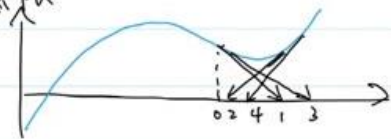
{更換下界}

② Net Method 問題: (在高次方狀態下)

1. 發散圖形不可解:



2. 凹槽無限



D:\OneDrive\桌面\財務工程導論\HW2\0811253_HW2.exe

第 1 期報酬 = -19700

第 2 期報酬 = 10000

-----Bisection Method-----

Low = 0

High = 0.015

線性方向 1=右上, -1=右下 = -1

計算過程 High 0.015000, Low 0.007500, Mid 0.007500, Value 0.320313
計算過程 High 0.011250, Low 0.007500, Mid 0.011250, Value -0.099609
計算過程 High 0.011250, Low 0.009375, Mid 0.009375, Value 0.075195
計算過程 High 0.010312, Low 0.009375, Mid 0.010312, Value -0.020508
計算過程 High 0.010312, Low 0.009844, Mid 0.009844, Value 0.026367
計算過程 High 0.010312, Low 0.010078, Mid 0.010078, Value 0.001953
計算過程 High 0.010195, Low 0.010078, Mid 0.010195, Value -0.008789
計算過程 High 0.010137, Low 0.010078, Mid 0.010137, Value -0.002930

Yield rate IRR = 0.010137

----Newton-Raphson method----

輸入初始猜定IRR值 : 0

計算過程 Value = 2.000000 X = 0.006667

計算過程 Value = 0.452148 X = 0.009401

Yield rate IRR = 0.009401

Process returned 0 (0x0) execution time : 63.264 s

Press any key to continue.

```
期數 = 2
期初投入 = -9702
第 1 期報酬 = -19700
第 2 期報酬 = 10000

-----Bisection Method-----
Low = 0.015
High = 1
線性方向 1=右上, -1=右下 = 1

計算過程High 0.507500, Low 0.015000, Mid 0.507500, Value 1034.337891
計算過程High 0.261250, Low 0.015000, Mid 0.261250, Value 368.912109
計算過程High 0.138125, Low 0.015000, Mid 0.138125, Value 112.878906
計算過程High 0.076562, Low 0.015000, Mid 0.076562, Value 31.241211
計算過程High 0.045781, Low 0.015000, Mid 0.045781, Value 8.030273
計算過程High 0.030391, Low 0.015000, Mid 0.030391, Value 1.850586
計算過程High 0.022695, Low 0.015000, Mid 0.022695, Value 0.267578
計算過程High 0.022695, Low 0.018848, Mid 0.018848, Value -0.128906
計算過程High 0.020771, Low 0.018848, Mid 0.020771, Value 0.037109
計算過程High 0.020771, Low 0.019810, Mid 0.019810, Value -0.054688
計算過程High 0.020771, Low 0.020291, Mid 0.020291, Value -0.010742
計算過程High 0.020531, Low 0.020291, Mid 0.020531, Value 0.011719
計算過程High 0.020411, Low 0.020291, Mid 0.020411, Value 0.000000
計算過程High 0.020411, Low 0.020351, Mid 0.020351, Value -0.005859

# Yield rate IRR = 0.020411

---Newton-Raphson method---
輸入初始猜定IRR值 : 0.5

計算過程 Value = 1013.110352 X = 0.141964
計算過程 Value = 119.248047 X = 0.070835
計算過程 Value = 25.912109 X = 0.041790
計算過程 Value = 6.056641 X = 0.028702
計算過程 Value = 1.415039 X = 0.022898
計算過程 Value = 0.294922 X = 0.020809

# Yield rate IRR = 0.020809

Process returned 0 (0x0)   execution time : 44.557 s
Press any key to continue.
```