Corporate Finance Progress Test
Week 5

1) For the following 10 year project, find the break even unit production (Q) per year to achieve a zero:
   a) Net Income (NI)
   b) Net Present Value (NPV)

Project Data	
Initial investment in factory that lasts for 10 yrs	$10m
Sale price per unit	$10
Variable cost per unit	$6
Fixed costs per year (such as rent)	$2m
Total depreciation of factory per year	$1m
Tax rate	0.3
Required return on equity	0.1

Note:
Assume constant sales per year
Current liabilities of the whole firm are forecast to stay at $0.5m, while current assets will grow by $0.1m per year due to the project, starting from $1m at t=0.
Remember,
NI = [Q*(P – VC) – FC – Depr - IntExp]*(1-t_c)
NPV = PV(Free Cash Flows to Equity, discounted by the cost of equity)
Free Cash Flows to Equity= FCFE = NI + Depr – CapEx – (Increase in Net Working Capital)
Net Working Capital = Current assets – Current liabilities

2)
A factory can be built now for $90 to farm quails, after which there's a
   c) 60% chance of receiving cash flows of $10 forever, starting in 3 yrs after the quails have fattened up.
   d) 20% chance that quail becomes very popular and cash flows will be $30 per year, starting in 3 yrs.
   e) 20% chance that bird flu strikes again in the next 3 yrs and all quails are wiped out and cash flows are zero.

In 3 yrs the factory can be shut down and sold for $50. **What is the value of this abandonment option?** The discount rate is 10%.