Capital Budgeting and Entrepreneurial Organizations: A Survey of Hospital Practices

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Efficiency and effectiveness for all entrepreneurial firms requires that limited resources be put to their best use. Thus the acquisition of long-term assets is an important decision for any entrepreneurial firm. For hospitals, which have become entrepreneurial to survive in today's health care environment, long-term asset investment decisions have become critical to their survival. The objective of this study is to increase health care organizations' awareness of the

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important considerations in selecting and monitoring long-term investments. Our findings from a small sample of American hospitals indicate that payback method is the primary criterion for evaluating hospital's long-term investment projects. Also of note is the high proportion of hospitals whose approaches seem to incorrectly deal with the effects of inflation. On the other hand, the sample hospitals seem to be aware of the need to consider both tangible and intangible costs and benefits. They also exhibit awareness of the importance of follow up in the form of post audits.

Introduction

Over the last two decades, health care costs have escalated dramatically at the same time that governmental and insurance agencies have become more stringent in their funding and reimbursement to health care organizations. The implementation of managed care and HMOs has added further pressures on health care organizations to provide cost-effective, yet high quality, health services. In response, health care organizations have undertaken such initiatives as patient case costing, utilization review, organizational restructuring, partnering with other health care organizations on procurement, outsourcing of non-essential services, and process reengineering (Chan and Lynn 1998).

In addition hospitals have become more entrepreneurial (Herzlinger, 1994). Responding to consumer demands and pressure from insurance organizations, new health care organizations and cost-cutting measures have been instituted. Hospital executives have discovered that those who become entrepreneurs, who have the vision and also the ability to get projects completed, will be rewarded (Kazemek and Grauman, 1989). In addition, entrepreneurs see hospitals and the health care industry as an industry that has plenty of opportunities. Sharpe (1998), shows how profits have been made in what once were nonprofit hospitals. New health care organizations have been set up by outsiders (Frey, 1989), Doctors (Johnson, 1992), and nurses (Manthey, 1999). Studies have examined the entrepreneurial attitudes in the health care industry. McCline, Bhat, and Baj (2000) use the "entrepreneurial opportunity recognition measure" to classify the change-charged health care industry into entrepreneurial and non-entrepreneurial segments.

An important aspect of increasing efficiency and effectiveness for all entrepreneurial organizations is ensuring that the limited resources available are put to their best use. In this regard, an area that can significantly impact a health care organization's operations is how it allocates resources to alternate long-term projects (i.e., capital budgeting). There have been many writings on how to do capital budgeting. In almost all basic finance and accounting textbooks, there are separate chapters about capital budgeting. In order to help health administrators do a better job, we want to see if practitioners have adopted the better practices and if they are aware of the pitfalls of some of these approaches. The objective of this paper is to delve into hospital management's current capital budgeting practices and, more important, the extent to which such practices are subject to the pitfalls of discounted cash flow analysis.

The remainder of the paper is organized as follows. A description and illustration of the common pitfalls of discounted cash flow analysis is followed by the findings of a survey on the use of capital budgeting tools by hospital management. The final section contains remarks and suggestions for practice.

I. Pitfalls of Discounted Cash Flow Analysis

Discounted cash flow (DCF) analysis such as the net present value (NPV) method and the internal rate of return (IRR) method are widely used in practice, and detailed instructions on its application are readily available (Brigham, Gapenski, and Ehrhandt 1999; Horngren, Foster, Datar, and Teall 1997). Profitability index (PI) and breakeven time (BET) are other DCF methods that have been used in evaluating long-term investments.

Despite the conceptual soundness of DCF analysis, its use in practice is anything but flawless. Management often compares proposed projects to the status quo, assuming that future cash flows will continue at current levels if no action is taken (Seed, III and Wagner 1987, Kaplan and Atkinson 1998). Such an approach is unlikely to be tenable in the current environment of intense competition and rapid technological changes. There also tends to be an over-emphasis on the quantifiable aspects of projects as compared to intangible measures of benefits and costs (Seed, III and Wagner 1987, Kaplan and Atkinson 1998). Other reportedly common pitfalls in DCF applications include arbitrary cutoffs on the timing and amount of cash flows, unrealistic discount rates or required rates of return, inappropriate assumptions about reinvestment rates, misrepresentation/omission of inflation effects, and inappropriate risk adjustments (Chow and McNamee 1991). The nature of each of these pitfalls, and how they may induce suboptimal project selections, will be described in the following section.

II. Using the Status Quo as the Baseline for Evaluating New Investments

When evaluating a new investment proposal, the manager, either consciously or subconsciously, is comparing the proposal with some alternative investments. Unless alternative investments are being proposed at the same time, the present condition or status quo provides a convenient and seemingly reasonable baseline for evaluating a new investment proposal.

The potential problem with using the status quo as the baseline is that it may overlook the impact of inaction. For technology-intensive operations in particular, the decision to forego investment in innovative technology might result in a deterioration in the current competitive position (Boer 1998). This ultimately might lead to drops in profit margin and market share. Hence the assumption that nothing will be affected by deciding not to adopt a new investment project is not realistic.

Consider the case of hospital management evaluating the purchase of a new X-ray machine for the Diagnostic Imaging Department. The existing X-ray machine is functioning properly and could be used for several more years. In evaluating the new X-ray machine against the existing one, hospital management may simply assume that the annual operating revenues and costs (cash flows) of the existing machine will remain the same over its remaining life. Exhibit 1(a) illustrates that with this assumption, the net advantage from the new machine, as represented by the distance between the two streams of cash flows, is relatively small. As a result, it is likely that the investment proposal will be rejected.

But the net cash flows from the existing X-ray machine are unlikely to remain constant over its remaining life. As the existing machine ages, more maintenance and repair will be needed. Also, the quality of the X-rays produced may deteriorate, necessitating some duplicate X-rays to be taken and perhaps even adversely affecting the quality of diagnoses. Furthermore, duplicate X-rays take up productive capacity that can otherwise be used for new patients, and the potential inconvenience and quality impacts of the aging machine (especially given the availability of superior new machines, perhaps at other hospitals) may adversely affect demand for its services. The combination of these impacts on future revenues and costs implies that over time, the net cash flows from the existing machine will deteriorate, thus increasing the net benefit from the new machine (see Exhibit 1(b)). Hence, simply assuming that the status quo will remain will bias decisions against (desirable) new investments.

III. Imposing Arbitrary Cutoff on Timing of Cash Flows

Sometimes, managers reportedly limit the number of future periods that they consider in evaluating projects. Such cutoffs have the purported advantage of limiting the organization's risk exposure. But they also can introduce a bias. Consider the example in Exhibit 2, where the project has an equal amount of cash flows, $20,000, in the first five years of its life, and then $30,000 in each of the next two years. When DCF analysis is limited to five years, both NPV and IRR indicate that the project should be rejected, as it has a negative NPV and its IRR is less than the required rate of return of 6%. But when all seven years are considered, the project becomes quite favorable with NPV and IRR of $40,348 and 17.26%, respectively. Thus, imposing an arbitrary cutoff period (or maximum payback period) on the cash flows of a long-term investment project can introduce a bias against projects that have large amounts of cash flows in their later years, or that have sustained cash flows over a long time period.

IV. Using Unrealistic Discount Rates or Required Rates of Return

When applying the NPV method, a discount rate has to be specified for determining the present value of future cash flows. Theoretically, this discount rate should be the expected return from alternate uses of the resources, and can be proxied by the organization's weighted cost of capital (also refereed to as the weighted average cost of capital. or WACC) The WACC is the after-tax cost of debt times its weight (debt divided by total capital) plus the cost of equity times the weight of equity (equity divided by total capital). The weighted cost of capital of a company depends on the nature of its business and its risk, which is affected by its capital structure. Companies with relatively high debt-to-equity ratios have more debt in their capital structures, and tend to be more risky because they have proportionally higher fixed commitments in the form of interest obligations. Accordingly, their costs of debt and equity are higher than for companies that have more equity in their capital structure. Our illustration in Exhibit 3 shows that the weighted cost of capital for the high-risk company, using required rates of return, which closely resemble those in the market, is 8.0%. Overall, the range of weighted cost of capital for low-risk to high-risk companies is from about 5% to 8%. Yet discount rates of 7% to 12% are commonly used in practice.[1] As Cheung (1999) notes, calculating the cost of capital for entrepreneurs can be difficult. He recommends a probability-based approach to calculating the cost of capital.

While calculating a project's IRR does not require a discount rate to be specified, in choosing projects a hurdle rate still is needed to determine which will be accepted. With an unrealistically high hurdle rate, it is likely that some projects that can add value to the organization still will be rejected. Projects with higher risk than the average project should have a higher discount or hurdle rate than the weighted cost of capital, while those with less risk than the average project should use a lower hurdle or discount rate.

Consider the decision by the manager of the Telecommunication Department of a hospital. He is evaluating whether to switch the paging system for medical professionals to a new supplier. The switch will require purchase of pagers and other hardware at a total cost of

1 Based on a survey conducted for this paper, the range of discount rates used in evaluating capital investment initiatives, as quoted by respondents whose hospitals use DCF analysis, is 7% to 12%.

$75,000, and the expected savings are $20,000 per year over the next five years. Using a discount rate of 11%, the NPV of the switch is -$1,082.06 (NPV = -$75,000 + $20,000 x 3.6959) which implies that the new supplier's proposal should be rejected. But if a more realistic discount rate is used, such as 8%, the NPV of the switch would be positive $4,854.20 (NPV = -$75,000 + $20,000 x 3.9927). Similarly, the IRR for the new supplier's proposal is 10.425%, which will be rejected when evaluated against a hurdle rate of 11% and accepted when an 8% hurdle rate is used. Thus, by using an excessively high discount rate/hurdle rate, hospital management may inadvertently reject many projects that can bring additional value to the hospital.

V. Unrealistic Assumptions about Reinvestment Rates

Under the NPV method, cash flows that occur during the project's life are assumed to be reinvested at the discount rate specified for the NPV calculation. This is a reasonable approach considering that the discount rate is supposed to represent the returns available from alternate uses of the funds. In contrast, the IRR method assumes a reinvestment rate equal to the computed IRR. The result is that the IRR method tends to be biased in favor of short-term projects and those that have relatively more of their cash inflows in early years. To illustrate, hospital management is evaluating two mutually exclusive investment projects, A and B, where project A's cash flows are mostly earlier than those of project B. Assuming that the weighted cost of capital to the hospital is 6%, the NPV method ranks project B higher than project A, whereas the IRR method produces a tie (see Exhibit 4). Since both of these DCF methods take into account the time pattern of cash flows and the time value of money, the question arises why they would yield different rankings for the two alternatives.

The answer lies in the reinvestment rate implicit in the IRR method. To see this, assume that the cash inflows from both projects are reinvested, and we will examine the total amounts of cash on hand at the termination of these projects. As shown in Exhibit 4, at a reinvestment rate of 10% (IRR), the cash inflows from both projects will grow to the same amount of $124,212 at the end of the five-year period. In this case, the earlier cash flows from project A ($20,000 and $30,000) are being reinvested at 10% for a longer period of time. But when a 6% reinvestment rate is used (the hospital's weighted cost of capital), the future values of the cash inflows are $113,980 and $119,028 for projects A and B, respectively. In this case, the superiority of project B is consistent with the rankings from the NPV method.

Given the disparity between the IRR and NPV rankings, it is important to examine which method makes a more realistic assumption about reinvestment opportunities. In doing so, it is reasonable to assume that a hospital would first adopt the most profitable project, and go down the list till the available funds are all committed. Under this scenario, the cash inflows from the first selected project can only be invested in the next best project, with a return below its own. This shows that the IRR method's assumed reinvestment rate will tend to be too high, in turn introducing a bias against projects with more of their cash flows further out in the future.

In recent years, a new measure called modified internal rate of return (MIRR)[2], which explicitly considers reinvestment rates, has been advocated by academics. However, it has not been popular even for the most sophisticated practitioners. According to Burns & Walker (1997), only about 3% of Fortune 500 companies used MIRR, whereas 84% used IRR.

[2] For a complete description of MIRR, see David M. Shull, "Interpreting Rates of Return: A Modified Rate of Return Approach." Financial Practice and Education, Fall 1993. 67-71.

VI. Accounting for Inflation Effects

An organization's weighted cost of capital reflects the return that the providers of capital require from the organization. As such, it already includes an allowance for expected inflation. When using the weighted cost of capital to evaluate projects, the cash flows need to be in nominal terms rather than being inflation-adjusted. Otherwise, the effects of inflation would be double counted (once through increasing the weighted cost of capital, and again via using cash flows in real terms).

The pitfall is that some managers may not adjust predicted future cash flows for expected inflation, thus inadvertently causing the effects of inflation to be double-counted. In the earlier example on the purchase of the new X-ray machine, hospital management may simply assume some steady level of cash flows for both the existing and new machines over the time horizon being considered, or add some annual increment to reflect increase in volume. By failing to consider the effects of inflation on the cost of supplies, salaries of technicians, prices charged for services, etc., this introduces an unintended bias that increases with the life of a long-term project. This bias comes about because the more distant a future cash flow, the greater the compounding effect caused by inflation (and thus, the greater amount ignored from failing to factor in inflation effects). Consider the case of hospital management evaluating the purchase of a testing machine at a cost of $220,000 (see Exhibit 5). Savings of $50,000 per year are expected over the next five years. The impact of inflation, even at an inflation rate of 2%, is $1,000 in the first year ($50,000 x .02) and is compounded to $5,204 in the fifth year ($50,000 x $((1.02)^5 – 1.0)$). In other words, the correct amounts of nominal cash savings to incorporate in the analysis should be $51,000 in the first year, growing to $55,204 in the fifth year. As illustrated in Exhibit 5, ignoring the inflation effect (in conjunction with using a weighted cost of capital which already allows for expected inflation) could lead to rejection of the project (NPV = -$9,382 and IRR = 4.43%), when a correct analysis would indicate acceptance (the inflation-adjusted NPV is positive ($3,082) and the project's IRR (6.51%) is greater than the hurdle rate of 6%.) Thus, nominal rates should be used in discounting nominal (inflation-adjusted) cash flows whereas cash flows of constant purchasing power should be discounted by the organization's real cost of capital.

VII. Excessive Risk Adjustments

Adjusting the discount rate or hurdle rate is a common approach to accounting for the risks of capital investment projects when applying DCF analysis. Similar to the adjustments for inflation, this approach can introduce an unintended bias in project selection. Consider Exhibit 6, which shows that the present value factor with risk adjustment (discount rate = 6% + 1% = 7%) decreases geometrically with the timing of the cash flows, i.e., the more distant the cash flows, the smaller the present value factor. As a result, the larger the risk premium added to the discount rate, the more future cash flows are discounted in obtaining a project's NPV. To avoid introducing an inadvertent bias against projects with longer time horizons, and/or with more of their net cash inflows in later years, it is important not to overly inflate the discount rate as an allowance for risk.

A further aspect of managing long term investments is monitoring to be sure that the expected costs and benefits are realized, and to respond to unexpected future changes. Such post-expenditure audits also are critical to assessing "the efficiency and effectiveness of a capital budgeting decision and of the management of its implementation" (IMAP #6 1994, iii). Thus, post-expenditure audits are as important as a correct application of DCF analysis to capital budgeting decisions.

VIII. Survey of Current Practice

To gain some insights into current practice and its susceptibility to the pitfalls discussed in the preceding section, we conducted a survey of American hospitals[3] on the topic. The nature and findings of the survey are reported below.

Sample

A questionnaire was mailed in May 1999 to a random sample of 500 U.S. hospitals. Twenty-four completed questionnaires were returned. Respondents include CEOs, Presidents, CFOs, and controllers of the hospitals who, on average, have 4.2 years of tenure in their respective positions. Due to the relatively small sample, findings reported in the following sections could not be generalized, but they do provide some interesting glimpses into the current capital budgeting practices of this particular set of health care organizations.

Findings

About 20% of the respondents indicated that their hospitals do not use any capital budgeting techniques to evaluate long-term investments. On the other hand, close to 80% of the respondents indicated that some kind of capital budgeting techniques was used for making investment decisions in both medical and non-medical equipment and facilities.

IX. Preference of Payback Period to DCF Analysis

Even though it is conceptually superior to account for the time value of money in capital budgeting techniques, payback period dominates over DCF analysis (NPV, IRR and PI) among our respondents. Among respondents who do use some capital budgeting technique to evaluate long term projects, over half used payback period as the primary evaluation criterion for their decisions and about 90% of all payback period users do not impose a specific cutoff period for rejecting investment proposals. Breakeven time, payback period, IRR and NPV are the most frequently cited secondary criteria for evaluating long-term investment projects.

The preceding findings stand in sharp contrast to the survey results of the Fortune 500 companies, but is similar to results of small business firms. In Burns & Walker (1997), 84% of the Fortune 500 companies use IRR, while 73% use NPV. 70.7% give either IRR or NPV method priority when there is conflict in preference using multiple methods. Only 7.9% give payback method priority in cases of conflict among methods. In contrast, Block's (1997) survey of small business firms[4] found that, similar to this current study, the payback method was the preferred method by 42.7% of the firms and DCF was used by only 27.6% of the respondents.

The dominance of a conceptually inferior capital budgeting technique (payback) in hospitals may suggest that hospital management still prefers simplicity and ease of use in its application of capital budgeting techniques. Moreover, given the lack of access to the public markets for funding and increasing pressure for mergers in this decade, hospital management might be especially concerned about the recovery of its initial investment. A method such as payback, which can be a quick indicator about the risk and liquidity of the investment projects, can be quite useful under such circumstances. But such considerations do not obviate the need to

[3] A copy of the questionnaire can be obtained from the authors.

[4] Block (1997) studied small business firms with sales of less than $5 million dollars and employees fewer than 1,000.

select optimal uses for the available funds, and our finding of the dominance of payback suggests room for improvement.

X. Susceptibility to Pitfalls of DCF Analysis

Three quarters of our respondents indicated that their hospitals did evaluate investment projects against the status quo, with the remainder not using any explicit baseline for comparison. For those who apply DCF analysis, about half do not impose a cutoff period in estimating future cash flows. For the other half, a cutoff period of five years is the mode. The five-year cutoff suggests that the planning horizon for some hospitals is not really long-term and some profitable projects with longer time horizons may have been erroneously rejected.

Relating to the discount rate used in DCF analysis, the most frequently cited one by our respondents is 8%, with a range of 7% to 12%. Based on our earlier discussion, this range of rates is likely to be higher than most hospitals' weighted cost of capital. Also, the majority (about 70%) of our respondents do not adjust the discount rate for inflation. That is, they use a nominal rather than inflation-adjusted, real cost of capital. At the same time, more than half of the respondents do not make any adjustments to the cash flows for inflation. In conjunction with the use of a nominal discount rate, this suggests a high probability of double-counting the effects of inflation, once charging for expected inflation through its (perhaps subconscious) incorporation into the nominal discount rate, and yet again by failing to adjust the future nominal cash flows for the expected effects of inflation.

Relating to the treatment of quantitative vs. intangible factors, our respondents indicated that the extent to which their hospitals explicitly consider intangible costs and benefits in evaluating investment projects is 6.37 and 6.58, respectively, on a 9-point scale where the greater the number (average response), the greater the extent. The respondents also indicated that an equal weight was typically given to intangible costs and benefits versus those that are more readily quantifiable. Examples of intangible costs given by the respondents include reduced employee morale, reduced job satisfaction, poor employee relations, poor physician relations, poor community relations, and political consequences. Examples of intangible benefits include improved customer satisfaction, improved quality of care, improved employee relations, improved physician relations, improved community relations and health, and better competitive positioning. This attention to intangible costs and benefits reflects favorably on our sample of hospitals. Finally, and again reflecting favorably on our sample, only 15% of our respondents indicated that their hospitals did not conduct any post-expenditure audits on approved long-term investment projects.

XI. Concluding Remarks and Suggestions for Practice

The correct application of capital budgeting techniques can enhance a hospital's effectiveness in allocating resources in the current environment of escalating costs, increased competition and increasingly stringent reimbursements. Our findings from a small sample of American hospitals suggest some unevenness in these hospitals' use of capital budgeting techniques. Of greatest concern probably is the primacy placed on payback, which does not explicitly take into account the entire profitability of the investment and the time value of money, in these hospitals' capital budgeting decision processes. Also of note is the high proportion of hospitals whose approaches seem to incorrectly deal with the effects of inflation, and the use of discount rates that seem to be excessive. On the other hand, the sample hospitals seem to be aware of the need to consider both tangible and intangible costs and benefits. They also exhibit awareness of the importance of follow up in the form of post audits.

Due to the small number of hospitals that participated in our survey, the results reported here should not be generalized to other health care organizations. However, in discussing the common pitfalls of capital budgeting techniques, and relating this discussion to a survey of practice, we hope that this study has served, if only in a limited way, to increase health care organization of the important considerations in selecting and monitoring long term investments.

Finally, the results of this study can be used to help focus the training and education programs for healthcare administrators. In making capital investment decisions, managers need to be aware of the strength and weaknesses of the tools that they use to solve the problem. Hence, the underlying assumptions and limitations of different capital budgeting methods need to be reinforced. The reason why the discounted cash flows method is considered as a preferred approach and some of the common pitfalls in capital budgeting, as described in this paper, have to be highlighted.

Exhibit 1(a)

Cash Outflows of Existing and New X-Ray Machines:
Extrapolating the Status Quo

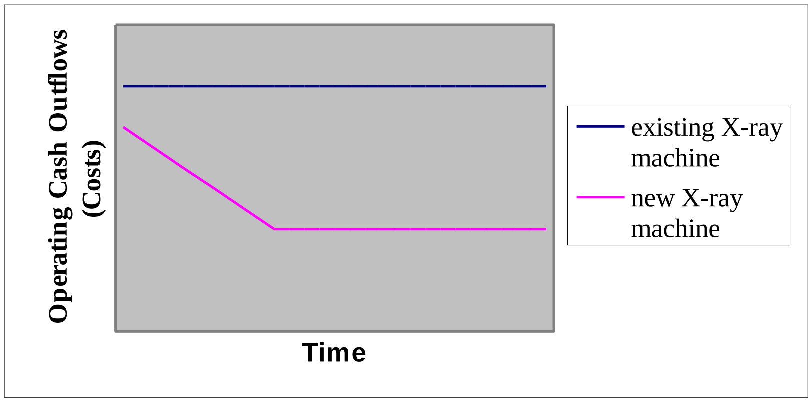

Exhibit 1(b)

**Cash Outflows of Existing and New X-Ray Machines:
Recognizing Deterioration of Existing Machine**

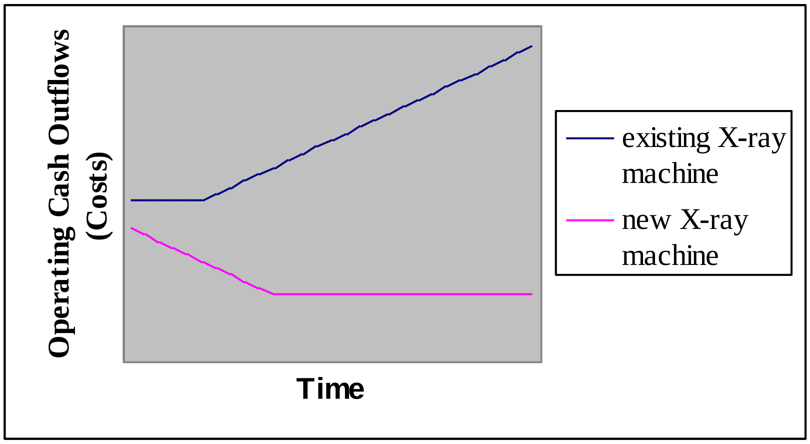

Exhibit 2

Effects of Ignoring Cash Flows in Later Years of Project

	Predicted Cash Flows							
Year	0	1	2	3	4	5	6	7
	-$85,000	$20,000	$20,000	$20,000	$20,000	$20,000	$30,000	$30,000

(a) Five years of cash flows included in DCF analysis

Net present value, using a 6% discount rate
= -$85,000 + $20,000 x 4.212 = -$ 753

Internal rate of return = 5.67%

(b) Seven years of cash flows included in DCF analysis

Net present value, using a 6% discount rate
= -$85,000 + $20,000 x 4.212 + $30,000 x 1.370 = $40,348

Internal rate of return = 17.26%

Exhibit 3

Range of Weighted Cost of Capital for Low-Risk to High-Risk Companies

	Low-Risk	Moderate	High-Risk
After-tax Cost of Debt	3.0%	4.5%	6.0%
Cost of Equity	6.0%	9.0%	12.0%
Debt-to-Equity Ratio	1:2	1:1	2:1
Weighted Cost of Capital	5.0%	6.75%	8.0%

Weighted Cost of Capital:

Low-Risk: (3.0% x 1 + 6.0% x 2) / 3 = 5.00%

Moderate: (4.5% x 1 + 9.0% x 1) / 2 = 6.75%

High-Risk: (6.0% x 2 + 12.0% x 1) / 3 = 8.00%

Exhibit 4

Effects of Assumed Reinvestment Rates
for the Net Present Value Method and the Internal Rate of Return Method

	Predicted Cash Flows					
Year	0	1	2	3	4	5
Project A	-$77,126	$20,000	$30,000	$0	$50,000	$0
Project B	-$77,126	$0	$0	$60,000	$0	$51,612

Net present value, using a 6% discount rate:

Project A = $ 8,047

Project B = $11,819

Internal rate of return:

Project A = 10%

Project B = 10%

Assuming cash inflows are reinvested at the discount rate of 6%, the future value of:

Project A = $20,000 x 1.06^4 + $30,000 x 1.06^3 + $50,000 x 1.06^1 = $113,980

Project B = $60,000 x 1.06^2 + $51,612 = $119,028

Assuming cash inflows are reinvested at the internal rate of return of 10%, the future value of:

Project A = $20,000 x 1.10^4 + $30,000 x 1.10^3 + $50,000 x 1.10^1 = $124,212

Project B = $60,000 x 1.10^2 + $51,612 = $124,212

Exhibit 5

Impact of Ignoring Inflation Effect in Predicting Future Cash Flows

	Predicted Cash Flows					
Year	0	1	2	3	4	5
Real Cash Flows	-$220,000	$50,000	$50,000	$50,000	$50,000	$50,000
Inflation Factor	1.000	1.020	1.040	1.061	1.082	1.104
Inflation-Adjusted Cash Flows	-$220,000	$51,000	$52,020	$53,060	$54,122	$55,204

Based on real cash flows:

Net present value, using a 6% discount rate
= -$220,000 + $50,000 x 4.212 = -$9,382

Internal rate of return = 4.43%

Based on inflation adjusted cash flows, with an annual inflation rate of 2%:

Net present value, using a 6% discount rate
= -$220,000 + $51,000 x 0.943 + $52,020 x 0.890 + $53,060 x 0.840
+$54,122 x 0.792 + $55,204 x 0.747 = $3,082

Internal rate of return = 6.51%

Exhibit 6

Geometric Effect of Risk Adjustment on Present Value Factor

	Present Value (PV) Factor				
Year	1	2	3	4	5
Without Risk Premium, 6%	0.943	0.890	0.840	0.792	0.747
With Risk Premium, 7%	0.935	0.873	0.816	0.763	0.713
Difference	0.008	0.017	0.024	0.029	0.034
Difference as a % of PV Factor Without Risk Premium	0.9%	1.9%	2.8%	3.7%	4.6%

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