

Capital Budgeting Practices of Taiwanese Firms

Kamal Haddad, College of Business, San Diego State University, San Diego, CA, USA
William Sterk, College of Business, San Diego State University, San Diego, CA, USA
Anne Wu, National Chengchi University, Wenshan, Taipei, Taiwan, R.O.C.

ABSTRACT

The capital budgeting practices of U.S. firms have been studied extensively. There have been fewer studies of capital budgeting practices in the Asia-Pacific region. Generally, the studies include results for firms in Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, Australia, and China. This paper extends these studies by surveying executives of Taiwanese firms regarding their firms' capital budgeting practices. The survey is important and interesting given Taiwan's current and growing importance in the world economy.

INTRODUCTION

A number of authors have surveyed firms concerning their use of capital budgeting techniques. The practices of U.S. firms have been studied extensively. The survey results indicate that the sophistication of analytical techniques used by U.S. executives have increased over time. Specifically, they have shifted from non-discounted cash flow techniques to the use of the theoretically more correct discounted cash flow techniques. The Internal Rate of Return technique seems to be the preferred method. See for example Klammer [11], Gitman and Forrester [4], Gitman and Maxwell [5], Trahan and Gitman [14], Bierman [1], Bruner, et al [2], and Graham and Harvey [8]. However, the use of NPV has increased over time. Graham and Harvey report that almost 75 % of U.S. and Canadian firms always or almost always use NPV, whereas slightly more than 75 % of the firms always or almost always use the IRR method. They also find that small firms are more likely to use the payback criterion.

There have been fewer studies of capital budgeting practices in the Asia-Pacific region. These include studies of firms in Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, Australia, and China. See Han [9], Wong, et al [15], Kester, et al [10], and Chan, et al [3]. The survey findings have not been consistent across these countries. Firms in some countries prefer non-discounting methods while firms in other countries prefer discounting methods. Firms in some of the countries consider discounted and non-discounted cash flow techniques to be equally important. This paper extends these previous studies by surveying executives of Taiwanese firms regarding their capital budgeting practices. The survey is important and interesting given Taiwan's current and growing importance in the world economy.

RESPONDENT CHARACTERISTICS

Twenty-five Taiwanese companies were contacted and asked to fill out a survey concerning their firm's capital budgeting practices. The respondents were most often high level managers in the financial area and included CFO's and controllers of the firm. These managers had been employed on average about seven and one-half years with the current company and had been in their current position about four and one half years on average. The survey covered a broad range of industries, however there were a larger percentage of firms in the electronics/communication (22%), service (22%), and non-bank financial (17 %) industries.

CAPTIAL BUDGETING PRACTICES

Capital Budgeting Process

Almost fifty percent of the firms felt that project definition and cash flow estimation was the most difficult part of the capital budgeting process and over half of the firms felt that financial analysis and project selection was the most critical part. Gitman and Maxwell [3] found that project definition and cash flow estimation was considered to be the most difficult *and* most critical part of the capital budgeting process in their survey of U.S. firms. Chan, et al [3] reported similar findings to Gitman and Maxwell for mainland Chinese firms.

The managers were also asked how often the performance of an accepted project was reviewed. The most popular response was quarterly or semiannually and very few firms (4%) indicated that they seldom reviewed project performance. This contrasts to the Gitman and Mercurio [6] and Gitman and Vandenberg [7] studies for U.S. firms that indicated that the percent that seldom reviewed project performance was larger and increased from 12 to 22 percent between 1980 and 1997. For those U.S. firms that did regularly review project performance, the most popular frequency of review was annually.

Capital Budgeting Techniques Used

Early capital budgeting surveys asked firms which capital budgeting methods they considered their primary and secondary methods. Other studies asked the firms to indicate which methods they considered more important. In an early study, Gitman and Maxwell [5] reported that almost 50 % of U.S. firms were using IRR as their primary method and only about 24 % were using NPV as their primary method. The payback method was the most popular secondary method. However, Gitman & Maxwell reported that the use of NPV was increasing at the time of their survey and about 80 % of the firms were at least using a discounting method as their primary method. (As compared to an original study of U.S. firms by Klammer [11] who found that payback and accounting rate of return were originally the most popular primary methods for U.S. firms.)

Shifting to similar studies of Asia-Pacific firms, Wong, et al [15] in an early 1987 study found payback was the most popular primary method in Malaysia, payback and accounting rate of return were equally important in Hong Kong, and payback, IRR, and accounting rate of return were equally important in Singapore. More recently, Kester, et al [10] reported in 1999 that executives of firms in Australia, Indonesia, and the Philippines, appeared to prefer discounting techniques to evaluate projects, but firms in Malaysia, and Singapore considered discounting techniques and payback to be about equally important. Firms in Hong Kong preferred the payback method for evaluating projects. Chan, et al [3] reported in a 2005 study of mainland Chinese firms that NPV was the most popular primary method, and payback was the most popular secondary method. This contrasts with U.S. firms where IRR seems to be the most popular technique.

In this study we asked the firms to score how often they used the different capital budgeting project evaluation techniques on a scale of 0 to 4 with 0 meaning never and 4 meaning always. A response of 3 or 4 was classified as "always or almost always." This question was the same question as the one posed by Graham and Harvey [8] in their relatively recent study of U.S. firms. Results are presented in Table 1. As can be seen, the inferior payback method is used more often, and the NPV technique is always or almost always used by a relatively small percentage of firms. The NPV percentage is much lower than the 75 % reported for U.S. and Canadian firms by Graham & Harvey. Although many of the firms are using the other capital budgeting techniques, the percentages are not as large as found by Graham & Harvey for IRR (76 %) and payback (57 %). However, our percentages are higher than Graham & Harvey's percentages for ARR (20 %) and PI (12 %). These results also do not compare favorably to the same question in the Chan, et al [3] study for mainland Chinese firms. Their results indicated that over 92 % of those firms used NPV always or almost always whereas the corresponding percentage for payback was only about 18 %.

Table 1: Capital Budgeting Techniques – Frequency of Use

	% Always or Almost Always	Mean
Payback Period	52.17	2.35
Internal Rate of Return (IRR)	47.83	2.09
Net Present Value (NPV)	30.43	1.83
Accounting Rate of Return (ARR) (or Book Rate of Return on Assets)	26.09	1.52
Discounted Payback Period	21.74	1.35
Profitability Index (PI)	17.39	1.04
Modified Internal Rate of Return (MIRR)	13.04	0.83

Project Risk

Questions were also asked concerning how a project's risk was assessed. These results are shown in Table 2 for a scale running between 1 and 5 with 1 being unimportant, 4 being important, and 5 being very important. Taiwanese firms consider the size of the project to be most important in judging a project's risk followed closely by the project's payback period. Chan, et al [3] found a similar relationship for Chinese firms as did Gitman and Mercurio [6] in their early study of U.S. firms. However, more recently Gitman and Vandenberg [7] found that the second most important factor was the relationship between the project's return and returns on the firm's other projects. This was followed closely by the project's payback period for U.S. firms.

Table 2: Importance of Factors in Assessing Project Risk

	% Important or Very Important	Mean
The size of the project	78.26	4.26
The project's payback period	78.26	4.13
The relationship between the project's returns and the returns of the firm's other projects	34.78	3.17
The track record of the division presenting the project	21.74	2.65
The track record of the individual presenting the project	21.74	2.70

The managers were also asked how often they used sensitivity analysis or simulation when deciding which projects to pursue. Approximately 22 % always or almost always used sensitivity analysis and about 9 % used simulation. This compares to 35 % and 14 % using these techniques for U.S. firms in the Gitman and Vandenberg [7] study and 52 % and 14 % respectively for the Graham and Harvey [8] study. For Asia-Pacific firms, Kester, et al [10] found that for every country they studied, a very high percentage of firms used sensitivity analysis (79 % or more in every country) whereas a small percentage used simulation. (The largest percentage was for Australia at 38 %.) In their sample of Chinese firms, Chan, et al [3] found that 63 % of the sample firms indicated that they always or almost always used sensitivity analysis, whereas 50 % always or almost always used simulation.

Capital Rationing

Previous U.S. studies have found that many firms ration capital at least part of the time. For example, Gitman and Vandenberg [7] reported that their respondents were confronted with capital rationing for 40 % of the time. However, Kester, et al [10] reported that four out of the six Asia-Pacific firms that they studied did not practice capital rationing. As can be seen in Table 3, approximately 35 % of the Taiwanese firms indicated that they had more acceptable projects than available funds 50 % or more of the time. This compares with about 54 % of the firms in the Chan, et al [3] study of Chinese firms.

Table 3: % of Time Firm Has More Acceptable Projects than Funds Available

	Percent
70%	8.7
60%	8.7
50%	17.39
40%	13.04
30%	13.04
20%	8.7
10%	13.04
0%	4.35
Respondents not answering	13.04
Total	100.0

The respondents were also asked what they considered their major cause of capital rationing to be. As can be seen in Table 4, the most popular reason given was the need to maintain a target earnings per share or price-earnings ratio although only 30 % of the respondents gave this as a reason. This contrasts with previous studies where the most frequent reason given generally has been a debt limit imposed by the firm's own management. About 60 % and 82 % of the firms gave this as the reason in the Gitman and Vandenberg [7] and Mukherjee and Hingorani [12,13] studies of U.S. firms respectively. This was also by far the most frequent reason given in the Chan, et al [3] study of Chinese firms.

Table 4: Reason for Capital Rationing

	Percent
Debt limit imposed by <i>an outside agreement</i>	17.39
Debt limit imposed by <i>management of another firm or organization</i>	4.35
Debt limit imposed by the firm's <i>own management</i>	21.74
Restrictive policy imposed on the payment of cash dividends	4.35
The need to maintain a target earnings per share or price-earnings ratio	30.43
Other	8.7
Respondents not answering the question	13.04
Total	100

SUMMARY AND CONCLUSIONS

In this study of Taiwanese firms, we found that the inferior payback method was used more often than discounting methods for evaluating projects. The percentage of firms always or almost always using the payback method was 52 %. This was followed by IRR and NPV although the percentage of firms always or almost always using NPV was relatively small (30%). A study of Hong Kong firms also found that the payback method was preferred. This contrasts with a sample of U.S. and Canadian firms where IRR and NPV were the most popular methods with a much larger percentage (76%) and (75 %) of firms always or almost always using these methods. It also contrasts with Chinese firms where NPV was used more often (almost or almost always by 93 % of firms) and with other Asia-Pacific countries such as Australia, Indonesia, and the Philippines where discounting techniques were preferred.

The Taiwanese firms considered project size most important for measuring project risk followed closely by the project's payback period. This agrees with studies of Chinese and U.S. firms, although the relationship between a project's returns and the returns of the firm's other projects also seems to be important for U.S. firms. A small percentage of Taiwanese firms used sensitivity analysis and an even smaller percentage used simulation for evaluating risk. The most recent study of U.S. firms indicated that a much higher percentage of firms used sensitivity analysis than Taiwanese firms. A much higher percentage of Chinese and other Asia-Pacific countries appear to use sensitivity analysis with simulation again not being used very often except in China.

Studies of firms in other countries indicate that their firms are confronted with rationing capital at least some of the time. This is also true of the Taiwanese firms in this study. Approximately 35 % of the Taiwanese firms indicated that they had more acceptable projects than available funds 50 % or more of the time. This compares with about 54 % of the firms in the Chan, et al [3] study of Chinese firms. However, this contrasts to firms in many other Asia-Pacific countries that apparently do not ration capital. The most popular reason given for rationing capital in this study was to maintain a target earning per share or price-earning ratio. This contrasts with other studies that found that the most important reason was a debt limit imposed by internal management.

REFERENCES

- Bierman, H., "Capital Budgeting in 1992: A Survey", *Financial Management*, 24,(Autumn 1993)
- Bruner, R., Eades, K., Harris, R. & Higgins, R., "Best Practices in Estimating the Cost of Capital: Survey and Synthesis", *Financial Practice and Education*, (Spring/Summer 1998), pp. 13-28.
- Chan, H., Haddad, K. & Sterk, W., "Capital Budgeting Practices of Chinese Firms", *The Journal of Global Business Management*, Vol. 4, No.2 (October 2008)
- Gitman, L. & Forrester, J.R., "A Survey of Capital Budgeting Techniques Used by Major U.S. Firms", *Financial Management*, 6, (Fall 1977), pp. 66-71
- Gitman, L. & Maxwell, C.E., "A Logitudinal Comparison of Capital Budgeting Techniques Used by Major U.S. Firms", *The Journal of Applied Business Research*, (Fall 1987), pp. 41-50
- Gitman, L. & Mercurio, V. A., "Cost of Capital Techniques Used by Major U.S. Firms: Survey and Analysis of Fortune's 1000", *Financial Management*, (Winter 1982), pp. 21-29
- Gitman, L. & Vandenberg, P., "Cost of Capital Techniques Used by Major U.S. Firms: 1997 vs. 1980", *Financial Practice and Education*, Vol. 10, No. 2, (Fall/Winter 2000), pp. 53-68
- Graham, J.R. & Harvey, C.R., "The Theory and Practice of Corporate Finance: Evidence from the Field", *Journal of Financial Economics*, Vol. 60 No. 2-3, (May/June 2001), pp. 187-243
- Han, C.K., "The Sophistication of Capital Budgeting in Malaysian Companies", *Omega*, Vol 14, No. 2, 1986, pp. 175-181
- Kester, G., Chang, R., Enchanis, E., Haikal, S., Isa, M., Skully, M., Tsui, K-C. & Wang, C-J., "Capital Budgeting Practices in the Asia-Pacific Region: Australia, Hong King, Indonesia, Malaysia, Philippines, and Singapore", *Financial Practice and Education*, (Spring/Summer 1999), pp. 25-33
- Klammer, T.P., "Empirical Evidence on the Application of Sophisticated Capital Budgeting Techniques", *Journal of Business*, (July 1972), pp. 387-397
- Mukherjee, T. & Hingorani, V., "Capital Rationing Decisions of Fortune 500 Firms: A Survey", *Financial Practice and Education*, (Summer 1999), pp. 7-15
- Mukherjee, T., Baker, H. & D'Mello, R., "Capital Rationing Decisions of Fortune 500 Firms – Part II", *Financial Practice and Education*, Vol 10., No. 2, (Fall/ Winter 2000), pp. 69-77
- Trahan, E.A. & Gitman, L., "Bridging the Theory-Practice Gap in Corporate Finance: A Survey of Chief Financial Officers", *Quarterly Review of Economics and Finance*, Vol. 35, No. 1, (Spring 1995), pp. 73-87
- Wong, K.A., Farragher, E.J. & Leung, R.K.C., "Capital Investment Practices: A Survey of Large Corporations in Malaysia, Singapore and Hong Kong", *Asia-Pacific Journal of Management*, (January 1987), pp. 112-123.