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CAPITAL BUDGETING AND MANAGEMENT OF INVESTMENT PROCESSES

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Abstract: The goal of our paper is to show how a firm should set its capital budget. Here we discuss how this is done in practice. We give particular attention to how capital budgeting is organized and to the administrative problems that inevitably crop up.

Key words: investment process, projects, decision calls, investment criteria, evaluation, measurement.

Sažetak: PLANIRANJE FINANCIRANJA I UPRAVLJANJE INVESTICIJSKIM PROCESIMA. Cilj je našeg rada prikazati kako bi se u poduzeću trebao izraditi plan financiranja. U radu se razmatra kako se to u praksi čini. Posebna se pažnja pridaje načinu na koji je planiranje financiranja organizirano i neizbježnim administrativnim problemima koji se pri tom javljaju.

Gljučne riječi: investicijski proces, projekti, odlučivanje, investicijski kriteriji, procjena, mjerenje.

INTRODUCTION

The role of the successful capital budgeting system is to do much more than to just make easy red light-green light decisions for individual projects. It has to take into account all the firms long-range planning processes and to figure out what line of business the firm has to concentrate on, and then set out plans for financing production, marketing, research and development, etc.. It must also tie into a procedure for measurement of performance. Otherwise the firm has no way of knowing how its decisions about capital expenditure finally turn out. Measurement of performance occupies in this article. The pitfalls in measuring profitability are serious but not as widely recognized as they should be.

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1. MANAGING INVESTMENT PROCESS AND PROJECT APPROVALS

List of planned investment projects and breakdown of planned investment outlays by plant and division is in fact the preparation of annual capital budget and for most sizable firms the first step in the investment process. In principle, the capital budget should be a list of all positive - net present value (NPV) opportunities open to the firm.²

Most firms let project proposals bubble up from plants for review by division management, and from divisions for review by senior management. The administrative process typically works as follows.

Plant managers identify "interesting" opportunities, analyze them, and decide which ones are really worthwhile. Proposed expenditures for these projects are then submitted to division managers for further review. Some of the proposals by the plants do not "make the cut" at the divisional level. But divisional management may add its own ideas, usually new, larger ventures, like manufacturing a new product, that plant managers could not be expected to initiate. The lists of the divisions are forwarded to the corporate controller, who prunes and consolidates them into a proposed company budget. For very large diversified firms there may be several intermediate review stages.

The resulting budget is a list of proposed new projects for the coming year and of any projects from former years that are incomplete. Supporting information is usually provided on standard forms, supplemented by descriptive memoranda for larger projects. Since approval of the budget rarely confers authority to spend money, backup information is not as detailed at this stage as it is later. Projects below a specified size are typically not even listed separately, but simply included under a blanket approval for a given division or plant. In many companies the budget also contains rough estimates of likely expenditures over a 5-year period.

The suggested budget is then reviewed by senior management and staff specializing in planning and financial analysis. It may be considered initially by a committee that includes the president, treasurer, and controller.

Usually there are negotiations between the firm's senior management and its divisional management, and perhaps there will also be special analyses of major outlays or ventures into new areas, before the budget is submitted to the board for approval. Once approved, the budget generally remains the basis for planning over the ensuing year. In a few firms, however, it is updated each quarter.

Because each proposal in the budget requires subsequent specific authorization, the use of a budget involves some duplication of effort. But it allows information exchange up and down the management hierarchy before attitudes have hardened and personal commitments have been made.

The danger with the whole procedure is loss of flexibility. There is a tendency for most projects to appear for the first time in the annual budget, and in some companies it is difficult to initiate project ideas at any other time of year.

² S., Orsag, *Budžetiranje Kapitala; Procjena investicijskih projekata*, Masmedia, Zagreb, 2002.

1.1. Approving the Projects

The approval of a capital budget rarely confers authority to undertake the expenditures listed in the budget. Most companies stipulate that formal appropriation requests should be prepared for each proposal. The requests are accompanied by more or less elaborate backup, depending on the project's size, novelty, and strategic importance. Also, the type of backup information required depends on project category. Some firms use a fourfold breakdown:

1. Safety or environmental outlays required by law or company policy for pollution-control equipment
2. Maintenance or cost reduction machine replacement
3. Capacity expansion in existing businesses
4. Investment for new products or ventures

Most large companies have manuals providing checklists to make sure that all relevant costs and alternatives are considered. The manual may contain instructions showing how to forecast cash flows and how to compute NPV, internal rate of return, or other measures of project value. Sometimes the manual also specifies the opportunity cost of capital.

Though appropriation requests may be prepared by the project originator, the plant manager is usually responsible for submitting them. These requests come up through the ranks of operating management for approval at each succeeding level. If the project is large, the request may be checked at some stage by staff accountants, engineers, and economists. The number of hurdles the proposal must pass depends on the magnitude of the expenditure involved.

Because the investment decision is central to the development of the firm, authorization tends to be reserved for senior management. Almost all companies set ceilings on the size of capital projects that divisional managers can authorize without specific approval from their superiors. Moreover, the ceilings are surprisingly low. Scapens and Sale surveyed 203 larger firms, with average capital budgets of \$130 million per year, and found that the average ceiling for individual projects was only \$136,000. When you consider that a large company may generate thousands of authorization requests each year, the limited extent of delegation is striking.

1.2. Management Decision Calls

Till now we saw capital investment process

We can not say that all capital investment process have roots in the bottom and grow towards the top of the organization. The managers of plants A and B cannot be expected to see the potential economies of scale of closing their plants and consolidating production at a new plant C. We expect divisional management to propose plant C. Similarly, divisions 1 and 2 may not be eager to give up their own data processing operations to a large, central computer. That proposal would come from senior management.

The final capital budget must also reflect strategic choices made by senior management. Strategic planning attempts to identify the businesses in which the firm has a real competitive advantage. It also attempts to identify businesses to sell or

liquidate as well as declining businesses that should be allowed to run down. Strategic planning is really capital budgeting on a grand scale.

In many firms strategic plans impose a strong top-down input to capital budgeting decisions. Projects that appear to have negative NPVs may be accepted if they help to establish the firm in a business with good long-run potential. Similarly, projects that appear to have positive NPVs may be rejected if the firm plans to run down this part of its business. Of course, if a "declining" business continually generates high-NPV projects, the strategic planners ought to think again - perhaps the business isn't declining.³

1.3. Investment Criteria

As a criteria for project selection different companies usually use different criteria. Of course the use of intelligent techniques does not guarantee intelligent decisions. You can have good techniques and poor judgment or vice versa. Often operating managers display considerable conceptual confusion on financial issues. One encounters such statements as "We do all three (book rate of return, payback, and internal rate of return-IRR) and may decide that one is more relevant than the other," or "We don't use present value because it can't handle uncertainty." Even when companies do impose theoretically justifiable criteria, their application is often imperfect. For example, many companies think they can ignore inflation in cash-flow forecasts because "on the average revenues increase to cover inflated costs."

There is ignorance in the world. But before we get too smug, let's stop and think of other explanations. There are, in fact, several.

Businesspeople often act smarter than they talk. They may make correct decisions but they may not be able to explain them in the language of finance and economics. Many decisions are fundamentally intuitive. If intuitive sounds capricious, replace the word with informed judgment. As we know: if a firm enjoys an advantage that promises to generate economic rents in a stable or growing business, it probably should press on regardless of calculated payback or present value. Experience helps in identifying such opportunities.

Of course, this is not a complete answer. Few decisions are totally judgmental. In principle, if any quantitative measure of project value affects a decision, it should be present value, not payback or return on book.

Payback is the easiest way to communicate an idea of project profitability. It is important to have one measure everyone can understand, because capital budgeting is a process of discussion and negotiation involving people from all parts of the firm. Insisting that everyone commenting on a project do so in terms of NPV may cut off those who don't understand NPV, but who nevertheless can contribute useful information.

There is a law at work here which we can also observe working in television, publishing, and many other areas: a wider audience demands simpler concepts and language. Perhaps we could have sold more copies of this book by making it easier.

³ D., Tipurić, G., Markulin, *Strateški savezi; Suradnjom poduzeća do konkurentske prednosti*, Sinergija, Zagreb, 2002.

Plant and divisional managers are concerned for their own futures. Sometimes their interests conflict with stockholders'. New plant managers, for example, naturally want to demonstrate good performance right away in order to move up the corporate ladder. Perhaps they will propose quick-payback projects even if NPV is sacrificed. If their performance is judged on book earnings, they will be attracted by projects whose accounting results look good. Even if managers propose the right (NPV-maximizing) projects, we can understand their concern for payback and book return.

The problem lies in the way many firms measure performance and reward managers. Don't expect them to concentrate only on NPV if you always demand quick results or if you will reward them later on the basis of book return.

2. PROBLEM SOLVING

It is clear that cooperation brings more knowledge and intelligence to bear but it is also the fact that it brings its own problems. Valuing capital investment opportunities is hard enough when doing alone, but having in mind that in real life it is the cooperative effort, we have to face certain barriers. Some are unavoidable and just another cost of doing business. Some can be alleviated by adding checks and balances to the capital investment process.

Many of the problems stem from sponsors' eagerness to obtain approval for their favorite projects. As the proposal proceeds up the organization, alliances are formed. Preparation of the request inevitably involves discussions and compromises which limit subsequent freedom of action. Thus once a division has screened its plants' proposals, the plants unite in competing against "outsiders."

This competition among divisions can be put to good use if it forces division managers to develop better justifications for what, they want to do. But the competition has its costs as well. Several thousand appropriation requests may reach the senior management level each year, all of them essentially sales documents presented by united fronts and designed to persuade. Alternative schemes have been filtered out at an earlier stage. The danger is that senior management cannot obtain the information to evaluate each project rationally.

The dangers are illustrated by the following practical question: "Should we establish a definite opportunity cost of capital for computing the NPV of projects in our furniture division?" The answer in theory is a clear yes, providing that the projects of the division are all in the same risk class. The most project analysis is done at the plant or divisional level. Only a small proportion of project ideas analyzed survives for submission to top management. Plant and division managers cannot judge projects correctly unless they know the true opportunity cost of capital.⁴

Suppose senior management settles on 12 percent. That helps plant managers make rational decisions. But it also tells them exactly how optimistic they have to be to get their pet project accepted. R.A. Brealey and S.C. Myers's second law states that the proportion of proposed projects having a positive estimated NPV is independent of top management's estimate of the opportunity cost of capital. If the law is true, top management is better off concealing its estimates of the cost of capital, asking instead

⁴ S., Orsag, *Budžetiranje Kapitala; Procjena investicijskih projekata*, Masmedia, Zagreb, 2002.

for NPVs calculated for a range of different discount rates, and applying the right rate when the final decision is made.

A firm that accepts poor information at the top faces two consequences. First, senior management cannot evaluate individual projects. In a study by J.L. Bower of a large multidivisional company, projects that had the approval of a division general manager were seldom turned down by his or her group of divisions, and those reaching the executive committee were almost never rejected. Second, the only effective control available to management is to impose expenditure limits on individual plants or divisions. The effect is to force the subunits to choose among projects and to encourage the divisions to compete for funds. The firm ends up using capital rationing as a way of decentralizing decisions.

Of course, capital rationing is not the only solution. Firms can improve the quality of information flowing to the top by setting up corporate capital budgeting staffs to enforce consistency, uncover unspecified assumptions, and undertake sophisticated analyses of major projects.

These analysts may also have to ferret out local managers who are evading the controls in the capital investment process. For example, managers may be permitted to approve projects only up to a certain value. But this authority may become infinite if each project can be broken down into a large number of small parts. The following story illustrates this problem: "Our (top managers) like to make all the major capital decisions. They think they do, but I've just seen one case where a division beat them. I received for editing a capital request from the division for a large chimney. I couldn't see what anyone could do with just a chimney so I flew out for a visit. They've built and equipped a whole plant on plant expense orders. The chimney is the only indivisible item that exceeded the 50,000 limit we put on the expense orders. Apparently they learned informally that a new plant wouldn't be favorably received, and since they thought the business needed it, and the return would justify it, they built the damn thing."

This embarrassment might have been avoided if the firm had imposed a limit on individual discretionary expenditures and also on the total amount of such expenditures by each manager in any one year.

A similar difficulty stems from the imprecise concept of a capital expenditure. It may not be material whether a firm purchases or leases a piece of equipment: the subsequent effect on operating cash flows is similar. Clearly management's interest is in controlling the acquisition of any important asset whether it be leased or purchased. It also wants to control acquisition not only of tangible assets, but also of intangible ones such as a patent or a long-term contract. Authorization procedures should be broadly construed and should not encourage the inefficient substitution of one kind of asset for another.

Another problem is to ensure that the authorization request draws attention to all likely contingent expenditures. Too often, seemingly small and innocuous investments are the first step in a chain of economically dependent investments. Management should be aware of the full consequences of letting a plant or division get its foot in the door.

We risk overemphasizing the problems and underemphasizing the ability of organizations to cope with them. They cope because people are sensible and because informal communication and negotiation reinforce formal procedures. There are also formal solutions, most of them mentioned in passing as we discussed the problems.

Corporate staff can be assigned to enforce consistency in project analyses, check the assumptions behind cash-flow forecasts, and undertake special analyses. Large corporations often have special staff departments devoted mainly to these tasks.

The capital budget is a part of a broader budgeting and planning cycle. The firm has to set operating budgets for plants and divisions and also plan marketing, research, financing, and long-term growth. Capital investments have to make sense in terms of these other plans.

We referred to strategic planning as capital budgeting on a grand scale. It attempts to identify the businesses which offer the best long-run opportunities and to develop a plan for achieving success in those businesses.

Strategic planning deals in intangibles. Present values are rarely calculated explicitly. But the goal is clear: to identify areas where the firm has a competitive advantage. Firms which emphasize strategic planning looking for the sources of economic rents as a check against bias and exaggeration in cash flow forecasts.

A firm's capital investment choices should reflect both "bottom-up" and "topdown" processes-capital budgeting and strategic planning, respectively. The two processes should complement one another. Plant and division managers, who do most of the work in bottom-up capital budgeting, may not see the forest for the trees. Strategic planners may have a mistaken view of the forest because they do not look at the trees one by one.

Strategic planning is more important in some industries than in others. It is not important for oil exploration companies, which have to analyze prospects one by one. It is important in industries where tomorrow's opportunities are created by today's investments and where success depends on intangible assets like technology, product design, and reputation, or on elaborate marketing and distribution systems. Intangible assets are hard to evaluate in a purely bottom-up process.

Most decisions on significant capital outlays are reserved for top management. At least this is the formal process. The real decisions may be made further down in the organization. Senior management may have limited effective control over project-by-project decisions because of lack of information at the top.

When this happens capital investment decisions are effectively decentralized regardless of what formal procedures specify. Many firms force divisions to set their own priorities by setting rigid constraints on the capital expenditures of the divisions. Other firms are less rigid: they accept decentralization; they relax and enjoy it, keeping control by budgeting, planning, and monitoring the overall operations of the divisions.

But decentralization can only work if plant and division managers are rewarded for doing the right things. The way performance is measured and rewarded affects the kinds of projects that are proposed. Capital tends to flow more easily to divisions that seem to perform well.

Therefore any discussion of the capital expenditure process has to consider what happens after the project is accepted.

3. CAPITAL INVESTMENTS EVALUATION

Formal procedures for evaluating the performance of the firms capital investment is the must-have for every successful firm. There are three aspects to performance measurement. First, companies need to monitor projects under

construction to ensure that there are no serious delays or cost overruns. Second, companies generally conduct a postmortem on major projects shortly after they have begun to operate. These investigations are known as postaudits. They help to identify problems that need fixing, to check the accuracy of forecasts, and to suggest questions that should have been asked before the project was undertaken. Postaudits pay off mainly by helping managers do a better job when they come to analyze the next round of investment proposals. Finally, there is ongoing performance measurement, which is done through the firm's accounting and control system. We will explain how that system should work to support the capital investment process and why it sometimes fails.⁵

3.1. On-Going Projects and their Control

Decision to authorize expenditure is followed by the rigorous control over projects in progress. The authorization usually specifies how much money may be spent and when. Control is established by accounting procedures for recording expenditures as they occur. Typically, companies will permit up to 10 percent expenditure overruns, but beyond that the sponsor is required to submit a supplemental appropriation request. To ensure that the money is not diverted to other uses, the sponsor is also required to submit a revised appropriation request if there is any significant change in the nature of the project.⁶

In order to avoid delays, a few companies attempt to set limits to the length of time before construction begins. Almost all firms require the sponsor to submit a formal notice of completion, so that the accumulated costs can be transferred to the permanent accounts and any unspent cash can be recovered rather than kept in a hidden kitty for miscellaneous uses.

These procedures are necessary aspects of control. More general information on progress is usually contained in monthly or quarterly status reports.

3.2. Assessment of the Project's Success

Postaudits of capital expenditures are now undertaken in most large firms. Not all projects are audited, and those that are, are usually audited only once. A few firms require further audits for "problem" projects. The most common time for audit is 1 year after construction or installation is completed.⁷

The audit is usually the responsibility of the corporation's controller and is handled by the internal auditing department. Because this department may be illequipped to assess technical issues, the task is sometimes jointly assigned to accounting and engineering departments. Sometimes the audit is delegated to plants, and not infrequently it is assigned to the project originator. The scope for conflicts of interest in such cases is obvious.

⁵ L.D., Schall, *Introduction to Financial Management*, McGraw Hill International Editions, New York, 2000.

⁶ P., Sikavica, M., Novak, *Poslovna organizacija*, Informator, Zagreb, 1993.

⁷ Schall L.D., *Introduction to Financial Management*, McGraw Hill International Editions, New York, 2000.

It is a sensible precaution to check on the progress of recent investments. Otherwise problems may go undetected and uncorrected. Postaudits can also provide useful insights to the next round of decision making on capital investments. After a postaudit the controller may say, "We should have anticipated the extra working capital needed to support the project." Next time working capital will get the attention it deserves.

The postaudit is sometimes also used to monitor the quality of forecasts made by project proposers. However, it is worth sounding a note of caution here. The audit is usually taken far too soon after installation to provide any clear assessment of the project's success. And, since the forecasters rarely specify the economic assumptions behind their forecasts, it is hard to measure whether they really got it right or whether they were bailed out by a buoyant economy. Finally, the number of audited projects is so small and their authorship so imprecise that it is difficult to associate forecasting ability with a particular type of project or proposer.

Of course, the mere threat of postaudit may spur the forecaster to greater accuracy. But it can work the other way around. Many managers make conservative forecasts in the belief that what matters is to beat one's forecasts. In other cases the threat of audit may cause risky projects to be suppressed altogether.

3.3. Incremental Cash Flows

Often postaudits cannot measure all cash flows generated by a project. It may be impossible to split the project away from the rest of the business.

Suppose you have just taken over a trucking firm which operates a package delivery service for local stores. You decide to try to revitalize the business by cutting costs and improving service. This requires three investment projects:

1. Buy five new trucks
2. Construct two additional dispatching centers
3. Buy a small computer to keep track of packages and schedule trucks

A year later you try a postaudit of the computer. You verify that it is working properly and check actual costs of purchase, installation, and training against projections. But how do you identify the incremental cash inflows generated by the computer? No one has kept records of the extra gas that would have been used, or the number of packages that would have been lost, had the computer not been installed. You may be able to verify that service is better, but how much of the improvement comes from the new trucks, how much from the dispatching centers, and how much from the computer? It is impossible to say. The only meaningful way to judge the success or failure of your revitalization program is to examine the delivery business as a whole.⁸

⁸ J.C., Francis, *Investments; Analysis and Management*, McGraw Hill International Editions, New York, 2000.

3.4. Measuring

Think again of your package delivery business. We could measure its performance in two ways:

1. Actual versus projected. We could compare actual operating earnings or cash flow with what you predicted.
2. Actual profitability versus an absolute standard of profitability. We could also compare actual profitability against an absolute standard of profitability. Ideally we would like to know the present value of that business's future cash flow relative to the parent firm's current investment in it. The current investment is the value of the assets now committed to the business if they were put to the best alternative use.

The first measure is easy to understand and implement. The second is full of pitfalls.

3.5. Accountants Wrong View

Let us think for a moment about how profitability should be measured in principle. It is easy enough to compute the true, or "economic," rate of return for a common stock that is continuously traded. We just record cash receipts (dividends) for the year, add the change in price over the year, and divide by the beginning price:

$$\text{Rate of return} = \frac{\text{cash receipts} + \text{change in price}}{\text{beginning price}} = \frac{C_1 + (P_1 - P_0)}{P_0}$$

The numerator of the expression for rate of return (cash flow plus change in value) is called economic income:

$$\text{Economic income} = \text{cash flow} + \text{change in present value}$$

Any reduction in present value represents economic depreciation; any increase in present value represents negative economic depreciation. Therefore

$$\text{Economic depreciation} = \text{reduction in present value}$$

and

$$\text{Economic income} = \text{cash flow} - \text{economic depreciation}$$

The concept works for any asset. Rate of return equals cash flow plus change in value divided by starting value. The return on the package delivery service for 2005 is

$$\text{Rate of return} = \frac{C_{2005} + (PV_{2005} - PV_{2004})}{PV_{2004}}$$

where PV_{2004} and PV_{2005} indicate the present values of the business at the ends of 2004 and 2005.

The only hard part in measuring economic income and return is calculating present value. You can observe market value if shares in the asset are actively traded, but few plants, divisions, or capital projects have their own shares traded in the stock

market. You can observe the present market value of all the firm's assets but not of any one of them taken separately.⁹

Accountants rarely even attempt to measure present value. Instead they give us net book value (BV), which is original cost less depreciation computed according to some arbitrary schedule. Many companies use the book value to calculate the book return on investment (ROI):

$$\begin{aligned}\text{Book income} &= \text{cash flow} - \text{book depreciation} \\ &= C_1 + (BV_1 - BV_0)\end{aligned}$$

Therefore

$$\text{Book ROI} = \frac{C_1 + (BV_1 - BV_0)}{BV_0}$$

If book depreciation and economic depreciation are different (they are rarely the same), then the book profitability measures will be wrong; that is, they will not measure true profitability. (In fact, it is not clear that accountants should even try to measure true profitability. They could not do so without heavy reliance on subjective estimates of value. Perhaps they should stick to supplying objective information, and leave the estimation of value to managers and investors.)

CONCLUSION

In this article we tried to focus on several important things when deciding in investing in a project so we began this article by describing how capital budgeting is organized and ended by exposing serious biases in accounting measures of financial performance. Inevitably such discussions stress the mechanics of organization, control, and accounting. It is harder to talk about the informal procedures that reinforce the formal ones. But it takes informal communication and personal initiative to make capital budgeting work. Also, the accounting biases are partly or wholly alleviated because managers and stockholders are smart enough to look behind reported book earnings.

Formal capital-budgeting systems usually have four stages:

1. Preparation of a capital budget for the firm. This is a plan for capital expenditure by plant, division, or other business unit.
2. Project authorizations give authority to go ahead with specific projects.
3. Procedures for control of projects under construction warn if projects are behind schedule or costing more than planned.
4. Postaudits check on the progress of recent investments.

The formal criteria used in project evaluation are a mixture of modern rules like net present value and internal rate of return, and old-fashioned rules like payback and average return on book. The old rules survive partly because everyone understands them; they provide a common language for discussing the project. They also survive because of the way performance is evaluated and rewarded. If managers are expected to

⁹ J.C., Francis, *Investments; Analysis and Management*, McGraw Hill International Editions, New York, 2000.

generate quick results, and results are measured as contribution to book earnings, then management is naturally interested in payback and book return.

Most specific project proposals originate at the plant or division level. If the project doesn't cost much, it may be approved by middle management. But the final say on major capital outlays belongs to top management. The desire of top management to retain control of capital budgeting is understandable. But the chief executive cannot undertake a detailed analysis of every project he or she approves. Information at the top is often limited; project proposals may be designed more to persuade than inform.

Top management copes by relying on staff financial analysts, by making capital budgeting part of a broader budgeting and planning process, and by keeping the capital budgeting process flexible and open to informal communication.

Capital budgeting is not entirely a bottom-up process. Strategic planners practice "capital budgeting on a grand scale" by attempting to identify those businesses in which the firm has a special advantage. Project proposals that support the firm's accepted overall strategy are much more likely to have clear sailing as they come up through the organization.

Usually the plant or division proposing a capital investment will be responsible for making the project work. A project's sponsors are naturally concerned that the project performs well, and also that it appears to perform well. Thus the way the firm evaluates operating performance can affect the kinds of projects that middle managers are willing to propose.

There are two approaches to performance measurement. The first and easier is to compare actual cash flow with projected cash flow. The second is to compare actual profitability with the opportunity cost of capital. Both approaches are needed.

The second approach is the difficult and dangerous one. Most firms measure performance in terms of accounting or book profitability. Unfortunately book income and ROI are often seriously biased measures of true profitability and thus should not be directly compared to the opportunity cost of capital.

In principle true or economic income is easy to calculate: you just subtract economic depreciation from the asset's cash flow for the period you are interested in. Economic depreciation is simply the decrease in the asset's present value during the period. (If the asset's value increases, then economic depreciation is negative.)

Unfortunately we can't ask accountants to recalculate each asset's present value every time income is calculated. But it does seem fair to ask why they don't try at least to match book depreciation schedules to typical patterns of economic depreciation.

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