Capital Budgeting and Investment Decisions: The case of valuating a new investment in a company.

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Abstract: This paper is an empirical application on a specific business case. It accommodates though the relevant literature on capital budgeting and business valuation, management accounting and investment decisions. It follows a concrete path incorporating and using financial techniques and financial instruments that help in decision making. Thus, it examines whether a new investment will benefit or not the company, and concludes with a final recommendation as well as the rationale, formed through the whole application process.

Furthermore, it demonstrates certain findings and ideas from literature, trying to analyse what means for a company to change its capital structure, what is the risk undertaken and which the impact is for the company's shareholders.

Managerial finance deals with two aspects and these are: (a) to maximise shareholders' wealth, implying the discounted value of earnings and (b) the importance of understanding the time value of money, implying the costs and benefits over time.

Therefore, time and risk are considered as the two significant valuation parameters for an investment.

Finally, this study intends not only to present a proposal but, in extent, to support this process with academic arguments and views.

Keywords: capital budgeting, investment, cash flows, risk, financial techniques, valuation

1. INTRODUCTION

In this paper there is an effort to apply and present a set of methods of quantitative analysis for capital investment appraisal. This is for the purpose of evaluating and recommending to the general management of the company the most valuable investment. The Company XYZ plans to expand its capacity and growth through the acquisition of a new printing machine which is expected to add value in the company. Making a valuation on capital investment is a standard process as illustrated in *Appendix A.*

In this case, the general management needs to evaluate the two printing machines as alternative purchases, to replace an old one. Being in the decision making phase, it is the financial manager's responsibility to follow a certain methodology and perform a number of calculations in order to evaluate each machine separately as an independent project. Then, each project is evaluated and compared with the other. In the end, the financial manager demonstrates the results and makes the recommendation. In the next sections of this paper, it is intended to perform the whole process of evaluating and recommending the most valuable investment, giving the pros and cons, while in parallel provide reasonable arguments for persuading the shareholders to approve the investment.

In section 2 of this paper, the financial management starts the evaluation with the determination of values for the evaluation of each machine. This is done through: (A) the development of incremental cash flows including: (i) initial investment cash flows for all machines, (ii) the calculation of incremental operating cash flows, (iii) the calculation of terminal cash flows and (B) the calculation of discount rate. In section 3, there is applied capital budgeting techniques such as: (a) the payback period (PB), (b) the net present value (NPV) and (c) the internal rate of return (IRR). Moreover, it is examined the significance of such techniques under capital rationing for the company. In section 4, the parameter of risk is incorporated in the calculations. It is important to take into consideration the uncertainty. Risk can affect seriously the process of evaluating an investment and may alter final decisions. In section 5, are discussed the two main ways for the company to finance the investment. In addition, extended literature is presented in an effort to identify the best financing mix. In Section 6, it is discussed the capital structure concept and more specific what means for the company to change its capital structure in terms of impact in value. Finally, in the last section (section 7), which is based on the dividends of last 5 years, there is an attempt to explain to the shareholders whether the company should undertake the proposed

investment. The Dividend Discount Model is followed to calculate the effect that the new investment will have to the company's share.

In the section of Conclusions, there is an overall indication of the findings and recommendations.

2. Determination of values for the evaluation of the proposal *(question A)*

In this section, it is indented to calculate and present the relevant costs and revenues which concern the future. The suggested investment is expected to raise an incremental change in the company. Therefore, this decision requires an incremental analysis *(Weetman, 2010).*

2.1 Incremental Cash Flows

In order to assess the value of a new project, especially when this is expected to provide a competitive advantage for the company, there are a number of incremental cash flows which could be performed. The general manager of the company has proposed to replace the old printing machine with a new one, introducing the selection among two.

To evaluate this proposal, there will be presented incremental cash flows associated with each project including the old machine. A certain methodology is followed based on the parameters and assumptions given below:

- Cash flows will be performed for all three machines (old press, press A, press B).
- We do not include any sunk costs (money spend in the past is irrelevant).
- Cash flows are considered with current and future costs.
- We will apply MACRS 5-year schedule of depreciation including the depreciation in year 6 (the project evaluates 5 years duration).
- For calculation reasons we assign: (t1) for year 1, (t2) for year 2, (t3) for year 3, (t4) for year 4, (t5) for year 5, (t6) for year 6 and (t0) for the initial time of the project.
- We will compare the old machine versus the other options based on its current net sale price.
- All amounts are calculated in USD ($).
- We do not incorporate inflation neither in cash flows, nor in discount rates in order to preserve consistency in our results.

The cash flows presented in this section are the following and will be applied for all three machines:

1. Initial Investment Cash Flows
2. Incremental Operating Cash Inflows
3. Terminal Cash Flows

2.1.1 Initial Investment cash flows

Before proceeding to the calculation of the initial investment cash flows it is necessary to provide the relevant calculations of depreciation and the taxes for all machines, as given below.

Old press

The machine has a current installed cost of t0=370,000 USD and a remaining economic life of 5 years (if the company decides to keep it). The machine was purchased three years ago for the price of 350,000 USD. Nevertheless, its current net price is 370,000 USD. We assume that if the company would decide to purchase it, this would cost the amount of 370,000 in t(0). Below are given the relevant annual depreciation amounts:

Project Year	MACRS (%)	Annual depreciation expense (USD)	Remaining accounting book value (USD)
t1	0.20	74,000	296,000
t2	0.32	118,400	177,600
t3	0.19	70,300	107,300
t4	0.12	44,400	62,900
t5	0.12	44,400	18,500
t6	0.05	***18,500***	
Totals	**100**	**370,000**	

The depreciation amount in year 6 (t6=18,500 USD), will never be realized since the project ends in year 5. If the old press will be kept, it is expected that this could be sold at the end of year 5 for 100,000 USD, according to the initial estimation. The tax rate for the company is 40% (0.40). Thus, the estimated tax on the sale of the old press at year 5, will be the following:

Tax=[Tax rate] x [Sale price-Remaining book value] =
[0.40] x [100,000-18,500] =
[0.40] x [81,500] = **32,600** USD, which will be paid at year 5 (t5).

If, the company decides to sell the old press immediately (t0) this implies the following estimated tax sale:

Tax=[Tax rate] x [Sale price-Remaining book value] =
[0.40] x [370,000-0] =
[0.40] x [370,000] = **148,000** USD, which will be paid today (t0).

Press A

This new machine costs 800,000 USD. It has an additional installation cost of 50,000 USD. Thus, the installed cost is t0=850,000 USD. This machine could be sold at the end of year 5 for t5=400,000 USD. The purchase of this machine is expected to create a change in net working capital of the company (NWC). This change is illustrated below:

Current Asset Changes	Current Liability Changes
+30,000 USD increase in Cash	+40,000 USD increase in Accounts payable
+100,000 USD increase in Receivables	
-30,000 USD decrease in Inventories	
Total current asset changes: +100,000 USD	**Total current liability changes: +40,000 USD**

Beyond the initial cost for acquiring a machine, a company usually needs to invest in its net working capital since this is affected from investments. The net working capital is the difference between current assets and current liabilities.

Based on the above, the NWC (Net Working Capital) is: 100,000 USD – 40,000 USD = 60,000 USD, which is a positive change required in our capital. This amount should be included as cash outlay in the cash flow estimates. It is realized that the purchase of Press A will demand an increase in the company's NWC.

The installed cost and the net working capital define the initial investment cash flow. Regarding Press A, the initial investment cash flow is the following:

	Amounts in USD
Purchase of Press A	800,000
+ Installation	50,000
Installed cost	**850,000**
+ Initial increase in Net Working Capital (NWC)	60,000
- Proceeds from the sale of Old Press	370,000
Net investment before taxes	**540,000**
+ Tax on sale of Old Press	148,000
Total initial net investment (cash outflow)	**688,000**

The machine has an installed cost of t0=850,000 USD and an estimated economic life of 5 years. Below are given the annual depreciation amounts:

Project Year	MACRS (%)	Annual depreciation expense (USD)	Remaining accounting book value (USD)
t1	0.20	170,000	680,000
t2	0.32	272,000	408,000
t3	0.19	161,500	246,500
t4	0.12	102,000	144,500
t5	0.12	102,000	42,500
t6	0.05	***42,500***	
Totals	**100**	**850,000**	

Again, according to the methodology followed for the Old Press, the depreciation amount in year 6 (t6=42,500 USD), will never be realized since the project ends in year 5. The Press A can be sold at the end of year 5 for net 400,000 USD. The tax rate for the company is 40% (0.40). Thus, the estimated tax on the sale of the machine at year 5, will be the following:

Tax=[Tax rate] x [Sale price-Remaining book value] =
[0.40] x [400,000-42,500] =
[0.40] x [357,500] = **143,000** USD, which will be paid at year 5 (t5).

Press B

This machine costs 650,000 USD. It has an additional installation cost of 30,000 USD. Thus, the installed cost is t0=680,000 USD. This machine could be sold at the end of year 5 for t5=300,000 USD. The purchase of this machine is not expected to create any change in net working capital of the company (NWC).

The installed cost and the net working capital define the initial investment cash flow. Regarding Press B, the initial investment cash flow is the following:

	Amounts in USD
Purchase of Press B	650,000
+ Installation	30,000
Installed cost	**680,000**
- Proceeds from the sale of Old Press	370,000
Net investment before taxes	**310,000**
+ Tax on sale of Old Press	148,000
Total initial net investment (cash outflow)	**458,000**

The machine has an installed cost of t0=680,000 USD and an estimated economic life of 5 years. Below are given the annual depreciation amounts:

Project Year	MACRS (%)	Annual depreciation expense (USD)	Remaining accounting book value (USD)
t1	0.20	136,000	544,000
t2	0.32	217,600	326,400
t3	0.19	129,200	197,200
t4	0.12	81,600	115,600
t5	0.12	81,600	34,000
t6	0.05	***34,000***	
Totals	**100**	**680,000**	

The depreciation amount in year 6 (t6=34,000 USD), will never be realized since the project ends in year 5. The Press B can be sold at the end of year 5 for net 300,000 USD. The tax rate for the company is 40% (0.40). Thus, the estimated tax on the sale of the machine at year 5, will be the following:

Tax=[Tax rate] x [Sale price-Remaining book value] =
[0.40] x [300,000-34,000] =
[0.40] x [266,000] = **106,400** USD, which will be paid at year 5 (t5).

2.1.2 Calculation of Incremental Operating Cash Inflows

Starting from the operating cash flows, it is intended to present the operating inflows for each of the three machines.

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
OLD PRESS						
Earnings before depr.int.taxes	100,000	100,000	100,000	100,000	100,000	
(-) Depreciation	74,000	118,400	70,300	44,400	44,400	18,500
Earnings before interest and taxes	26,000	-18,400	29,700	55,600	55,600	-18,500
(-) Taxes (40%)	10,400	-7,360	11,880	22,240	22,240	-7,400
Net operating profit after taxes	15,600	-11,040	17,820	33,360	33,360	-11,100
(+) Depreciation	74,000	118,400	70,300	44,400	44,400	18,500
Operating cash inflows	89,600	107,360	88,120	77,760	77,760	7,400

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PRESS A						
Earnings before depr.int.taxes	250,000	270,000	320,000	330,000	350,000	
(-) Depreciation	170,000	272,000	161,500	102,000	102,000	42,500
Earnings before interest and taxes	80,000	-2,000	158,500	228,000	248,000	-42,500
(-) Taxes (40%)	32,000	-800	63,400	91,200	99,200	-17,000
Net operating profit after taxes	48,000	-1,200	95,100	136,800	148,800	-25,500
(+) Depreciation	170,000	272,000	161,500	102,000	102,000	42,500
Operating cash inflows	218,000	270,800	256,600	238,800	250,800	17,000

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PRESS B						
Earnings before depr.int.taxes	210,000	230,000	250,000	250,000	250,000	
(-) Depreciation	136,000	217,600	129,200	81,600	81,600	34,000
Earnings before interest and taxes	74,000	12,400	120,800	168,400	168,400	-34,000
(-) Taxes (40%)	29,600	4,960	48,320	67,360	67,360	-13,600
Net operating profit after taxes	44,400	7,440	72,480	101,040	101,040	-20,400
(+) Depreciation	136,000	217,600	129,200	81,600	81,600	34,000
Operating cash inflows	180,400	225,040	201,680	182,640	182,640	13,600

These tables are based on the earnings, taxes and depreciation, as given by the general manager of the company and provide a clear view of the inflows incrementally. The incremental operating cash inflows and the compared differences are illustrated below.

YEAR	PRESS A	PRESS B	OLD PRESS	Incremental (relevant) [PRESS A - OLD PRESS]	Incremental (relevant) [PRESS B - OLD PRESS]
1	218,000	180,400	89,600	128,400	90,800
2	270,800	225,040	107,360	163,440	117,680
3	256,600	201,680	88,120	168,480	113,560
4	238,800	182,640	77,760	161,040	104,880
5	250,800	182,640	77,760	173,040	104,880
6	17,000	13,600	7,400	9,600	6,200

There is a comparison in the flows among the two new proposed machines with the old one. The amounts cover the whole duration of the project. The terminal cash flows, which are presented in the next section, provide us with the result, in case the company decides to keep the machines for the whole duration and in the end of the project (t5) sell them.

2.1.3 Calculation of Terminal Cash Flows

The Press A can be liquidated at the end of year 5, for the price of net 400,000 USD. The Old Press can be liquidated at the end of year 5, for the price of net 100,000 USD. The acquisition of Press A, as calculated previously, creates a positive change in the company's NWC of 60,000 USD. On the other hand, Press B can be liquidated at the end of year 5, for the price of net 300,000 USD and has no effect in company's NWC. Tax rate remains 40%.

The project has duration of 5 years (t5).

Below are given the two terminal cash flows for (a) Press A – Old Press and (b) Press B – Old Press.

Terminal Cash Flow of: Press A – Old Press

After tax proceeds from sale of Press A		
Proceeds from sale of Press A	400,000	
(-) Tax on sale of Press A	143,500	
Total after-tax proceeds (Press A)		**256,500**
(-) After tax proceeds from sale of Old Press		
Proceeds from sale of Old Press	100,000	
(-) Tax on sale of Old Press	32,600	
Total after-tax proceeds (Old Press)		**67,400**
(+) Change in Net Working Capital		**60,000**
Terminal Cash Flow		**249,100**

Terminal Cash Flow of: Press B – Old Press

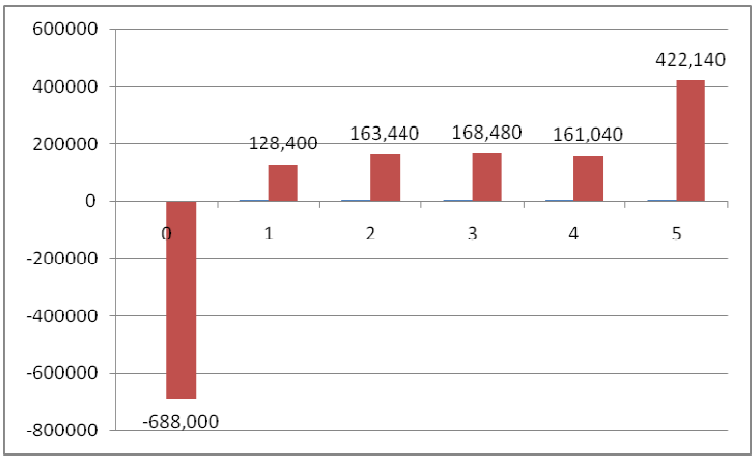
After tax proceeds from sale of Press B		
Proceeds from sale of Press B	300,000	
(-) Tax on sale of Press B	106,400	
Total after-tax proceeds (Press B)		**193,600**
(-) After tax proceeds from sale of Old Press		
Proceeds from sale of Old Press	100,000	
(-) Tax on sale of Old Press	32,600	
Total after-tax proceeds (Old Press)		**67,400**
(+) Change in Net Working Capital		**0**
Terminal Cash Flow		**126,200**

The “tax on sale” amount incorporates the subtraction of the remaining book value from selling price for each machine since the full depreciation is done on year 6 (t6).

2.1.4 Summarising the Relevant Cash Flows

In the figures below, it is intended to present the cash flow through the duration of the project, on annual basis, starting from the initial investment (t0) and incorporating the terminal cash flow of each machine in the operating cash inflow of year 5 (t5). As defined earlier, these inflows are derived from the subtraction of cash inflows of current machine with each new proposed machine.

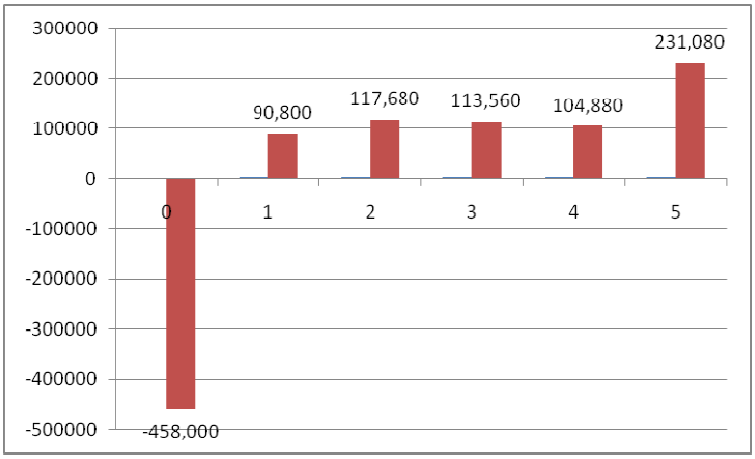
Press A



Initial investment required for Press A: 688,000 USD
Cumulative cash flows: 1,043,500 USD (5 years)
Difference: 355,500 USD

Figure 1. Cumulative cash flow of Press A.

Press B



Initial investment required for Press B: 458,000 USD
Cumulative cash flows: 658,000 USD (5 years)
Difference: 200,000 USD

Figure 2. Cumulative cash flow of Press B.

2.2 Calculation of Discount Rate

The cash flows presented in the previous section are based on estimations and data as provided by the general manager. Since these are forecasts, it is necessary to discount them in order to convert the forecasts in today's value.

When evaluating an investment, it is required to take into consideration (a) the time value of money to be invested (opportunity cost) and (b) the risk taken in the investment (risk premium). The Capital Asset Pricing Model (CAPM) is used as a formula to estimate the cost of capital which is the key input in the capital budgeting process and the valuation of an investment *(Jagannathan and Meler, 2002)*. In this case, we will follow CAPM to calculate the cost of capital which is actually the required rate of return *(Raonic, 2012; Madura and Fox, 2007; O'Hanlon and Steele, 2000).* It is worth to mention that all percentages are given by the general manager and they are based on assumptions.

The formula to apply is the following:

CAPM: $r = r_f + B \times (r_m - r_f)$

The description of each operand is given, as well, below:

Description:
r_f = risk free rate of return
r_m = the risk of the market
$(r_m - r_f)$ = the risk premium
B=beta coefficient, volatility of the market

The assumptions are the following:

Assumptions:

$$r_f = 6.5\%$$
$$r_m = 12.5\%$$
$$(r_m - r_f) = 6\%$$
$$B = 1.2$$

Applying the model, the result is the following:

CAPM:

$$\mathbf{13.7}\% = 6.5\% + (1.2 \times 6\%)$$

The cost of capital for the company is **13.7%.** In other words, this is the required return which is necessary to make the capital budgeting project.

3. Evaluation of the proposal using Capital budgeting techniques *(question B)*

The use of sophisticated capital budgeting techniques is adopted ever since the 1970s *(Klammer and Walker, 1984)*. Mainly that was due to the fact that companies were in search of coping with the increasing uncertainty. Literature reviewed has demonstrated a number of surveys tried to measure through time the most popular techniques. The present study applies these techniques as mentioned below *(Sangster, 1993; Brounen et al, 2004; Chadwell-Hatfield et al, 1997).*

1. Payback period (PB)
2. Net present Value (NPV)
3. Internal rate of return (IRR)

Although NPV is one of the most popular methods among financial managers for evaluating an investment there is much disagreement about its validity *(Ross, 1995; Jagannathan and Meler, 2002)*. Since the calculation is based in the CAPM which gives input to the technique (cost of capital), it was identified a weakness in defining the real value of market's risk premium *(Jagannathan and Meler, 2002).* Therefore, managers are expected to pay attention in the estimation of cost of capital when using this method. Sometimes, it is useful to incorporate hurdle rates along with cost of capital in order to assess the NPV. Positive NPVs does not always mean that the investment is an opportunity. On the other hand, as *Ross (1995)* stated, the NPV is not wrong but sometimes it may be irrelevant in the valuation of a project especially when the management does not seek other options for assessment.

Graham and Harvey (2001) recommended that NPV is more appropriate for large companies which administer heavy projects within restricted time. The PB on the other hand, is mostly used from smaller companies where the limits are more flexible. They argue though, that most of the times NPV method is not used correctly from the managers. In addition they posited lack of knowledge among managers in capital structure impacts related to new investments.

According to *Asimakopoulos (2012),* NPV and CAPM are two of the most important ideas in finance. Still though there are under consideration what really determines project risk and present value as well as possible missing issues in risk and return.

3.1 Payback period

This technique calculates the required period of a project to recover the initial investment, throughout the cash flows. It is measured in years. Below is calculated the payback period for the two machines.

	Press A		Press B	
Initial Investment		688,000		458,000
Year	Operating Cash Inflow	Net invested cash	Operating Cash Inflow	Net invested cash
1	218,000	*-470,000*	180,400	*-277,600*
2	270,800	*-199,200*	225,040	*-52,560*
3	256,600	*57,400*	201,680	*149,120*
4	238,800	*296,200*	182,640	*331,760*
5	250,800	*547,000*	182,640	*514,400*
Total cash inflows	1,235,000		972,400	
Payback Period		**2.78**		**2.26**

The net invested cash in (t1) derives from the addition of initial investment amount to the cash inflow of that year. Since the initial investment is considered as an outflow the result is negative. For each year the net invested cash is added to the next year's cash inflow.

Finally, the payback period is calculated following the formula given below:

[(the number of the Year of last negative net invested cash) +
(the amount of last negative net invested cash / next year's operating cash flow)]

Therefore the final payback for machine A is **2.78 years**, while for machine B is **2.26 years**. This method gives a criterion for selecting one investment versus another, but it is suggested not to be the sole one, since it has a number of weaknesses. Thus, it could be better used in combination with others.

Moreover, it is advisable that the general manager should place a desired threshold as a benchmark for the comparison of the two new machines. This will contribute in deciding which machine is acceptable depending on the payback period results.

3.2 Net Present Value

The net present value (NPV) is a discounted cash flow which uses the cost of capital (required return) in this case, to determine the present value of a stream of future cash flows. To be more precise, NPV is the difference between the present value of the future cash flows from an investment and the amount of investment *(Business Dictionary, 2012).* The present value of the expected cash flows is computed by discounting them at the required rate of return (13.7% in this case).

Below is given the computation of NPV for the two machines (Press A, Press B):

Cost of capital	**0.137**

Year	Press A	Press B
0	-688,000	-458,000
1	218,000	180,400
2	270,800	225,040
3	256,600	201,680
4	238,800	182,640
5	250,800	182,640

NPV	**162,650**	**217,347**

The second machine demonstrates higher NPV.

3.3 The Internal Rate of Return (IRR)

Although the Payback Period is an indicative index when evaluating an investment, both NPV and IRR are used for comparative evaluation. IRR is a discounted cash flow technique, such as the NPV. IRR is the average annual return earned through the life of an investment *(Business Dictionary, 2012).* Below is given the calculation of IRR for both machines.

Year	Press A	Press B
0	-688,000	-458,000
1	218,000	180,400
2	270,800	225,040
3	256,600	201,680
4	238,800	182,640
5	250,800	182,640

IRR	**23%**	**32%**

The Press B has higher internal rate of return.

3.4 Comparative representation of results (Suggestion)

This section is used to summarize the calculations and conclude in terms of which machine to propose in the general management.

The table below gives the data:

	Press A	Press B
Initial investment	688,000	458,000
Operating cash inflows		
year 1	218,000	180,400
year 2	270,800	225,040
year 3	256,600	201,680
year 4	238,800	182,640
year 5	250,800	182,640
Paypack period (in years)	2.78	2.26
NPV at 13% (in USD)	162,650	217,347
IRR (%)	23%	32%

First of all, both machines are acceptable because they give a positive NPV. If this was affordable we would suggest to the general manager to purchase both machines.

Nevertheless, from the results, it is concluded that Press B appears more attractive since it demonstrates comparatively better results in all three techniques (Payback, NPV, IRR).

3.5 Taking into consideration capital rationing

According to *Weetman (2010),* capital rationing means that there is no sufficient capital available to support all projects proposed in an organization. In this case the general manager set from the beginning the selection of one machine only.

Moreover, the project is a non-divisible one meaning that it must be evaluated in total. When we evaluate a project using capital rationing, it is intended to identify which is the greatest benefit the company can get, with its given capital. To find this, there is a specific ratio which compares the present value of the expected cash inflow with the given amount of investment. This is the profitability index.

In this case the formula of profitability index is given below:

$$Profitability\ index_{press\ A\ or\ B} = (Initial\ investment_{press\ A\ or\ B} + NPV_{press\ A\ or\ B)}/Initial\ investment_{press\ A\ or\ B}$$

	Press A	Press B
Profitability index	1.24	1.47

Thus, according to the profitability indexes, Press B is preferable at a cost of capital of 13.7%. It is significant to mention here, that the suggested machines have different initial investments amounts. Using the profitability index we conclude that Press B demonstrates a higher net present value comparing to press A.

We recommend agan to the general manager to purchase Press B.

4. Capital Budgeting decision under uncertainty *(question C)*

In capital budgeting is significant to introduce and measure the risk factor. It is true that uncertainty delays the investment commitment *(Carruth et al, 2000).* This mostly deals as a consequence between the timing of an investment decision and the existence of thresholds. Therefore, uncertainty creates irreversibility. Usually uncertainty is related to the future cash inflows since the invested amount is known. Scenario analysis is one method to mitigate risk and investigate possible outcomes for the investment.

4.1 Decision Tree

This is a type of tree-diagram used in determining the optimum course of action, in situations having several possible alternatives with uncertain outcomes. The resulting chart or diagram (which looks like a cluster of tree branches) displays the structure of a particular decision, and the interrelationships and interplay between different alternatives, decisions, and possible outcomes *(Business Dictionary, 2012).* On the contrary, *Weetman (2010)* highlights that decision trees are not useful when there are more than two-three possible decisions. Moreover, *Bailes and Nielsen (2001)* concluded that if a manager has multiple factors of uncertainty to present, this increases the complexity of the tree and becomes overwhelming.

In this study, it is followed the Risk Adjusted Discount Rate to incorporate risk in the model.

4.2 The Risk Adjusted Discount Rate (RADR)

This is a rate that has to be earned in order to compensate the investor for the risk taken; the higher the risk the higher the RADR *(Asimakopoulos, 2012)*. Although RADR is usually subjective, thus difficult to specify, in this case, it is adopted the CAPM approach risk is incorporated within this formula.

Below is given the initial formula to calculate:

$$k_{press\ A} = R_f + [b_{press\ A} \times (k_m - R_f)]$$

Explanations:

$$k_{press\ A} = required\ rate\ of\ return\ on\ Press\ A$$

$$R_f = risk\ free\ rate\ of\ return$$

$$k_m = return\ on\ the\ market\ portfolio$$

$$b_{press\ A} = Beta\ coefficient\ for\ Press\ A\ (Risk\ index)$$

Assumptions:

$$R_f = 6.5\%$$

$$k_m = 12.5\%$$

$$(k_m - R_f) = 6\%$$

$$b_{press\ A} = \mathbf{2.4}$$

We assume that press A demonstrates double the riskiness of the overall company (Beta=1.2), which is 2.4.

The formula returns the risk adjusted discount rate, as given below.

RADR using **CAPM:**

$$20.9\% = 6.5\% + (2.4 \times 6\%)$$

As *Madura and Fox (2007)* highlighted, the greater the uncertainty about a project's forecasted cash flows, the larger should be the discount rate. The RADR could be calculated on an annual

basis if we accept that the uncertainty changes through time. The RADR illustrates the reduction in the worth of a project by the degree of the risk that the specific project exhibits *(Madura and Fox, 2007)*.

As mentioned earlier the RADR is a subjective process but is easy to follow and is very close to the real risk assessment. Another method we propose is the one where we may try to mitigate risk by involving more employees of the XYZ Company and ask for their opinions about the proposed machines. Through this process people will raise possible issues. These issues will be assigned as risk components. Then we will try to measure them according to employees' opinions.

Press A: initial investment 688,000 USD and cost of capital 13.7%.

Press A	**Risk Grade**				
Risk Components	**Low**	**Medium**			**High**
	1	**2**	**3**	**4**	**5**
Initial investment cost					5
Recession in business sector			3		
Press machine failure	1				
Maintenance costs			3		
Specialized personnel				4	
Non-environment friendly	1				
Ergonomic needs in workplace			3		
Safety and Security specialties		2			
Total	**2**	**2**	**9**	**4**	**5**
Riskiness	**22/8=2.75 (medium)**				

Press B: initial investment 458,000 USD and cost of capital 13.7%.

Press B	**Risk Grade**				
Risk Components	**Low**	**Medium**			**High**
	1	**2**	**3**	**4**	**5**
Initial investment cost			3		
Recession in business sector			3		
Press machine failure		2			
Maintenance costs		2			
Specialized personnel			3		
Non-environment friendly	1				
Ergonomic needs in workplace			3		
Safety and Security specialties		2			
Total	**1**	**6**	**12**	**0**	**0**
Riskiness	**19/8=2.37 (medium)**				

We assume that for each risk grade there will be a 10% risk reward as follows:

Risk grade	1	2	3	4	5
Risk reward	1	1.1	1.2	1.3	1.4
Adjusted cost of capital	13.7%	15%	16.3%	17.6%	18.9%

The Press A will be discounted for risk grade 3, using the 16.3% cost of capital.
The Press B will be discounted for risk grade 2, using the 15% cost of capital.

The new NPVs for the two machines are given below (amounts in USD):

Press A

Cost of capital	0.163

Year	Press A
0	-688,000
1	218,000
2	270,800
3	256,600
4	238,800
5	250,800
NPV	**111,190**

Press B

Cost of capital	0.15

Year	Press B
0	-458,000
1	180,400
2	225,040
3	201,680
4	182,640
5	182,640
NPV	**196,869**

In the figure below are calculated the Present Values of the future cash flows, using the following formula:

$$PV = {Initial\ investment}/{(1 + cost\ of\ capital^{number\ of\ years})}$$

Press A

Cost of capital	0.163

Year	Press A
0	-688,000
1	187,446
2	200,212
3	163,124
4	130,532
5	117,877
Total	**799,190**

Press B

Cost of capital	0.15

Year	Press B
0	-458,000
1	156,870
2	170,163
3	132,608
4	104,425
5	90,804
Total	**654,869**

In this section there were presented two methods of calculating the RADR. The first was based in the systematic risk and has incorporated this in the CAPM, while the second was more flexible and subjective and was based on personal evaluations.
The results confirm our original proposal of purchasing Press B.

5. Raising capital *(question D)*

There are two basic channels to raise capital and finance an investment; these are:

(a)	**Equity financing (internal)**	Meaning: (i) to approach venture capitalists through participating in the company's capital; (ii) to issue stocks or sell stocks that the company owns; (iii) to issue bonds; (iv) to retain profits and re-invest them in the company;
(b)	**Debt financing (external)**	Meaning: (i) to get a bank loan; (ii) to lease; (iii) to get governmental funding loan;

The above are the most accessible and usual ways for a company to finance its investing plans. There is much literature dedicated to both channels of financing in terms of their pros and cons. It is challenging though the contradictions rose, which result in that management and shareholders should carefully evaluate each investment decision. The financing mix encrypts various misinterpretations that affect the company's plans in the long run. The aim in this section is to highlight some of the literature's findings.

For example, it is interesting what *Wu (2010)* posited, through his study in a number of companies. Equity financing is preferable versus debt financing when the company has the policy to reward managers on equity-based compensation. Thus, if the way of financing is linked to the structure of equity, this is expected to create more managerial effort, better decisions, tension for effective governance. On the other side, it was identified that debt financing leads to lower levels of effort especially when this encompasses high risk for the company. Also, *Gombola and Marciukaityte (2007)* identified that managerial over-optimism is related to debt financing which in the long-run has negative effect on stock performance.

On the contrary, *Ghosh and Moon (2010)* stated that debt financing, when referring to low debt levels, has a positive influence on earnings since management reveals hidden information to the creditors about the company's plans. This is done in the effort to mitigate financing costs. Moreover, this aligns to what is mentioned in the next section about asymmetric information. Nevertheless, this formula applies mostly on short run and low debt financing. But, it is a matter of consideration to compare debt financing with the quality of earnings and what the impact will be on any future decisions. *Sarkar (2011)* agrees with *Ghosh and Moon (2010)* that there is a negative relationship between leveraging and earnings.

Another issue is that, the dependency of the company on bank financing affects directly its accounting policy decisions *(Bellas and Tzovas, 2008)*. A high leveraging owed to banks raise non-tax costs that the company might face. On the other hand, as *Wong (2010)* stated, non leveraged companies tend to invest less. As a result, debt financing has real effect on investment timing. *Rampini and Viswanathan (2010)* in their study argued that, there is an opportunity cost for the company to conserve its debt capacity. Moreover, there is a trade-off between financing and risk management. But, it is worth mention that keeping debt provides an open opportunity for new investments. Nevertheless, a high debt ratio implies significant negative effects on operating performance of the company concerning specifically the cash flow *(Cheng, 2009)*. *Almeida and Campello (2010)* in extent highlighted the same implication in terms of profitability. At this point, it is true that more profitable companies require less external financing.

Equity financing plays a significant role regarding the liquidity position of the company. Thus, it demonstrates a positive relation with working capital. Therefore, higher equities mean better liquidity ratios, while lower equities and higher debts bring liquidity deterioration *(Mehar, 2005)*.

Sarkar (2011) made an interesting study on financing an expansion. Considering that in current case, the company decides to expand its operations through the acquisition of a new printing machine and in combination with what Sarkar suggested, it will be an option to use more debt than equity to finance this investment. In contradiction with what other researchers claimed, *Sarkar (2011)* asserts that debt financing has a positive effect when this considers an expansion. He defines this option as expansion financing. This is due to the tax shield and the transfer of wealth from the company to the shareholders through the implementation of the investment. On the other side though, this rise possible bankruptcy costs. The implementation cost of the investment is always a parameter. It is rationale to mention that this option is valid when the company experiences still low leveraging ratios and decides to undertake a big investment. Furthermore the high external financing costs are always under consideration.

Nevertheless, none of the two ways demonstrate only risks or only benefits. It is of management's responsibility to monitor any possible impacts, as described above and incorporate them in its strategy. One-way financing is not proposed. On the contrary, a mixed method of raising capital could be adopted in the frame of exploiting their advantages and mitigating their losses. According to *Mehar (2005),* debt and equity are not perfect substitutes; they may demonstrate a positive or negative relation depending on the nature of company's operations. They could be defined as rather complementary financing sources.

6. The Capital structure concept *(question E)*

(What means for a company to change its capital structure?)

The capital structure is the study of the financing sources that are used by companies to finance real investments *(Myers, 2001)*. Usually this is related to the debt-equity mix of a company and the decisions that have to be taken on that aspect in terms of maintaining a balance. As *Lim et al (2009)* argued, the link between capital structure and diversification is moderated by the environment in which companies operate. There is always the option for the company to use part of its income from an equity issuance to redeem debt and rebalance this ratio *(Bessler et al, 2011)*. According to *Pinegar and Wilbricht (1989)*, the optimal capital structure maximizes the company's value. Similarly, *Rajan and Zingales (1995)* concluded that capital structure is relevant to the company's value.

When a company decides to alter its capital structure, this reveals information to the shareholders on potential investment opportunities. Of course, any rise on capital, either from inside or outside, is expected to have a direct impact on shareholders' financial position. As *Harris and Raviv (1991)* identified, there are much to consider on conflicts that emerge between debt holders and equity holders as well as equity holders and management. Nevertheless, the primary concern is that management operates for maximizing the shareholders' wealth. At this point, it is interesting what *Myers (2001)* claimed; the management acts to maximize the present value of current and future benefits to "insiders". As insiders is considered the human resource of the company (but mostly the top management). Making an investment is an attempt for future payoffs. This is due to that company invests not only through financial capital but also through human capital. Furthermore, another attribute is that company's insiders possess information which is not easily disseminated outdoors (asymmetric information). This information asymmetry between the management and investors creates information risk. *Bessler et al (2011)* have identified that this characteristic plays an important role in most theories of the capital structure. *Masulis (1980)* earlier and *Gombola and Marciukaityte (2007)* later, both identified that the management of a company can make decisions which do not necessarily maximizes shareholders' wealth or aligns with shareholders' interests.

In this case, it is worth to mention the interrelation between an investment and the capital structure. *Harris and Raviv (1991)* asserted that financing a new investment should first seek to internal funds than outside debt. This has to do mostly with the available information that potential investors have about the company's value, and the willingness to reveal any hidden information.

Strebulaev (2007) identified a positive relation between leverage and profitability in terms of changing the capital structure in a company. Leverage is also positively related to the size and the age of the company, especially when this represents a well-established brand. Nevertheless, as *Banerjee et al (2000)* concluded, debt in general can finance growth but it needs to take into consideration the specialties of the economic environment and the risk of the country. Additionally, it is important to examine the momentum of the investment and check whether the environment is more bank-oriented or market-oriented in the country. The company is advised, in general, not to exceed the leveraging targets originally set by the management and keeps in track the optimal leveraging and debt ratios. For example, the debt ratio influences the position of the company in competition. Furthermore, bad debts are expected to create additional costs.

Moreover, when the top management decides to change the capital structure, it is of concern to analyse the book and the market value of the company as well as the impact of such decision. As *Heshmati (2001)* highlighted, the capital structure is a determinant for the market value of the company. Not to forget that capital structure has a direct impact on company's advertising, research and development expenditures, as well as, product or service characteristics *(Harris and Raviv, 1991)*.

Especially when an investment is under consideration, all aspects mentioned so far, related to the capital structure should be scrutinized. Usually companies do not consider their decisions on investments as a valuable attribute on their assets through time *(Strebulaev, 2007).* Investments are not independent. On the contrary, they are part of the company's growth model and add value in the brand equity.

By changing the capital structure, actually this directs to wealth redistribution for the company. In other words, this is related to the financing policies and how the management administers the credit constraints. The debt versus equity principle adopted, defines company's profile and its leveraging status. According to *Faulkender and Petersen (2005)*, the source of capital affects the capital structure. This is mostly referred to the capital markets where companies do not necessarily

have greater access. In the end, capital structure reflects the company's characteristics and mentality, affecting strategic decisions.

7. Common share valuation *(question F)*

According to *Asimakopoulos (2012),* the value of any stock is the present value of its future cash flows. In addition, dividends represent the future cash flows of any firm, as well. Though, they convey information but encrypt expectations.

To perform the valuation of the company's share, it is proposed to apply the Dividend Discount Model (DDM). This formula values the equity by forecasting future dividends *(Asimakopoulos, 2012)*. In extent this will demonstrate the effect that the acquisition of the new purchase is expected to have on shareholders.

Nevertheless, it is necessary to make some assumptions, beyond the given forecasts by the general management.

Assumptions:

- The dividends forecast will be performed for the next 5 years which is the duration of the project.
- The dividends have an annual growth rate of 15% for the duration of the project.
- After that we assume that remain the same forever after year 5 (t5) to perpetuity.
- The year 5 (t5), is defined as the terminal year T.
- We assign year 6, which is one year after the end of the project, as the perpetuity.
- We will discount each dividend on annual basis.
- We will discount the terminal value as well.

The formula to be used is the following:

$$V_0^E = \frac{d_1}{\rho_E} + \frac{d_2}{\rho_E^2} + \frac{d_3}{\rho_E^3} + \frac{d_4}{\rho_E^4} + \frac{d_T}{\rho_E^T} + \left[\frac{d_{T+1}}{\rho_E - 1}\right] / \rho_E^T$$

This formula incorporates perpetuity.

Explanations:

$$V_0^E = Value\ of\ common\ equity$$

$$d_x = dividend\ in\ year\ X$$

$$\rho_E^x = required\ rate\ of\ return\ for\ equity\ in\ year\ X$$

According to *Raonic (2012)* the value of a project or equity can be the sum of three components; (a) the original invested capital, (b) the cost of capital, and (c) the residual return on invested capital.

Regarding the cost of capital, which we have already calculated in previous section, using CAPM formula, this is 13.7% or 0.137. The general manager expects the cost of capital for the stock to increase by 3% or 0.3, due to the high risk of the investment. The CAPM is used both for projects and equities. Thus, we will add the expected increase in the original required rate of return. So, this is 16.7%. Thus, the "ρ" in the formula of dividend discount model is 1.167.
By applying this model the result is the following:

$$V_0^E = \frac{2.05}{(1.167)} + \frac{2.35}{1.167^2} + \frac{2.70}{1.167^3} + \frac{3.10}{1.167^4} + \frac{3.56}{1.167^5} + \frac{3.56}{0.167} / 1.167^5 = 18.35$$

The table below provides in details the discounted dividends as well as the values of equity (amounts in $).

It is worth to mention that any changes in cost of capital and expected growth rate affect the dividend discount model.

According to *Financial Dictionary (2012),* the dividend discount model is a procedure for valuing the price of a stock by using predicted dividends and discounting them back to present value; if the value obtained from the DDM is higher than what the stocks are currently trading at, the stock is undervalued. The value of stock in this case is 18.35 USD according to the DDM formula. The truth is that from the data given we do not know what the current trading price of the company's stock is to identify if it is undervalued or overvalued incorporating the future investment. Nevertheless, the price found may be a benchmark to evaluate the impact of the suggested investment.

In addition, as illustrated below, the total present value of future dividends (of the next 5 years) is expected to be higher than what shareholders receive in the previous 5 years. Therefore the investment will raise the company's value and is expected to create wealth for the shareholders.

Total value of dividends (past 5 years)

Year (of dividends)	Dividend per share ($)	
-5	1.20	
-4	1.30	
-3	1.45	*dividend with old press*
-2	1.60	*dividend with old press*
-1	1.80	*dividend with old press*
Total	**7.35**	

Total present value of dividends (next 5 years)

Year (of dividends)	Dividend per share ($)	
1	1.76	*dividend with new press*
2	1.73	*dividend with new press*
3	1.70	*dividend with new press*
4	1.67	*dividend with new press*
5	1.64	*dividend with new press*
Total	**8.50**	

Even if we incorporate the dividends expected to be paid from the current year, keeping the old press, the total value of dividends remain lower.

Year (of dividends)	Dividend per share ($)	
-5	1.30	
-4	1.45	*dividend with old press*
-3	1.60	*dividend with old press*
-2	1.80	*dividend with old press*
-1	1.90	*dividend with old press*
Total	**8.05**	

On the other hand, when a company demonstrates increase in the dividends returned to the shareholders, this increases its price in the stock market as this creates expectations.

Keeping into consideration that shareholders have two ways to get back their investment in a company, this is crucial for the decision to proceed or not in such an investment.

Shareholders can both: (a) get dividends, and (b) trade shares when investing in a company. In this case the investment is suggested to get approval from the shareholders since it is expected to bring double benefit for them.

Conclusions

While reviewing the literature there were much references on the agency problem. This deals with the separation and the different approach between the investors and the management of the company, although these are the two sides of the same coin. As *Shleifer and Vishny (1997)* early stated, the fundamental question of corporate governance is how to assure that shareholders will get a return in their investment. The business case examined in this study is actually an issue

related to corporate finance and corporate governance. More or less, the methodology developed was used for identifying and investigating a new opportunity for the company. The aim was first the financial management to present considerable arguments in the general management and then to convince shareholders for the new challenge.

Derived data have demonstrated that a specific project (purchase of press machine B) is the preferable one, following a number of techniques to ensure the validity of the forecast. Furthermore, the whole process has taken into consideration the factors of risk and capital rationing while on the other side there was an attempt to extend the research in two more subjects: (a) the raise of alternative financial instruments to finance the project and (b) the capital structure concept. Both debt and equity financing appear to have pros and cons but given the case it would be suggested for the company to follow the equity financing. Also, any decision for change in capital structure will have a direct affect in the brand equity of the company. Thus, the general management is suggested to discuss with the shareholders about the possibility of financing the project as well as to cooperate in any further possibilities for investments in the future. Referring to the current investment, the dividend policy will be affected positively for the sake of the shareholders, meaning that at least in this case the agency problem keeps in low percentage.

REFERENCES

Almeida, Heitor and Campello, Murillo (2010) Financing frictions and the substitution between internal and external funds. *Journal of Financial and Quantitative Analysis*, 45(3), p. 589-622.

Asimakopoulos, I. (2012) Capital Budgeting and Investment Decisions. *Academic Module material in Corporate Financial Management*, International Faculty of the University of Sheffield-CITY College, January 2012.

Asimakopoulos, I. (2012) Valuation principles of bonds and stocks. *Academic Module material in Corporate Financial Management*, International Faculty of the University of Sheffield-CITY College, January 2012.

Asimakopoulos, I. (2012) Capital Budgeting decisions under uncertainty, practical problems in Capital Budgeting. *Academic Module material in Corporate Financial Management*, International Faculty of the University of Sheffield-CITY College, January 2012.

Banerjee, Saugata et al (2000) The dynamics of Capital Structure. *SSE/EFI Working Paper in Economics and Finance*, No. 333, p. 1-20.

Bailes, C. Jack and Nielsen, F. James (2001) Using Decision Trees to Manage Capital Budgeting Risk. *Management Accounting Quarterly*, Winter 2001, p. 14-17.

Bellas, P. Athanasios and Tzovas, Christos (2008) The effects of dependency on debt financing on financial reporting policy: the case of Greece. *Journal of European Research Studies*, XI(1-2), p. 13-30.

Bessler, Wolfgang et al (2011) Information Asymmetry and Financing Decisions. *International Review of Finance*, 11(1), p. 123-154.

Brounen, Dirk et al (2004) Corporate Finance in Europe: Confronting Theory with Practice. *Journal of Financial Management,* Winter 2004, p. 71-101.

Business Dictionary (2012) *The Net Present Value*, *accessed on 05 March 2012*: http://www.businessdictionary.com/definition/net-present-value-NPV.html

Business Dictionary (2012) *The Internal Rate of Return*, *accessed on 05 March 2012*: http://www.businessdictionary.com/definition/internal-rate-of-return-IRR.html

Business Dictionary (2012) *Decision Trees*, *accessed on 05 March 2012*: http://www.businessdictionary.com/definition/decision-tree.html

Carruth, Alan et al (2000) What do we know about investment under uncertainty? *Journal of Economic Surveys,* 14(2), p. 119-153.

Chadwell-Hatfield, et al (1997) Financial Criteria, Capital Budgeting Techniques and Risk Analysis of Manufacturing Firms. *Journal of Applied Business Research*, 13(1), p. 95-103.

Cheng, Min-Tsung (2009) Relative effects of Debt and Equity on Corporate Operating Performance: A Quantile Regression Study. *International Journal of Management*, 26(1), p. 142-145.

Faulkender, Michael and Petersen, A. Mitchell (2005) Does the source of capital affect Capital Structure? *The Review of Financial Studies*, 19(1), p. 46-79.

Financial Dictionary (2012), *Dividend Discount Model*, *accessed on 10 March 2012*: http://financial-dictionary.thefreedictionary.com/Dividend+Discount+Model

Ghosh, Aloke and Moon, Doocheol (2010) Corporate Debt Financing and Earnings Quality. *Journal of Business Finance and Accounting*, 37(5), p. 538-559.

Gombola, Michael and Marciukaityte, Dalia (2007) Managerial over-optimism and the choice between debt and equity financing. *The Journal of Behavioral Finance*, 8(4), p. 225-235.
Graham, R. John and Harvey, R. Campbell (2001) The theory and practice of corporate finance: evidence from the field. *Journal of Financial Economics*, 60, p. 187-243.
Harris, Milton and Raviv, Artur (1991) The Theory of Capital Structure. *The Journal of Finance*, XLVI(1), p. 297-354.
Heshmati, Ahmas (2001) The dynamics of Capital Structure: Evidence from Swedish micro and small firms. *SSE/EFI Working Paper in Economics and Finance*, No. 440, p. 1-35.
Jagannathan, Ravi and Meler, Iwan (2002) Do we need CAPM for Capital Budgeting? *Journal of Financial Management,* Winter 2002, p. 55-77.
Klammer, P. Thomas and Walker, C. Michael (1984) The continuing increase in the use of sophisticated capital budgeting techniques. *California Management Review*, XXVII(1), p. 137-148.
Lim, Ngah-Kiing Elizabeth et al (2009) Diversification Strategy, Capital Structure and the Asian Financial Crisis (1997-1998): Evidence from Singapore firms. *Strategic Management Journal*, 30, p. 577-594.
Madura, Jeff and Fox, Roland (2007) *International Financial Management*. Thompson Learning, United Kingdom.
Masulis, W. Ronald (1980) The effects of Capital Structure change on security prices. *Journal of Financial Economics*, 8, p. 139-178.
Mehar, Ayub (2005) Impacts of equity financing on liquidity position of a firm. *Applied Financial Economics,* 15, p. 425-438.
Myers, C. Stewart (2001) Capital Structure. *Journal of Economic Perspectives*, 15(2), p. 81-102.
O'Hanlon, John and Steele, Anthony (2000) Estimating the equity risk premium using accounting fundamentals. *Journal of Business Finance & Accounting*, 27(9), p. 1051-1082.
Pinegar, J. Michael and Wilbricht, Lisa (1989) What managers think of Capital Structure theory: A survey. *Journal of Financial Management*, 18(4), p. 82-91.
Rajan, G. Raghuram and Zingales, Luigi (1995) What do we know about Capital Structure? Some evidence from international data. *The Journal of Finance*, L(5), p. 1421-1458.
Rampini, A. Adriano and Viswanathan, S. (2010) Collateral, Risk Management and the Distribution of Debt Capacity. *The Journal of Finance*, LXV(6), p. 2293-2322.
Raonic, I. (2012) Introduction to risk-return, portfolio theory and the cost of capital. *Academic Module material in Corporate Financial Management*, International Faculty of the University of Sheffield-CITY College, January 2012.
Raonic, I. (2012) Corporate valuation based on profits. *Academic Module material in Corporate Financial Management*, International Faculty of the University of Sheffield-CITY College, January 2012.
Ross, A. Stephen (1995) Uses, Abuses and Alternatives to the Net-Present-Value Rule. *Journal of Financial Management,* 24(3), p. 96-102.
Sangster, Alan (1993) Capital Investment Appraisal Techniques: A Survey of Current Usage. *Journal of Business Finance & Accounting*, 20(3), p. 307-332.
Sarkar, Sudipto (2011) Optimal expansion financing and prior financial structure. *International Review of Finance,* 11(1), p. 57-86.
Shleifer, Andrei and Vishny W. Robert (1997) A Survey of Corporate Governance. *The Journal of Finance,* LII(2), p. 737-783.
Strebulaev, A. Ilya (2007) Do tests of Capital Structure theory mean what they say? *The Journal of Finance*, LXII(4), p. 1747-1787.
U.S. Small Business Administration (2012), *Financing*, *accessed on 08 March 2012*: http://www.sba.gov
Wong, Kit Pong (2010) On the neutrality of debt in investment intensity. *Annals of Finance*, 6, p. 335-356.
Weetman, Pauline (2010) *Management Accounting*. Second Edition, Prentice Hall, United Kingdom.
Wu, Yan Wendy (2010) Testing the effects of capital structure on entrepreneurial effort. *Journal of Applied Financial Economics*, 20, p. 785-794.

BIBLIOGRAPHY

Agca, Senay and Mansi A. Sattar (2008) Managerial ownership, takeover defenses and debt financing. *The Journal of Financial Research*, XXXI(2), p. 85-112.

Brealey, A. Richard and Myers, C. Stewart (2003) *Principles of Corporate Finance*. Seventh edition, McGraw-Hill publications,

Chava, Sudheer and Roberts, R. Michael (2008) How does financing impact investment? The role of debt covenants. *The Journal of Finance*, LXIII(5), p. 2085-2121.

Cheng, Min-Tsung and Yun, Ching (2006) The application of a quantile regression to the relationship between debt financing and equity financing by dual-issue cases. *The Journal of American Academy of Business, Cambridge*, 8(2), p. 134-137.

Finnerty, D. John (1988) Financial Engineering in Corporate Finance: An Overview. *The Journal of Financial Management,* Winter 1988, p. 14-33.

Gebhardt, R. William (2001) Toward an implied Cost of Capital. *Journal of Accounting Research*, 39(1), p. 135-176.

Kaya, D. Halil (2011) The effect of firm characteristics on choice of debt financing. *International Journal of Management*, 28(4:2), p. 199-208.

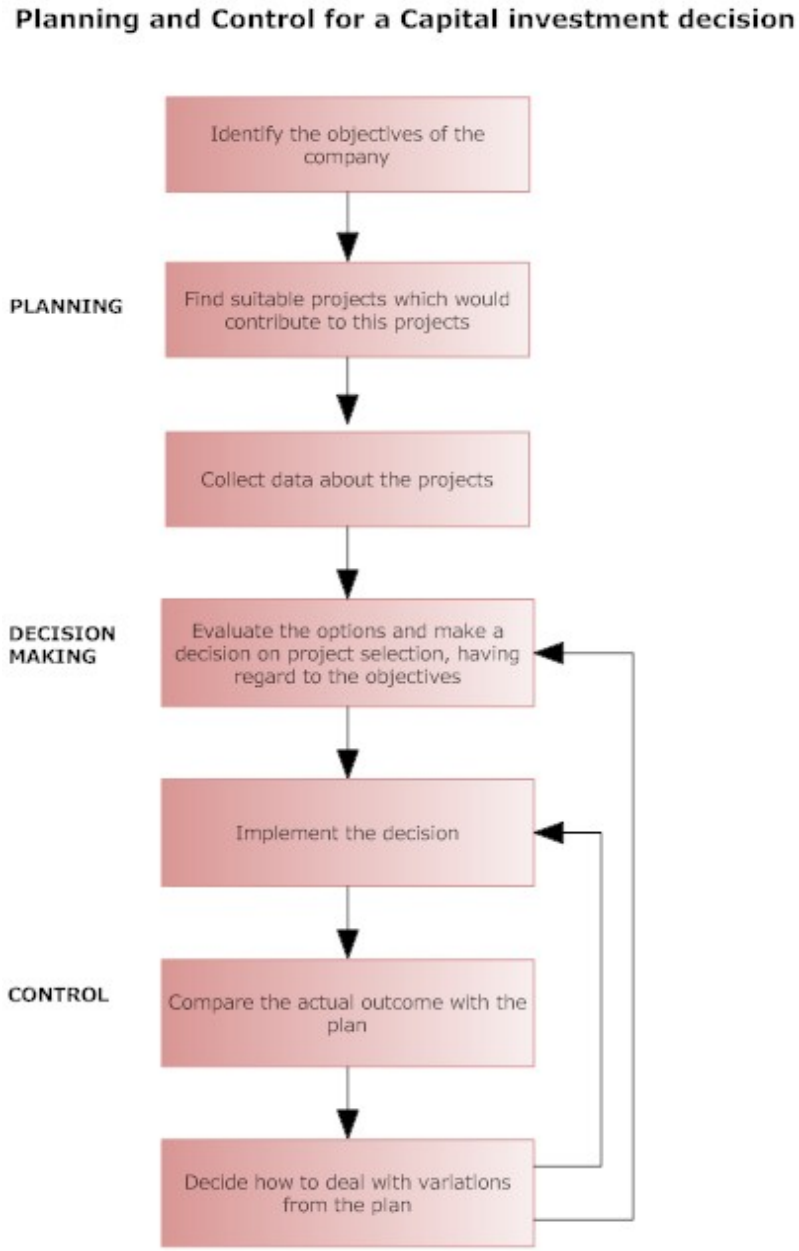
Rong-Jie, Cheng (2008) Debt financing and tunneling of Chinese listed firms. *China-USA Business Review,* 7(2:56), p. 29-36.

Slavec, Alenka and Prodan, Igor (2012) The influence of entrepreneur's characteristics on small manufacturing firm debt financing. *Journal of East European Management Studies*, 01, p. 104-130.

Vintila, Nicoleta (2005) Real options in capital budgeting. Pricing the option to delay and the option to abandon a project. *Journal of Applied Corporate Finance*, 17(3), p. 47-58.

Yan, An (2006) Leasing and Debt Financing: substitutes or complements? *Journal of Financial and Quantitative Analysis,* 41(3), p. 709-731.

APPENDIX A
The process of Capital Investment Decision



(Source: Weetman, Pauline (2010) *Management Accounting*. Second Edition, Pearson Publishing, England, p. 266)