

## HOW TO DESIGN A "FAIR" CONTROL SYSTEM

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Financial control systems are a part of the operating mechanisms used by organizations to facilitate the process of formulating plans and measuring results. It is true that today's corporations use a variety of different tools with these purposes but few of them enjoy as wide a diffusion as budgets expressed in financial terms. In most cases, they remain the backbone of the formal systems used to define objectives.

A financial control system has two different components: a measuring system or network of responsibility centers and a pre-scheduled planning cycle also known as the planning and control process. In this article, we shall focus exclusively on the design issues concerning the first of them.

There are five types of responsibility centers: standard-cost centers, revenue centers, discretionary-expense centers, profit centers and investment centers. It is worth noticing that this typology relies exclusively on financial terms; however, conventional wisdom as well as academic literature tell us that there is more there than meets the eye. Shifting from one type to another implies different assumptions about the cognitive and behavioral demands of the budgetee's task; in other words: different types are meant to embrace decisions of substantially different nature. The need for distinguishing between standard-cost centers and discretionary-expense centers is based on these kinds of premises: both of them appear deceptively similar from a financial standpoint; however making a decision about a discretionary item differs so much from making another one on engineered costs that the split into two different types becomes warranted.

The change from a cost to a profit center is not trivial either. Very often the missing element in the former is not only revenue but some particular cost-revenue relationships. As every practitioner knows, an attempt to increase profits through cost cutting measures may sometimes be self-defeating if the reduction in costs has some significant impact on the competitive capabilities of the organizational sub-unit. Designing that sub-unit as a profit center usually aims to direct the budgetee's attention towards those sensitive trade-offs.

Nevertheless, there are some significant decisions not encompassed by a profit center approach, namely, the ones concerning capital investments. Any profit figure can be increased through single marginal investments if the budgetee is not held accountable for return on the overall resources he/she manages. This is the advantage that an investment center offers in comparison with the simpler profit type of responsibility center.

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<sup>1</sup> Assistant Professor, Strategic Management, IESE.

An investment center approach is not problem-free, especially if the R.O.I. is computed as the percentage of profit over net investment. An organizational sub-unit – let us say a division of a divisionalized company – treated in such a way will tend to reject any investment opportunity that lowers its current R.O.I. figure. But, this decision may not be in the best interests of the company as a whole if the project has a return that is higher than the overall company's, cost of capital although, in that instance, it may be lower than the R.O.I. of the division that rejects the project.<sup>2</sup>

To overcome this problem, a “residual income” approach has been advocated. Residual income is obtained by subtracting a capital charge from the profit figure. But this technique still does not salve a number of problems such as how to include fixed assets in the investment base. In addition, R.O.I. as an inter-divisional standard of performance is no longer available.

The preceding paragraphs summarize part of the current state of the literature in management control systems. The point they try to convey is that these five types of responsibility centers are meant to provide some structure to increasingly complex, i.e., non-programmable decisions. But the reader should notice that these considerations provide limited help for designing a new network of responsibility centers. In the absence of other design criteria, they would suggest that an investment center should always be the choice, since this is the most encompassing measure available. Practitioners as well as academicians know well that this is seldom the right option; therefore, a different type of theoretical framework is called for to deal with the constraints that more often than not make other options more desirable.

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While the behavioral accounting literature has repeatedly focused on this design problem, practitioners have been using planning and control systems for a long time relying only moderately on scholarly help. Academicians trying to stay close to the field have implicitly recognized the systemic nature of the problem by developing a multicriterion approach. From this perspective, no single formula or criterion is the only determinant of a system design. On the contrary, several criteria that cannot be explicitly traded-off with each other have to be considered simultaneously. A specific design is considered appropriate when it satisfies reasonable standards along the different criteria.

Richard F. Vancil<sup>3</sup> puts forward the following two criteria to be satisfied by the designer of a control system:

- a) Fairness
- b) Goal Congruence

Controllers know very well that it is no easy task to design a measurement system that appears satisfactory from both points of view. In the Test of this article, I will explore the sources of this difficulty. We shall see that very often an appropriate system from a “goal congruence” standpoint is bound to appear “unfair” to the budgetee. Moreover, I wish to set forth from the beginning that, in my opinion, this dilemma cannot be solved with an accounting system of

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<sup>2</sup> For an expanded analysis of this argument see John Dearden, “The Case against ROI Control”, Harvard Business Review, May-June 1969.

<sup>3</sup> Richard F. Vancil, “What Kind of Management Control Do You Need?” Harvard Business Review, March-April 1973.

performance measurement as the only frame of reference. On the contrary, the problem has to be dealt with in a broader context of organization design where a major issue is the degree of "fit" among the several administrative systems.

## Goal Congruence

This criterion calls for a measurement system that puts the goals of the budgetee in harmony with those of the whole organization. If the system is "goal congruent" the budgetee, when pursuing his/her own goals, will also be acting in the interests of the total corporation.

If there is a consensus among accounting scholars, this revolves around the extreme difficulty involved in attaining the "goal congruence" desideratum. There is much less agreement on the source of the trouble. This is partly so because there is no single source but several of them that can be summarized in three major categories:

- a) Product interdependencies among different responsibility units, especially when those are treated as profit centers.

This is the classical "transfer price" problem that exemplifies better than any other one the internal contradictions among the "goal congruence" and the "fairness" criteria. Solomons<sup>4</sup> has shown that, under Very restrictive assumptions, the "marginal cost" rule can produce an optimal outcome for the corporation as a whole.<sup>5</sup> However, this rule allocates all the profit of a given operation to one of the subunits; outcome that can hardly be regarded as "fair" by the rest of the responsibility centers.

But, even setting aside "human behavior" considerations, the reader may realize the enormous problems involved in designing a good system when the corporation has dozens of divisions transferring hundreds of different products among them.

- b) Existence of local information is an even more important hurdle, although it has received much less attention in the accounting literature than the former one. However, the problems it presents cannot be easily ducked because they are inherent in any decentralized organization: local information stems from the greater familiarity a divisional manager usually develops with his/her particular product-market environment.

An analysis of the constraints imposed by the existence of local information reveals crucial limitations for any designer of control systems. If the designer were able to establish rules which would tell the field manager the "best" action for the whole organization, He/She would not only be limiting the personal development of the budgetee. He/She would also be denying the logical foundations of a decentralized structure. Indeed, there are no valid reasons to support a decentralized setting if a corporate officer always knows what is the optimal decision to be taken by a divisional manager.

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<sup>4</sup> David Solomons, *Divisional Performance: Measurement and Control*, Richard D. Irwin, 1965. Mainly Chapter VI.

<sup>5</sup> According to this rule, products have to be transferred at variable cost if the selling division has spare capacity and at variable cost plus the appropriate "shadow price" if the division is already at full manufacturing capacity.

In that sense, there is no “perfect” system from a “goal congruence” standpoint. Any academic effort on control systems that does not start off by acknowledging this fact is bound to be as fruitful as any traditional attempt to square the circle.

What, then, is the nature of this “moderate” goal congruence the designer has to seek? Charles Christenson has suggested that a negative thinking approach can go a long way in clarifying the concept of decentralized control. In effect, he argues that “control of a truly decentralized organization is exercised by telling the subordinate executive what they must not do.”<sup>6</sup>

By applying a set of negative constraints, budgets can be used to structure the managers task. Designers and budgeters should struggle for ending up with a budget that captures the key factors affecting the success of the operations delegated to the budgetee. But the latter has a more thorough knowledge of his/her particular business environment. Therefore, the quality of the superior-subordinate interactions throughout the budgetary process becomes a necessary condition for the budget to embody a meaningful plan for the budgetee. These considerations take us to the third obstacle against the “goal congruence” criterion:

- c) Degree of cooperative behavior among superior and subordinates.

One of the functions of budgets is to structure and formalize the key success factors of the budgetee’s task in a way that is not harmful to the organization’s objectives.

The superior can facilitate this process only inasmuch as the subordinate is willing to discuss openly about his/her perception of the business environment (this is the constraint imposed by the existence of local information). The whole process is disrupted if the budgetee exhibits non-cooperative behavior, that is, if he/she does not hesitate in providing misleading or distorted information if that appears to his/her own benefit.

Obviously, these attitudes are closely linked to the budgetee’s expectations about evaluation procedures. We therefore have now to deal with the other criterion put forward by Vancil: fairness.

## Fairness

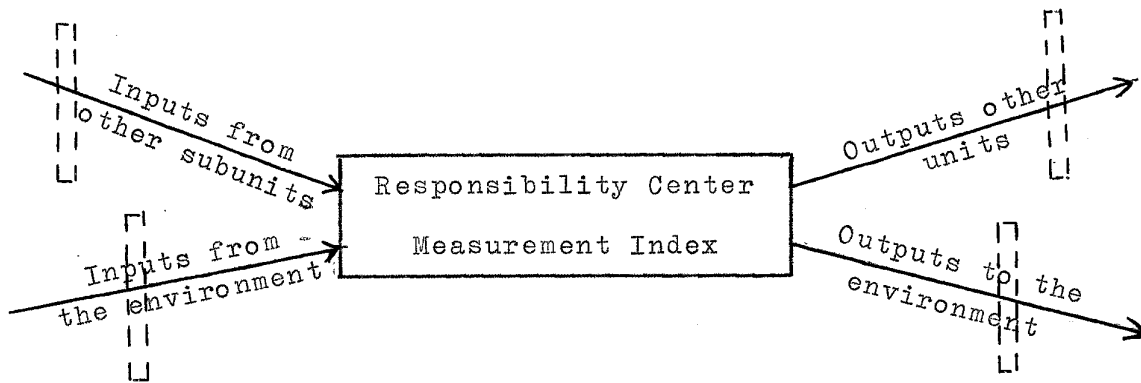
If we adopt some synonyms contained in Webster’s dictionary, a fair system should measure performance in an honest and impartial way. That suggests that measurement indices should encompass all the factors the budgetee can control and exclude those over which he/she has no control. This requirement is deceptively easier than the “goal congruence” one. In practice it is often difficult to pinpoint specific responsibilities for certain items. And for reasons other than inconvenience and ambiguity, the designer may want to include non-controllable items in a measurement index. More on that later.

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<sup>6</sup> Charles Christenson, “The Power of Negative Thinking,” IBS Working Paper 72-41,p. 51. Emphasis in the original.

Vancil stresses that “the ‘fairness’ of a financial measurement is not a fact; it is a perception through the eyes of the manager to whom it applies.”<sup>7</sup> However, he does not explain how this perception is to be achieved other than by a careful exclusion of all items that appear as non-controllable to the budgetee.

I wish now to put forward some concepts that have been useful to me when analyzing any measurement system under the “fairness” criterion. I shall start off by introducing the concept of “insulating filter.” An “insulating filter” is defined as any accounting device incorporated in a measurement index with the purpose of suppressing a non-controllable input or output. There are four logically possible loci for an “insulating filter” to be installed; they are depicted as dotted rectangles in the following figure:



If “fairness” were the only relevant criterion, the systems designer would have to start by choosing the most encompassing index available and then apply appropriate insulating filters to all non-controllable items. In fact, this point of view reverses the traditional approach to selecting a particular type of responsibility center. Standard cost centers are considered the simplest alternative; only when the decision-making process becomes more complex, does the designer opt for more sophisticated types. From my point of view, an investment center with full financial responsibility is the most “natural” index for measuring performance. Only when a “turbulent” environment or heavy interdependence with other subunits introduces too much “noise” in the index, does the designer have to apply insulating filters. If all assets are filtered out we end up with just a profit center. If all revenues are filtered as well, a simple expense center embodies the performance index. Finally, if the discretionary expenses are also filtered out, a standard-cost centers is left as a means of measuring performance.

We are now ready to tackle some basic contradictions between the “goal congruence” and the “fairness” criteria. We are going to see that the former is likely to require not using insulating filters on some non-controllable items. We shall also suggest some means to deal with the design problems originated in such situations.

To start with, let us take up the input-output relationship with the outside environment. The question is: should the designer apply insulating filters to completely shield the budgetee from unexpected environmental changes?

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<sup>7</sup> R. F. Vancil, “What Kind...?” p.77.

In the case of a profit or investment center the most important item in this range is the revenues originated by sales to external customers. An insulating filter may consist, for instance, in taking the volume variance below the bottom line when evaluating profit performance.

The crucial point to grasp here is that the “turbulence” or risk supplied by the environment does not vanish by insulating some organizational subunits from its consequences. The only effect is that all or most of the risk is borne by top management. If the environmental diversity faced by the whole organization is quite high, considerations of information overloading may make it advisable to spread the risk among the different subunits. A way of doing so consists of holding divisional managers responsible for the profit they committed themselves to make, even under changing environmental circumstances.

There are other practical reasons for not applying insulating filters. First, it is not always easy to accurately pinpoint when superb performance is due to singular environmental circumstances or to exceptional managerial skill. Secondly, there are “moral hazard” considerations; if the manager has been shielded against unforeseen changes he/she may not be trying to overcome or capitalize on them. And – last but not least – the absence of insulating filters can be the source of an interesting challenge by creating a certain “game” atmosphere that would be lacking otherwise in those organizations immersed in a too rigid – and thus boring – environment.

Systems that as a rule reject the use of insulating filters for measuring subunits’ interactions with the outside environment are known as tight delegation systems. In those systems, the budget is regarded as a strong commitment. The system used by the International Telephone and Telegraph Co. is a paradigm of that kind of system. On the opposite side, if, as a matter of policy, subunits are insulated from unexpected environmental events, the company is seen as using a loose delegation system (weak commitment). Du Pont has been regarded as belonging to this category.<sup>8</sup>

It should be clear by now that top managers may have more than one valid reason to oppose using insulating filters for non-controllable items coming from the environment. Let us now proceed by examining the convenience of using insulating filters in the interactions with other subunits of the same organization.

The key question now for the designer to answer is: do I want to primarily encourage differentiation among the different subunits or, on the contrary, is integration a more important requirement?<sup>9</sup> If the latter is the case, giving up insulating filters may well be the appropriate solution if the designer wants to encourage informal interaction among the subunits and/or create a conflict that becomes a signal to tell the hierarchy when to act. It may be worth illustrating those instances with some examples.

Let us imagine a functional organization operating in a highly stable environment such as, for example, the container industry. Price is determined by market forces; quality and schedule (cost) performance are the main competitive weapons, both of them heavily influenced by the

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<sup>8</sup> See John Dearden, *Cost Accounting and Financial Control Systems*, Reading, Mass.: Addison-Wesley, 1973. Chapter XII.

<sup>9</sup> Differentiation and Integration are terms popularized in the organizational design literature by Lawrence & Lorsch. See their book: *Organization and Environment*, Homewood, Illinois, 1969, Richard D. Irwin.

manufacturing department. If the system filters assets and revenue when evaluating the performance of the manufacturing department, that is, if this department is treated as a cost center, its managers may be insensitive to the long-run impact of product quality and/or to sensible demands of the sales department such as, for example, a rush order for a good customer. In that kind of scenario, it would pay to refuse filtering revenues in evaluating the manufacturing department. In other words, by subjecting the production people to profit responsibility, the designer is forcing them to take special care of the interactions with sales. They are pressured to reach a delicate balance among production costs – that increase with more numerous set-ups – and the need for good customer relationships.

This is a clear case where rejecting insulating filters can lead to a healthy integration between the sales and the production efforts. But, how can the production manager of this company be persuaded that this is a “fair” measurement system? I suggest that the system will be perceived as “fair” only if he/she has been given full authority to change the production schedule. If this is so, it is worth noticing that – the perception of “fairness” is achieved by an organizational device other than the financial control system, namely, the authority structure. We are going to explore further the implications of such relationship.

A second case can be exemplified by a divisional company with a transfer pricing system that does not always produce a profit split satisfactory enough for every divisional manager involved in the transaction. The lack of “automatism” may well be appropriate if it forces the divisions either to negotiate among themselves or to refer the conflict up the hierarchical ladder. Another example is provided by those companies that evaluate divisional performance not in terms of the division’s own profit but in terms of the total results of the group to which it belongs.

A final example can be provided by some divisional companies that, as a matter of policy, allocate several non-controllable costs – such as some kind of depreciation expense – to their divisions. There are several reasons for doing such a thing: helping divisional managers to understand the economics of the total firm is a major one. Traditionally that has been regarded as using the budget as an attention-getting device. In these cases, the perception of “fairness” is often achieved through careful explanations throughout the planning process.

The conclusion that emerges from the preceding discussion is the following: if the designer wants to make managers aware of non-trivial interdependencies it may be necessary not to filter the actions of other subunits for performance evaluation purposes. In other words: there are good reasons for designing an “unfair” measurement system. And yet Vancil’s prescription is still valid in the sense that managers have to believe that the summary financial measurement used to report on their performance is appropriate. But then, where is this perception of fairness to come from? The answer is: from organizational devices other than the measurement system itself, namely:

- a) The budgetary process or pre-scheduled planning cycle.
- b) The authority structure.
- c) Other operating mechanisms such as compensation systems, formal training, etc.
- d) Informal practices.

The control system designer might be unaware of these mechanisms, but the manager is aware of them as he passes judgment on the fairness of the measurement. They will have to perform a



compensatory function in a way that the final outcome is an overall sense of “fairness” for the budgetees. In that sense, the different administrative systems have to “fit” or be consistent with each other to create a feeling that cannot be produced by the measurement system alone.

## Summary

The central thesis of this article is that a compartmentalized approach to control systems design is likely to be sterile. This argument has been unfolded around the undesirability of a strictly “fair” control system. Through an analysis of the possible interactions of an organizational subunit with the outer environment and/or other subunits, we could realize that the absence of insulating filters for non-controllable items may well be appropriate under certain circumstances.

Realizing that the measurement system may have to be objectively “unfair” for the sake of goal congruence left us with the problem of creating, by other means, the necessary perception of fairness in the process of performance appraisal. It has been argued that an overall perception of fairness can be achieved with the help of other administrative systems.

Taking these considerations into account, a sensible approach to control systems design can be as follows:

- 1) In designing the organizational context for a subunit’s manager, the systems designer should seek a package of administrative systems that exhibit a high degree of internal consistency. As a guiding principle, he/she should try to harmonize the strategy of the total corporation with the key success factors of the subunit’s particular competitive environment.
- 2) In so doing, the systems designer should be well aware of the local information phenomena, that is, he/she ought to avoid imposing too much constraint on the subordinate. Experience shows that the tendency of most designers is toward over determination.
- 3) In considering the financial control system as part of the total package, the systems designer should not necessarily exclude non-controllable items from the measurement of performance.
- 4) However, if such items are included, the systems designer should not forget that a certain imbalance has been introduced. This distortion will have to be compensated with some other administrative systems in such a way that the manager perceives that his/her performance is evaluated in an appropriate fashion. In other words: the different administrative systems will have to be well “fitted” to each other along lines of “fairness” which now becomes a guiding criterion for the process of organization design as a whole.