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# AGENCY CONTRACTS APPLIED TO CHANGING PRICE REPORTS

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#### Abstract

Agency theory redirects current cost research from an investor to a managerial orientation. Given an environment of uncertainty, conflict and moral hazard, the choices in reporting models, in measurement of data, and in budgeting current costs thus turn from neutral to partisan actions. In a principal agent matrix, incentive contracts are negotiated to provide compensation for truthful reports and for concessions contrary to self-interest. Model variances derive from definite, known differences such as maintaining physical or financial capital. By contrast, from period to period, goal variances arise from estimating the model variances and test the truthfulness of the data and projections employed. Just as in designing a Soviet model incentive contract, estimation of changing price reports are assigned rewards and penalties for the fit of budget to performance in changing price reports.

#### I. NO ONE NEUTRAL CHANGING PRICE REPORT

Just to catalogue the versions of current value, current cost, and constant purchasing power reports conceived or promulgated would require an entire paper. Terminology is slippery and so the umbrella code 'changing price reports' is employed. The particular focus here is on the Anglo-Saxon accounting for both specific and general price changes, relative to historical cost. No one such model appears to be dominant.

If there is anything more miraculous than the widespread practical adoption of such accounting, it would be the success of the capital asset pricing model and the efficient market hypothesis. These two academic success stories are even more improbable in their concurrent development, since one deals with fundamental analysis and the other with security market behavior. In fact, nearly all tests for security market responses to changing price reports have found none. Academic research is refining its technology in both accounting and finance, so all bets remain open. However, just as efficient markets seemed to be establishing its redundancy, economists and finance scholars have discovered accounting as an essential function in monitoring agency relationships.

In his chapters on 'Executive Contracts and Bonus Plans' and 'Formal Models in Budgeting and Incentive Contracts', Kaplan (1982) relates incentive compensation to the principal-agent relationship. He observes that executive contract incentives are often based on accounting numbers, but that generally accepted accounting principles are commonly modified or supplemented in order to direct the executive - agent to act in the principal - shareholder's interest. Such modifications are not necessarily evidence that GAAP should also be modified, but they do point to sensitive variables. Another of Kaplan's observations is that 'budget based incentive schemes will be subject to the problem of strategic manipulation of information'. Our paper presumes that changing price reports have problems similar to budget oriented incentive plans. Consequently, rather than search for agreement on the one neutral changing price report we propose to investigate disagreements, to take for granted conflict, and to assume that improvement of changing price reports requires incentives.

### II. CONFLICT MODELLED BY AGENCY THEORY

Agency theory presumes that conflict of interest exists not only between firms as in classical economic theory, but also within the firm broadly defined. Two actors in one period have provided the scenario for important analytical results. To transfer the terminology into this context, the principal has some vested interest in the actions of an agent, whose effort and decisions the principal aims to turn to his own advantage. To do so, the principal contracts with the agent to provide rewards and penalties to induce behavior advancing his/her goals.

The apparatus requires the objective functions of both parties in utility form to adjust for risk attitudes. Prior probabilities on

outcomes of both parties are also required together with the design of an incentive contract. Given highly restrictive assumptions, unorthodox results are derived. The utility of the principal can be enhanced, when the agent's incentive includes risk taking and is affected by factors noncontrollable by the agent.

Of immediate application to determining specific price change and the reporting of current costs is a key feature of the so-called Soviet incentive formula. The quota or budget as well as the performance results affect the agent's incentive. In a physical units environment, if coordination of production is essential, a higher incentive is awarded for both budgeting and attaining a given goal than for simply attaining it. Under a contract of this type :

Let I = agent's incentive, x = his budget, and y = his production

(1) I = K + bx + a(y-x), if  $y \ge x$ I = K + bx + c(y-x), if  $y \le x$ 

The principal sets parameters for K, a basic bonus pool, and  $0 \le a \le b \le c$ . Thus, an unfavorable budget variance is penalized more heavily than a higher original budget is rewarded, but a higher budget is rewarded more than a favorable budget variance.

Basic to the incentive contracts are schemes to make the agent share the principal's goals by conceding to the agent a share of the principal's risk and return. In more realistic settings, agent-manager's actions and their outcomes are to some degree unobservable especially in the short run. An agent subject to the contract above (1) functions as a decisionmaker, by virtue of his budgeting and production expertise. The agent serves as a risk sharer, not by virtue of his financial expertise or endowment but in order to reduce the moral hazard of the agent generating self-serving, easily attainable, budget forecasts. (Jennergren, 1980; Holmström, 1979). Incentive contracts of the type illustrated are conventionally termed 'truth-inducing', because the agent's unbiased estimate of the maximum attainable budget is rewarded.

Weitzman (1976) derives the relationship of the Soviet plan parameters as :

Prob  $(y \le x) = (b-a)/(c-a)$ 

If we set the preferred probability of under and over runs equal, then the favorable variance reward a, is as much less than the budget reward, b, as the unfavorable variance penalty, c, is more than the budget reward parameter. The scale and the constant, K, are decided on by the participants. In extensions more complex than a shop production setting, the determination of the amount of output also comes in question. This so called unobservability problem is central to accounting and discussed in more detail in a separate section.

The uncertainty of a production quota estimate for the next period, given a technology, is magnified, if the restrictive assumptions are lifted. Examples are estimating costs and trade-offs, allowing for new investment and technical change, and recognizing follow-on consequences of a budget ratchet effect (Weitzman, 1980) in a multi-period setting. These factors subject applications of truth-inducing incentives to current costing to severe problems, but relevant ones.

In summary, the incentive contract for production budgeting has been proposed as an analogue for current cost budgeting incentives. The feature of interest in this simple production setting is to design reward/penalty parameters for budgeting not just for producing. Bedgeting becomes an action space of the agent, as production itself is.

# III. CONTRACT THEORY OF THE FIRM AND REAPPRAISAL OF INVESTMENT AND MANA-GERIAL FUNCTIONS

The foregoing section emphasized the agent's management decisions and actions relative to a principal who is only an investor in the firm. This orientation to the manager in specific budgeting and

operating decisions rather than to the investor in general financial decisions disengages the paper from the fruitless security market response criterion for changing price disclosures.

The goal congruence fostered by incentive contracts depends on the agent acting like a principal or becoming one to some degree. Also the principal role can be filled by other participants in the firm, conventionally thought of only as agents or ignored in formal models.

Not just majority equity shareholders have principal interests at stake and agency costs to bear. Minority owners, financiers, creditors, suppliers, labor, customers, local or global governments and all levels of management function as principals in the firm relative to each other. Labor, local government, creditors and suppliers commonly have undiversified financial, physical and human capital investments in the firm. If so, those parties run greater risk of income variability from the firm and have a greater need for their fellow principals as agents to act in their interest. Due to the current economic recession, both popular and academic attention has been redirected from diversified investors to undiversified interests as principals of the firm.

Indeed, portfolio theory tells us that the optimal portfolio for any investor is likely to be diversified across the securities of many firms. Since he holds the securities of many firms precisely to avoid having his wealth depend too much on any one tirm, an individual security holder generally has no special interest in personally overseeing the detailed activities of any firm. (Fama, 1980)

A principal's agency costs are defined as the sum of incentives granted agents, monitoring costs, and the agent's actions to their own benefit, not the principals'. Outside the U.S., the function of governments and workers as principals is more formalized in union contracts, worker representation on boards, the reporting to labor councils, and outright ownership. Whatever the institutional and legal setting, however, the contractual relationships recognized in academic research and in practice now include implicit as well as explicit, legal contracts among the factors of production. However, ownership of capital should not be confused with ownership of the firm. Each factor in a firm is owned by somebody. The firm is just the set of contracts covering the way inputs are joined to create outputs and the way receipts from outputs are shared among inputs. In this 'nexus of contracts' perspective, ownership of the firm is an irrelevant concept. Dispelling the tenacious notion that a firm is owned by its security holders is important because it is a first step toward understanding that control over a firm's decisions is not necessarily the province of security holders. (Fama, 1980)

What we call the contract, rather than entrepreneurial theory of the firm corroborates our scheme of the firm as a matrix of principals and agents, where each actor plays both roles in varying settings. As authority for this premise, we cite Fama and Jensen :

An organization is the nexus of contracts, written and unwritten among owners of the factors of production and customers... Each agent has an objective function, but the complex organization has neither owners (Fama, 1980) nor an objective function (Jensen and Meckling 1976). A complex organization is more like a market in which agents maximize their self-interests within the constraints provided by the set of contracts among them than (it is) like a well-defined economic unit with its own objective function. (Fama and Jensen, 1980)

If Fama and Jensen are correct, the accounting reports of a complex organization should perform an agency function for the competing principals/agents. Pension fund, tax, labor council, segment and changing price reports are evidence that accounting reports already reflect the contract theory of the firm as a complex organization. In what ways, do changing price financial reports represent empirical evidence of how the contract theory of the firm functions ? The groundwork has been laid to answer that question. In an effort at focus and structure, the exposition is largely limited to the central conflict of shareholders and employees, especially managers, each acting as both principal and agent.

### IV. CHANGING PRICE MODELS AND AGENCY REPORTS

Changing price reports have many variations, as do complex organizations, from country to country, from industry to industry and also from firm to firm. Evidence exists that the report variations correspond to this or that principal's interest. As illustrations, in the U.K., 'current cost profit to the enterprise' is distinguished from 'current cost profit attributable to shareholders' by the gearing adjustment. Employees as principals concerned with the overall enterprise might look to the first and shareholders to the second, after credit for the gearing effect, interest expense and miscellany. The variance of the current cost from historical cost and of the gearing effect are the guides to how the agent as budgeter reveals the shifting fortunes of the principals relative to each other.

What incentive bases for truthful agency reports are appropriate to the particular principals ? Since truthful reports are at least as important with losses as with profits, the novel issue is not the absolute level of the result, but the variance between reports in the interest of one or another party.

With its avowed orientation to reporting maintenance of capital only in the sense of operating capability, SSAP No. 16 in the U.K. restricts the repertory of agency reports provided to the differing principals, as compared to SFAS no. 33 in the U.S. Though fragmented in disclosure, the U.S. accounting standard requires both maintenance of physical and tinancial capital reports. As in the U.K., the physical capital model is more, but not exclusively addressed to the workers as principals, whereas the financial capital model is more directly the concern of the shareholders. The trade-offs of benefit and cost between the principals are quantified by the variances between these reports. The exact correspondence of the reporting models to the principals is not asserted, but a potential for designing such relationships is proposed and illustrated in sections to come. As with executive compensation, the agency reports are limited by available data and models.

The investors' service for their return is risk bearing and in that function act as an agent for other principals. If the contractual theory of the firm hypothesis continues to be entertained, then the diversified investors ask whether the factor cost of the financial capital which they supplied has been maintained in purchasing power. Received doctrine holds that diversified investors are indifferent to specific return and risk, but are interested in minimizing agency costs and in actually taking the systematic risk return position which they prefer. Finally, their own more general purchasing power and consumption is only fractionally dependent on that of the firm.

A constant purchasing power standard is relevant to shareholders and obtained at low agency cost due to the objective, verifiable procedures employed. Audited historical cost reports of equity adjusted for general price level charge obtained from an authoritative source provide the standard of financial capital maintenance.

This standard, however, does not report on the stewardship of specific assets and liabilities on a current basis nor represent the actual position and results of the firm. Moreover, the employees, the suppliers of management and labor factors of production, do have relatively undiversified human capital investment in the specific firm. Their interest is in the maintenance of its operating capability, i.e. physical capital.

The underdiversified employees' interests run both with the specific purchasing power of the firm on which their own general purchasing power as individuals is heavily dependent. However, these employees compete with each other for surplus resources. They compete for preferred risk/return positions for themselves within the firm and for the firm in outside markets. Depending on what specific factors of production they supply and what contracts they negotiate among themselves, the employees do each end up with some mix of agency costs. The insiders engage in formal and informal monitoring, contract for explicit rewards and penalties, and incur the implicit cost/benefit of whatever self-serving activities go on. Outsiders in an efficient market benefit from attending to their preferred activities and ignoring the intramural activities of the insiders.

#### V. CHANGING PRICE REPORTS AS BUDGETS

A current cost report has the aim of presenting (the best estimate of) the firm's actual results and position-retrospectively and descriptively. However, the current costs reported are hypothetical and planned rahter than historical and incurred. Their composition and magnitude depend upon assumptions about policy, technology and the coordination of factor costs. These model variations employ data whose measurements are estimates, not events. The report is a synthesis, which represents the current assessment of the firm's ongoing endowment and operations, as prospectively coordinated.

How to measure budgeting performance varies with the functions, which the budget serves. If incentives are based on budgets as actions and their estimation variances as exceptions, then the types of budgets and variances which we are proposing need restrictive definition.

In order to evaluate performance, the revisions due to forecast error must be isolated from the diagnostic variances for control. By contrast, budgets can represent different principals' interests for bargaining between principals and negotiating the trade-offs in contracting. Then, budgets serve as contracts between principals and agents to determine the basis for incentives in meeting goals. However, this budgeting process must be evaluated from period to period over time, since that is the principal purpose of changing price reports, to make historical and current data comparable. Thus, a commensurability adjustment to past reports, even though already once updated, is another definable budgeting step, requiring what we term "bridging" variances between period. Since these bridging variances only revise past reports, usually they are not disclosed, but they arise by omission, if not intention, in any time series.

### Budget function

- 1) Forecasting
- 2) Performance Evaluation
- 3) Principals' Bargaining
- Commensurability over Time
- 5) Incentive Contracts
  - a. Budgeting
  - b. Operations

Variance function Revisions Isolated Diagnostics Model Trade-offs Bridging to the Same Unit of Measure Goal Attainments

This paper is not concerned with budget variances for revisions and diagnostics (# 1 and # 2), but rather trade-offs and pay-offs (# 3, # 4 and # 5). Model variances identify causes for different trade-offs and goal variances determine the amounts of settlements between the principals and agents for budgeting and operations. While like a budget in its planning respects, the current cost report is not an updated efficiency standard against which controllable performance is compared. Standards, forecast revision and diagnostic variances in control reports have their place in costing systems and document current cost reports. (Scapens, 1981 or Harvey and Thompson, 1982).

The separate and equally practical question is whether the current cost reports are 'untrue' or misleading in negotiating trade-offs and pay-offs between principals and agents. Untruth lies in misrepresentation of measurements or of the model employed and in an orientation in favor of one principal against another. Scientific methodology suggests that any particular reporting model can be tested against alternative hypotheses and replicated across other periods with new data. Under the scrutiny of knowledgeable experts both on the methodology and on the firm's own activities, the current cost report can be pitted against the constant dollar report to generate model variances. Period after period, generating goal variances on budgeting evaluates the agent's performances and their trends.

In the Soviet bonus plan sense of budgeting as action, the principals have the motive to contract, to provide truth inducing incentives to the responsible agent. As a subjective estimate, under uncertainty, modified by the utilities of the reporter, the current cost budget is only an hypothesis which prudence dictates should be tested against more objective observables, concurrently and subsequently. The budget hypothesis testing at best rejects errant budgets and leaves the other simply undisproved. However, this is the limit of science generally.

#### VI. MODEL AND GOAL VARIANCES

Multi-model, multi-period reports pose difficulty both conceptual and procedural. For a given period, variances can be reported between accounting models : cash flows, historical, constant purchasing power (CPP), and current cost. If, as well, period to period variances (or period against budget) are to be reported, then the effect of the model change must be isolated from the effect of the data change. Moreover, the comparison period to period requires a bridging model. To bridge each of the models gives four more variances for each element of data comparison. An artificial problem, you may say, but changing price reports exhibit such difficulties either explicitly or implicitly by report comparisons between periods and exist for budget variances in foreign currency.

As a means to report changing price variances, this procedure is defined.

- 1) Isolate model variances within each period
- 2) Bridge periods (or actual and standard ex ante) with the constant purchasing power model. Using monetary units of the current year means "rolling forward" or transforming the monetary units used in the reference report, prior period or budget. Bury the bridge variance in the revised prior period report, since it does not represent performance.
- 3) Isolate goal variances between the current and prior period or budget.

As for interpretation of changing price variances, the following procedure is defined. For variances the favorable and unfavorable dichotomy exists. The same magnitude of difference with opposite signs is not

the same. However, the model variance of historical cost net income relative to cash flow is always negative in a mechanical sense, as is constant purchasing power net income always less than historical cost net income, given a history of inflation. Moreover, the differences between these models is largely a function of depreciation method, capital intensity, vintage and replacement cycle position. Thus, even a smaller absolute model variance is not necessarily better or true. Only its relative magnitude matters.

The cash flow as against historical cost, as against CPP model variances represent differences in perspective of time and of principals' . preference and interest. The model variances are reported and evaluated to define the bargaining space between principals, e.g. as to dividends, wages and taxes. The goal variances test for truthfulness of model variances. The budgeted depreciation or whatever other adjustments are made to cash flow are principally in question since the CPP adjustment itself is mechanical. Thus, the second serves the first function in analysis.

The current cost as against the CPP model identifies a variance more sensitive to the bargaining and truth test functions. Planning into the future is present in historical cost depreciation and other allocations, but to a much lesser extent than for current cost because the depreciable assets are already in place. Moreover, this model variance can change sign depending on whether specific price change is more or less than general price change.

The standard for current cost model depreciation variances could be cash flow, but then the entire amount is untavorable. The standard could be historical cost, but then the replacement cycle lag and the eftects of currency debasement confound the magnitude of the current cost model variance. The hypothesis maintained is that CPP is the standard from which model variances are interpreted. Further support for this hypothesis comes from the following analysis of goal variances.

What distinguishes the current cost model is the estimation of the current cost increment. The goal variance on the current cost model variance tests the outcome of that estimation process rather than of revenues and costs which the models have in common. Though not to rule out other comparisons, the model variance between CPP and current cost has been shown to isolate on the estimation process by making the monetary unit and replacement cycle position the same.

"Corresponding amounts and 5/10 year summaries in current cost accounting" (ASC, 1982) raises the issue of designing the complementarity of constant purchasing power and current cost accounting. If prior periods' statements are restated in current year purchasing power, the erosion of the monetary unit is compensated for in past current cost financial statements from date of issue to the present. In such summaries, year to year variances become a form of current cost-constant purchasing power accounting. However, the vintage is only for the number of intervening periods in matching current cost and constant purchasing power capital recovery. In order to maintain ceteris-paribus conditions. variances between models are calculated for the same period and variances in meeting goals between periods must employ the same model. The model variances themselves can have goal variances; for example, a gearing adjustment can be budgeted as a model variance and itself have a goal variance.

Though the U.K. does not introduce constant purchasing power statements into SSAP No. 16 reports, the adjustment of prior year reports to units of current purchasing power provides a bridging model as in the 1982 ASC discussion paper, which parallels SFAS No.33. As a consequence the prior year's changing price report restated to the next year's purchasing power stipulates the expectation for the next year on an objective basis as a standard implicitly, if not explicitly.

Our conclusion is that contracts providing incentives for truthful current costs should be based on estimating the model difference between current cost and constant purchasing power and the goal variance in doing so.

# VII. THE COMPLEMENTARITY OF CURRENT COST AND CONSTANT PURCHASING POWER MODELS

Since we choose the variances between current cost and constant purchasing power models as a negotiating space between principal/agents their complementarity must be examined. Constant purchasing power standards of financial capital maintenance for assets and their periodic consumption may be conducted with varying degrees of complexity and agency cost effects. Basically, from simple to complex, the methods are :

- 1) Lump sum charge against income equal to the increased financial capital to be maintained,
- 2) 'Gearing' adjustments for the effect of financing structure on shareholder return,
- 3) Allocation of the maintenance of financial capital adjustments across the basis of assets and expenses modeling an unrealized to realized flow of income accruing on an historical cost basis.

Moreover, each of these procedures can take on a maintenance of <u>physical</u> <u>capital</u> function by employing specific price changes. Which of the above is used and how depends on whose capital and whose purchasing power is to be measured.

A representative case for industrial corporations is a net monetary debt position, which necessarily must then finance nonmonetary assets. The CPP model hypothesizes that these nonmonetary assets maintain their purchasing power in exact parity with the consumer price index. If they do so, the firm maintains its purchasing power with those assets, but owes less on the net monetary debt. The resulting gain is as dependent on the nonmonetary assets maintaining their purchasing power in constant dollars as on holding a net monetary debt position.

Under SSAP No. 16 the gearing adjustments based on specific price changes respond to this problem by measuring the gain on debt in proportion to the specific price change of the nonmonetary assets. Under SFAS No. 33 the offsetting of a constant dollar capital maintenance charge against a current cost gain on inventory and property makes their net

effect a test of the validity of the purchasing power gain or loss. If current cost or specific price increases of inventory and property should fail to keep pace with general price level increases, then the implication is the firm loses on the recovery of its nonmonetary assets in offset to the gain on its net debt position. That is, if capital recovery were limited to the lesser specific price increase.

By comparing the specific price changes of a firm's assets with those implied by the general price level change, the resulting variances also become an empirical test of the revaluations of position and the standards for capital recovery to be employed by the agents in decisions such as pricing, procurement, and dividends. Only using both methods in a complementary design generates these model variances.

The function of the constant dollar complement of current cost in FASB disclosures is the setting of budgeted standards of financial capital recovery. Current cost and constant dollar methodology estimate cost of sales and depreciation from different models. In order to maintain financial capital against inflation, a firm must generate sufficient income to cover a charge for the erosion of purchasing power invested in equity. The FASB general price level offset to specific price level adjustments acts as a standard against which current cost write-ups and operating income implicitly are tested.

Though specific prices may increase faster or slower than the general price level in a particular short period, over long periods the equilibrium of the economy tends to realign the specific and general price levels. Whereas over many periods the operating income of a profitable firm compounds in growth, the cumulative variance between current cost and constant dollar adjustments has a tendency to regress toward zero. (Peasnell and Skerratt, 1977).

Over time firms adapt their positions toward an array of specific assets, whose cost behavior favors efficiency and adapts to supply

and demand in general. Any resource, which becomes progressively more precious, should reduce to a lesser role in a firm's production. Obviously, resource cartels (unions, OPEC) can distort the equilibrium between relative price increases and demand for supply. However, the longer the period of adjustment, the less likely that the economy will not discipline supply and demand to constrain specific price relative increases or decreases from continuing. (Fama and Schwert, 1979)

The complexity and possible misinterpretation of historical cost performance measures subject to position revaluations requires such information be analyzed. Because results from operations and from holding a position have different time horizons, their disengagement actually reduces distortion. The separate operating and holding results of SFAS No. 33 can be evaluated individually as informative interim estimates. Then as well, these current cost disclosures can be reconciled collectively to historical cost, since their differences are only a matter of timing and classification. The longer the reporting period, the more verifiable the comprehensive measures become. The cumulative results of the five year array of disclosures required by SFAS No. 33 present a long run perspective crucial to interpreting and validating revaluations of position.

### VIII. INTERIM PAYOFFS AND UNOBSERVABLES

Incentive contract payoffs based on accounting numbers for income and wealth do not possess the same degree of verifiability as observable product units of definite specifications. The original motivation for the paper is simply that no one neutral accounting report can be agreed upon by the principals. Cash flow ex post in a single period venture accounting does exemplify one neutral observable pay-off function. Settling up between owners of the factors of production at the end of interim periods based on cash flows raises all the problems, which have engendered the present state of the art in accrual accounting for multiple periods. However, ex post cash flow from operations period by period, whatever its faults or definitions, at least illustrates observability.

The truth inducing tests in accounting are imperfect and any agency function is never complete. The allocations, estimation, and budgets illustrated here by depreciation may be untrue as a result of uncertainty or misrepresentation. Except for cash flow, the accounting numbers are flawed by unobservability.

Another form of agency cost in monitoring current cost estimation is to wait for the unobservable to become observable. By analyses over time, the replacement lag can be identified and current cost estimates traced to historical cost replacements. However, monitoring and auditing current costs are not the subject of this paper. Kather the question is what current incentives could be contracted to elicit the agent's best estimates now. A surrogate for monitoring of the actual best estimate now is to offer rewards to the agent possessing superior knowledge.

The moral hazard is that the agent responsible for the current cost estimate, or the historical cost depreciation and other allocations, may choose to increase or decrease costs in order to smooth income or for other self-serving motives. Current cost depreciation is especially vulnerable to misrepresentation, since whatever costs are estimated can be attributed to projected states of nature subject to uncertainty. Eventually, the "true" state of nature will be more observable but even then the ideal technology for the economic environment is not certainly identifiable.

Period by period, the observability of realized current costs is greater for inventory than for depreciable asset adjustments. Moreover, the current cost adjustment for realized depreciation is based on the unrealized adjustment to the underlying asset. The validity of the remainder of cost of sales and the inventory adjustments have not been qualified in the commentaries of U.S. corporate respondents. To the contrary, U.S. corporations have widely disclaimed the realism of depreciation adjustments. In wordings that are noticeably similar, the highly speculative nature of the replacement assumptions for long lived assets is emphasized. (ATT, 1981).

The critical issue is the observability of current cost adjustments to long-lived depreciable assets. However, the contractual theory of the firm and underdiversified owners of cost factors are oriented to long run operating capability, not day by day security price responses. Within, say, a three year cycle of union and executive contract periods augmented by the reappraisal of current cost estimates in years prior to that, the observability of depreciable assets' current cost would appear adequate for the bargaining among the principal/agents owning the factors of production.

What about the diversified suppliers of capital whose risk and return does depend on the security market ? Can investors afford to wait out the observability lag for current cost estimates of depreciable assets. All empirical research has found no statistically significant security market responses to financial reporting of changing prices. These findings emphatically confirm no penalty is imposed on shareholders by tentative estimates of current costs or of constant purchasing power adjusted historical costs, whose usefulness is as a data base for decisions.

#### IX. CHANGING PRICE VARIANCES UNDER SFAS NO. 33

A modified Changing Price Variance Format is illustrated under SFAS No. 33 for American Telephone and Telegraph Company (ATT) as recast from the published data in Exhibit I. To generate variances ATT's 1980 results adjusted to 1981 dollars are used as a budget for 1981 as the required 5 year Summary implies. The comparison of current and prior years needs no defense, but its form does. Applying our apparatus, we envision the principals making these conclusions.

The observable, neutral result for cash flow in 1981 shows a favorable goal variance. Historical cost depreciation increases in 1981 at a rate more than the CPI, which implies additional real investment. The constant purchasing power recovery increment to historical depreciation increases and an unfavorable goal variance is generated. The rate of increase in current cost depreciation is held down in 1981 so that the add

back of "realized cost saving" relative to constant dollar model depreciation increases from 1980. A favorable goal variance is generated for current cost estimation. Current cost income from operations holds level whereas constant dollar income goes down over 50 %.

The constant purchasing power model variance for holding monetary liabilities shows a drastic decline in the purchasing power gain. In response to inquiry from the authors, ATT wrote that the 1981 purchasing power gain had been revised from \$ 3,011.5 to 5,381.9 in 1982. The summary of realized and unrealized changes in cost estimates on the balance sheet in 1981 shows that current cost increases were held substantially below the inflation rate. Though this favorable model variance on asset cost decreases somewhat from the previous year, percentage-wise the saving is greater in 1981.

The disclosures of ATT show that prices in general, as measured by the U.S. Consumer Price Index-Urban Workers, are rising faster than prices specific to ATT's operations. Such a situation may seem pathological or casual but the reasons for drawing conclusions from this conjuncture are not arbitrary. As a matter of public and private policy, we postulate that reducing the specific costs of the firm below those in general is fundamental to combatting inflation, generating productivity gains, and commanding comparative advantage in international trade both for a particular economy and firm. Accounting reports and incentives based on model variances have favorable economic consequences, if reduced costs are rewarded. The favorable variance of specific cost relative to general cost is due "primarily to benefits of technological improvements in constructing telephone plant", in words quoted from ATT.

Having examined the report itself, the next issue is its truthfulness. We propose that the Soviet Plan formula be employed as if an incentive were provided for the 'truthfulness' of the budgeted current cost. Without any moral overtones, the error in the 1981 purchasing power gain is an example of an "untrue" disclosure. However, current cost estimation provides a more general problem for the analysis which follows.

## EXHIBIT I

ATT COMPANY

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## SFAS No. 33 Reconciliation Format

Supplementary Financial Data Adjusted for the Effects of Changing Prices For the Year Ended December 31 (In 000,000 Average 1981 Dollars)

(In 000,000 Average 1981 Dollars)	★ MODEL VARIANCE	1981	1980	GOAL VARIANCE
Cash Flow		14,788.4	14,457.4	331.0
Historical cost Depreciation	*	(7,900.3)	(7,770.7)	(129.6)
Income from continuing operations as reported in the primary statement of income		6,888.1	6,686.7	201.4
Adjustment to restate costs for the effects of general inflation Cost of goods sold Depreciation	*	- (6,424.9)	- (5,661.6)	(763.3)
Income from continuing operations adjusted for the effects of general inflation		463.2	1,025,1	(561.9)
Adjustment to reflect the difference between general inflation and changes in spe prices (current costs) Cost of goods sold Depreciation	ecific *	-	-	- 579 <b>.</b> 9
Income from continuing operations adjusted for changes in specific prices		2,185.9	2,167.9	18.0
Purchasing power gain on net monetary liabilities held during the year	*	3,011.5	7,709.2	(4,697.7)
Increase in current cost of inventory and equipment held during the year (based on specific price changes)		9,844.3	15,217.9	(5,373.6)
Effect of increase in general price level	*	(15,322.5)	(21,504.0)	(6,181.5)
Decrease in current cost of inventory and equipment held during the year (based cific price changes) net of changes in the general price level (net holding loss) SFAS No. 33 Terminology	on spe-	<u>(5,478,2)</u>	<u>(6,286.1)</u>	(807.9)
Total		(280.8)	3,591.0	<u>(3.871.8)</u>
Net assets - at current cost - restated for effects of general inflation		121,613.7 (140,082.0)(	120,882.7 ( <u>134,601.8</u> )	731.0 (5,480.2)
Difference, primarily due to benefits of technological improvement in construction telephone plant	ng *	(18,468.3)	<u>(13,791.1)</u>	<u>(4,749.2)</u>

Source : ATT 198 .

Recall that the bonus parameter assigned to the budget is b; which is more than the bonus rate for bettering the budget a, but less than the penalty rate for falling short of the budget c. This formula could be applied only to a net result in contracting with a chief executive or could be applied independently as incentives for different functions. Here the asymmetric formula is limited to one application, budgeting current cost/ CPP model variances, subordinate to overall objectives.

To test the current cost estimation, the current cost-CPP model variance has been shown to be the distinguishing number. Where the budgeted model variance is a cost saving and its income effect is positive, as in the ATT example, the more the cost saving relative to the prior year the more the reward. Though the goal variance is favorable it is rewarded only at the rate a, which is less than the reward b for the budget itself because the current cost was overbudgeted ex ante. A premium is awarded for both budgeting and achieving the cost saving. The incentive for truthfulness offered is :

BY THE WORKERS AS PRINCIPALS :

I = K + b 1142.8 + a 579.9 - c(o)

Why should the current cost model variance budgeted ex ante from 1980 as bridged to 1981 (\$ 1,142.8) be compared with the model variance budgeted ex post at \$ 1,722.8 ? The favorable goal variance of \$ 579.9 serves two functions : bargaining between principals and testing for truth. If the shareholders want financial capital recovered from telephone rates and the workers only want current cost recovered, the model variance between the two should be estimated accurately in timely fashion. Otherwise the bargaining information presented to the principals is misrepresented. If bargaining is suspended to await more accurate information, ex post, then the regulatory lag problem arises. Justice deferred is justice denied. Analytical review and auditing can be employed to determine whether the goal variance is justified by new information or is consistent with other variances such as for cash flow or unrealized current cost/CPP balance sheet valuations.

More complex issues are raised, if executives and workers are viewed as different principals, or if consumers form another principal group. Consumers may regard the overestimation of the current costs bugeted by the responsible agent as counter to their interest. The overbudgeted current costs could be used to justify higher rates in negotiations with regulatory bodies. This analysis of the ATT Changing Price Report aims to illustrate how the Soviet system rewards fulfilling budgets and its suitability to current cost budgeting whose purpose is to reduce surprises, not to introduce them into financial reporting.

#### X. CONCLUSION

Current cost numbers are subjective and liable to manipulation in ways similar to budgets. Our hypothesis is that while competing principals have differing interests in which current cost numbers are reported, especially if they are implemented, they share a common interest in their truthfulness. Our conclusion is that this truthfulness is tested (but not proven) by disclosing variances between budgets favored by this against that principal, say, workers and investors. These model variances derive from definite, known differences such as maintaining physical or financial capital. From period to period, goal variances arise from estimating the model variances and do test the truthfulness of the data and projection employed. Just as in designing a Soviet model incentive contract, estimation of changing price reports are assigned rewards and penalties for the fit of budget to performance in changing price reports.

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