Submission to the Hong Kong SAR Legislative Council Panel on Public Service

by James Perry, Chancellors' Professor of Public and Environmental Affairs
Indiana University, Bloomington, Indiana, USA

I am pleased to have this opportunity to submit to you my views about the Consultation Document on Civil Service Reform. I recognize that you will have many submissions about the Consultation Document, so I will make my comments brief. I am willing, however, to elaborate about anything in this submission or other matters about which the Legislative Council Panel may seek my input. A bibliography of some of my research about civil service reform is listed at the end of this narrative. The articles listed on the bibliography are included with this submission.

Strengths of the Proposed Civil Service Reforms

I endorse many of the proposed reforms contained in the Consultation Document. In light of global economic, technological, and social developments, private and government organizations are changing radically. Many of the proposed civil service reforms are in step with new ways that government organizations are doing business around the world. The reforms are not without risks, but the need to increase public productivity and responsiveness merits appropriate experimentation.

Among the strengths of the proposed civil service reforms are

- The new entry system, which proposes to employ basic rank civil servants on agreement terms. This arrangement helps to break the entitlement mentality that some associate with civil service employment. It also provides an incentive for job incumbents to demonstrate good performance so that their retention and subsequent advancement into supervisory and management positions is more likely to be based on performance.
- The redefinition of a permanent career, which again serves to reduce the entitlement mentality associated with civil service positions and reduces the property rights that are perceived to reside with civil service positions.
- The creation of contributory provident funds that would replace pensions as the retirement protection system. This change mirrors changes elsewhere (see "The End of the Company Pension," The Economist, May 15, 1999, pp. 77-79). The United States federal civil service converted to a defined contribution in the mid-1980s. It has been well received by both government officials and employees.
- Transition to a total remuneration policy, which includes wages and fringe benefits. This is an appropriate step for controlling costs of fringe benefits and increasing their comparability with the private sector.

The proposed reforms in the entry system, permanent terms, retirement system and fringe benefits are a step forward. They will inject new flexibility into civil service staffing and provide additional incentives for high performance.

Weaknesses of the Proposed Reforms

The Consultation Document proposes introducing performance pay. The Consultation Document justifies performance-based pay because of its widespread adoption in the private sector and its increasing use in civil services overseas. The latter assertion, that is, that civil services overseas are turning increasingly to performance-based pay, is questionable. In the U.S. federal sector, for instance, the amount of employees covered by performance-based pay is less in 1999 than it was in 1981. Beginning in 1981, the U.S. federal civil service embarked upon two performance-based pay programs, both of which failed. The attributes of these performance pay programs are strikingly similar to the attributes of the system implied by the Consultation Document.

If the Hong Kong SAR is inclined to pursue experimentation with performance-based pay, then I suggest you consider several lessons that have been learned from its application in the U.S. public sector. These lessons include:

- **Performance-based pay should follow other "gateway" changes.** Many organizations look upon performance-based pay as a quick and easy fix for serious performance problems. The reality is that performance-based pay is likely to be of little benefit to organizations with serious performance problems, and may actually cause harm. Performance-based pay plans are best suited for organizations with supportive cultures. The absence of an organizational culture that facilitates agreement about the performance-based pay system and whose values are compatible with it necessitates organizational change prior to any performance-based pay intervention. In essence, performance-based pay should not be a leading or "gateway" change that precedes other major innovations, but a "lagging" change that follows and reinforces other, more consequential organizational changes. This suggests that it is prudent to take a slow and deliberate approach to implementing performance-based pay.
- **Performance pay should be contingent on agency attributes.** The Consultation Document notes that "we do not consider any single model of performance pay could be applied throughout the civil service." I endorse this position wholeheartedly. It is consistent with lessons learned from the application of performance-based pay in public jurisdictions overseas. A "one size fits all" approach to performance pay is not likely to be effective. The performance-based pay system should be tailored to an agency's mission, strategic plan, and types of goods and services it produces. This means that Trading Funds might have quite different performance pay systems from the Disciplined Services, and these systems might be quite different from those used in the Government Secretariat.
- **Employees should have opportunities for participation in the design and administration of performance-based pay programs.** The logic for high degrees of employee participation in performance pay system design and administration is compelling. Probably the greatest benefit from employee participation is that it facilitates patterns of interaction conducive to performance pay success. Employees are likely to view performance pay plans in which they actively participate with higher trust and greater approval. They are also likely to be in a position to better implement such systems.

- **Implementation of performance pay should be gradual and special consideration should be given to measuring performance.** One of the major problems with performance pay in government involves inadequacies of performance measurement systems. This is also an area in which the public sector differs from the private. The government's bottom line is often not as readily identifiable as the private sector's. This creates special challenges for the implementation of performance-based pay. Public organizations too frequently initiate performance pay plans without tested and validated measurement systems. If performance pay is to have a fair chance for success, then significant time and effort must be devoted to designing and testing the performance measurement system. An agency's rush to implement a performance pay plan without adequate attention to the measurement system and other key factors affecting success is likely to be counterproductive. Furthermore, organizations prepared to make a genuine investment in performance improvement are likely to find favorable changes during the three to five years it may take to develop an acceptable measurement system because of the benefits of the measurement system alone. Gradual implementation of the measurement system also creates an opportunity for organizational members to develop agreement about the performance pay plan. I should also note that effective performance pay systems do not rely solely or even primarily on traditional performance appraisal systems as the system for measuring employee performance. If possible, the measurement system should be tied to objective indicators of organizational and individual achievements and not on subjective supervisory judgements about individual performance.
- **Performance-based pay needs to be adequately funded.** From a motivational perspective, performance-based pay is ineffective unless sufficient portions of pay are put "at risk," that is, can be gained or lost as a result of performance. Estimates of the amount of compensation that needs to be awarded on a performance basis runs from minimums of 3% to 10% of overall salary. These estimates of minimum amounts of pay at risk exceed the portion of salary associated with the current increment system. Thus, a performance pay system will need to identify additional monies to have a motivational impact.

Areas for Further Study

The Consultation Document notes that the Pay Trend Survey is well established and widely accepted. Despite the Pay Trend Survey's longevity and acceptance, I believe it should be scrutinized more closely as part of the civil service reforms. Based on my understanding of the methodology used for the Pay Trend Survey, it does not appear to be consistent with the best practices for salary surveys by civil services overseas. There is a good prospect that the methodology employed may bias public salaries by not using comparable positions in the survey and not controlling explicitly for variation in education and experience of job incumbents. If my understanding of the Pay Trend Survey is correct, then it merits further scrutiny as part of the reform process.

An Additional Proposal

If the government of the Hong Kong Special Administrative Region pursues these civil service reforms, then evaluation of their effectiveness is appropriate. Such an evaluation should be done by an independent outside party. Although such an evaluation would require a significant outlay of funds (which I estimate to be $10 million HK dollars/year), it would promote the goals of civil service reform. A rigorous evaluation would reinforce the accountability of the civil service and increase the transparency of the civil service reforms for all parties, including the Legislative Council, employees, their representatives, and top civil servants. The independent evaluator might report to an advisory body composed of those interests and others for the purpose of building confidence in the goals and achievements of the reforms.

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JAMES L. PERRY
Biographical Sketch

James L. Perry is Chancellors' Professor in the School of Public and Environmental Affairs (SPEA) at Indiana University, Bloomington. He has also held faculty appointments at the University of California, Irvine, the Chinese University of Hong Kong, and the University of Wisconsin, Madison. In 1992 he served as special assistant to the Assistant Secretary for Personnel Administration, U.S. Department of Health and Human Services. He received an undergraduate degree from the University of Chicago and M.P.A. and Ph.D. degrees from the Maxwell School of Citizenship and Public Affairs at Syracuse University.

Perry is co-director of Indiana University's Institute for the Study of Government and the Nonprofit Sector, a university-wide institute jointly sponsored by SPEA, the Center on Philanthropy, and the Center for Urban Policy and the Environment. He is a leading authority on pay-for-performance and public service motivation. He has authored over 100 articles, appearing in such journals as the *Academy of Management Journal, Academy of Management Review, Administrative Science Quarterly, American Political Science Review,* and *Public Administration Review.* He is author and editor of several books, including the *Handbook of Public Administration, Second Edition* (Jossey-Bass, 1996).

Perry is recipient of several national awards. He received the Yoder-Heneman Award for innovative personnel research from the Society for Human Resource Management. He is recipient of two awards, the Charles H. Levine Memorial Award for Excellence in Public Administration and the Distinguished Research Award, given jointly by the American Society for Public Administration (ASPA) and the National Association of Schools of Public Affairs and Administration (NASPAA). Most recently he was elected as Fellow of the National Academy of Public Administration.

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MANAGERIAL COMPENSATION BASED ON ORGANIZATIONAL PERFORMANCE: A TIME SERIES ANALYSIS OF THE EFFECTS OF MERIT PAY

JONE L. PEARCE
WILLIAM B. STEVENSON
JAMES L. PERRY
University of California, Irvine

Performance-contingent compensation is a widely accepted means for rewarding managers, but there are no rigorous empirical tests of its effectiveness. This study reports the results of a longitudinal analysis of the effects of tying managerial pay to organizational performance in the Social Security Administration. A Box-Jenkins time series procedure was applied to organizational performance data available two years before and two years after the implementation of a new compensation system. Statistical analyses indicated that the merit pay program had no effect on organizational performance, suggesting that merit pay may be an inappropriate method of improving organizational performance.

Does tying managerial compensation to organizational performance lead to higher organizational performance? It appears to be a truism that if you want to motivate high performance, you attach rewards to it. Several prominent scholars of organization behavior (Fein, 1976; Lawler, 1971, 1981) support this common sense view. However, although merit pay and bonuses for managers are common forms of compensation, there have been no rigorous tests of their effectiveness (Dyer & Schwab, 1982).

The present study reports the results of a test of the effects of a merit pay compensation system for managers. A Box and Jenkins (1976) time series procedure was used to determine whether or not implementing a merit pay plan that tied managers' salaries to four organizational performance indicators resulted in improved organizational performance. A quasi-experimental design, incorporating a before-and-after time series (Cook & Campbell, 1979), allowed us to consider, over a period of more than four years, the effects of implementing merit pay as an intervention into the trajectories of the four performance indicators. This procedure provided, after removing historical trends or periodic oscillations in organizational performance from the data, a rigorous test of the expected effects of merit pay on overall organizational performance.

An earlier version of this paper was presented to the Personnel and Human Resources Division at the 1983 national meeting of the Academy of Management. Dallas. Texas.

THE EFFICACY OF PERFORMANCE-CONTINGENT PAY

The Connection between Pay and Performance

Many theorists have discussed the motivational aspects of pay. Opsahl and Dunnette (1966) reviewed several prominent psychological theories and discussed their implications for organizational compensation, but did not, however, discuss performance-contingent pay. Gellerman (1963) emphasized the symbolic role of money, but had little to say about how compensation should be administered to increase performance. Herzberg, Mausner, and Snyderman (1959) made the provocative argument that pay is a "hygiene factor," not a motivator of performance. However, King's (1970) compre-hensive review of research found no support for Herzberg et al.'s two-factor theory. Proponents of equity theory (Adams, 1965) proposed that individuals who perceive themselves to be underpaid or overpaid may alter their efforts to achieve a balance between performance and reward. Again, subsequent research failed to support the performance predictions of equity theory (Dyer & Schwab, 1982; Goodman & Friedman, 1971).

A different perspective was offered by Deci (1975), who conducted a series of studies on the effects of externally-mediated rewards, such as pay, on laboratory subjects' intrinsic motivation to engage in tasks. Deci drew on this research to argue that contingent payment plans should be avoided because they reduce intrinsic motivation, lead individuals to develop strategies that will enable them to get rewards with the least effort, and can easily break down, if for instance, "no one is looking." These arguments are particularly relevant to managerial jobs, since such jobs are more likely than routine jobs to be intrinsically rewarding and are less likely to be subject to extensive surveillance. Deci suggested that salaries not directly based on performance are less likely to reduce intrinsic motivation than are salaries that are perfor-mance-contingent. Unfortunately, it is not clear from his argument whether this substitution in task motivations will necessarily result in either increased or decreased task performance. Furthermore, none of the theories that have been mentioned here, or any other discussions of pay for managers (Dunnette, Lawler, Weick, & Opsahl, 1967) directly address the question of what conditions are required to produce a successful contingent pay system in or-ganizations.

The most recent advocates of merit pay in organizational settings include Lawler (1971, 1981, 1983) and Ellig (1982). Basing his argument on Vroom's (1964) expectancy theory, Lawler argued that pay can be a powerful performance incentive because it can be used to satisfy so many needs (1971: 26). However attractive money may be, Lawler contended (1971, 1981), it cannot motivate performance unless it is contingent on performance; he presented research from numerous studies that showed that managerial pay is seldom contingent on performance. Further support for the lack of connection between pay and performance was provided by Haire, Ghiselli, and Gordon (1967), who reported that managerial raises are often uncorrelated from one year to the next, indicating that either managerial performance is quite dif-

ferent from one year to the next — or, what is more likely — that raises are not based on performance but on other, possibly variable, criteria.

It is important to note that, although most scholars advocate performance-contingent pay systems, they recognize that under certain conditions the implementation of such systems may be more dysfunctional than functional. According to Lawler (1971, 1981), performance-contingent pay should not be used when trust levels are low, performance cannot be validly and inclusively measured, and large pay rewards cannot be given to the best performers. Lawler (1971) also acknowledged that managers may not control all of the factors that affect their unit's performance, concluding that under such circumstances subjective judgments by superiors and objective unit performance data should be combined into a managerial performance measure on which pay could be based.

Empirical Research on Contingent Pay

Although there have been empirical studies of the effects of performance-contingent pay for nonmanagement employees that supported such plans (Dyer & Schwab, 1982; Fein, 1976), and others reported dysfunctions of such pay plans (Babchuk & Goode, 1951; Whyte, 1955), there have been no direct tests of the effects of performance-contingent pay for managers. The only available information comes from surveys of the relationship between level of executive pay and performance.

Fein (1976), reporting a consulting firm's 1971 survey, writes that firms with formal bonus plans (which, we infer, were based on a measure of firm performance) had an average pre-tax return on investment of 15.8 percent, compared to 11.7 percent for firms without a formal plan; the after-tax profits were 8.6 percent versus 5 percent. Unfortunately, we cannot tell anything about the sample or whether these differences were statistically significant.

In Redling's (1981) study, performance was measured by a 5-year performance ranking that combined earnings growth and return on shareholders' equity. Using a randomly selected sample of 25 companies, he correlated each organization's ranked performance with its base salary growth and with its salary-plus-bonus growth over 5 years. He found a correlation of .16 between base salary increase and firm performance and a correlation of .09 between salary-plus-bonus increase and performance, from which he concluded that there was little indication of the existence of performance-contingent pay plans in current top executive compensation.

A final account of the extent to which compensation for executives is, in fact, contingent on firm performance is offered in a magazine article by Loomis (1982). The author, who plotted 1981 compensation (salaries, bonuses, profit sharing, stock purchase contribution) against return on stockholders' equity, found a less than perfect correspondence, and moreover, highlighted extreme cases of executives receiving relatively large increases in compensation during a period of deteriorating profitability for their firms. Loomis argued that executive compensation in these prominent publicly-held firms should be more directly tied to firm performance.

The assumption that performance-contingent pay should result in enhanced organizational performance is widespread. Redling's (1981) and Loomis's (1982) advocacy of managerial pay based on organizational performance measures echoes the recommendations of compensation specialists (cf., Ellig, 1982). Yet, as this review of theory and research tying managerial compensation to organizational performance shows, there is a lack of conclusive empirical support for this assumption due to an absence of systematic research. Dyer and Schwab (1982) noted that there is research evidence that incentive pay plans for nonmanagement employees produce higher productivity, but that there have been no field studies of managerial merit pay plans. Nevertheless, some argue that managerial performance should be higher using such programs, and even if these programs are not perfect, the alternative of noncontingent pay certainly does not motivate performance (Ellig, 1982). The present study is the first systematic attempt to assess the actual effects on organizational performance of the introduction of performance-contingent pay for managers.

METHODS

This study was conducted as part of a larger study of personnel reform in five federal government agencies (Perry & Porter, 1981). Extensive interviews, on-site observations, surveys, and record audits from this larger study supplemented the archival data reported in the present study. The Social Security Administration (SSA) was the site of this study. The performance-contingent pay system was implemented in the SSA as part of the Civil Service Reform Act of 1978, and, as in all federal agencies, covered managers, but not their subordinates. This new pay system allocated one-half of annual pay increases for managers automatically and the other half on the basis of rated performance; in the prior system, the entire increase was routinely awarded. The new discretionary or merit portion of the annual increase was allocated to managers from a pool of funds according to the distribution of their performance ratings within the pool. The overall size of the annual pay adjustment was determined by a presidential decision based, in part, on a salary survey of comparable jobs in the private sector. In the initial year of implementation, 4.5 percent of the amount of base salaries was available for merit increases, and in the second year, 2.4 percent.

Sample

Performance data were collected from a regional network of 20 local district and branch SSA offices, ranging in size from 12 to 73 employees. The primary functions of each office were to accept claims, determine eligibility for benefits, and maintain records for retirement, insurance, and income supplement programs under Titles II and XVI of the Social Security Act. Managers in these 20 offices were part of the same merit pay pool. We combined performance indicators for the 20 district and branch offices into aggregate time series, because our research hypotheses focused on whether

the merit pay plan had effects on Social Security offices in general, rather than on whether a particular manager or group of employees responded favorably to it.

Measures

Monthly time series for four performance measures were the basis for the present study, with the number of observations in each series ranging from 48 to 53. Although several additional performance indicators were used during one yearly appraisal or the next, we confined our analysis to the following indicators that were used continuously over the study interval: (1) the average number of days for a retirement/survivor's claim to be paid or denied (performance measure 1), measured for 53 months from October 1977 to February 1982; (2) the average number of days for an aged supplemental income claim to be paid or denied (performance measure 2), measured for 53 months from October 1977 to February 1982; (3) the percentage of supplemental income claims with accurate payment documentation (performance measure 3), measured for 49 months from February 1978 to February 1982; and (4), the percentage of post-entitlement actions that took over 30 days to be settled (performance measure 4), measured for 48 months from October, 1977 to September, 1981.

A district office's performance on objective measures accounted for the largest share (40%) of its manager's rating for determining merit pay. The four indicators were designated "critical elements" in the first performance period by the regional commissioner of SSA, which meant that performance below standard on any of them resulted in automatic denial of a merit pay increase. The remainder of the performance rating was composed of supervisory evaluations and objective measures that were not critical and changed each year (e.g., affirmative action progress or meeting office security goals).

Subjective and objective ratings were converted to scores ranging from a 0 for unsatisfactory performance to a 4 for outstanding performance. For example, in fiscal year 1981, the standards for performance measure 1 — the average number of days for a retirement or survivor's claim to be paid or denied — for the Southwest California Area were: level 0, 34 or more days; level 1, 33 days; level 2, 30-32 days; level 3, 29 days; level 4, 28 or fewer days. All of these subjective and objective ordinal scores were then weighted and averaged to produce the overall rating on which the merit pay award was based.

The objective organizational performance measures used in this study were available for 2 years prior to creation of the merit pay system. Because they had become accepted measures of SSA performance, much as profitability is for business firms, they were not changed in any significant way to accommodate merit pay. Managers who were responsible for overseeing them indicated there was a high positive association between objective and final merit ratings. Field observations and extensive interviews also revealed that managers were highly attentive to the objective measures because of concern for their effects on final merit ratings and awareness that failure to perform

satisfactorily on any of them would result in automatic denial of a merit pay increase (Perry & Porter, 1981).

Interventions

The effects of changing to a performance-contingent compensation system were assessed in terms of the hypothesized statistical effects of three interventions into each of the four time series. The first intervention corresponded to the initiation of merit pay orientation and training sessions in September, 1979. We hypothesized that the training intervention would familiarize managers with the new contingent pay program and might sensitize them to attendant expectations, thereby spurring an increase in performance. The second intervention corresponded with the actual start of merit pay on January 1, 1980, the date on which future annual increases became contingent on organizational performance. The third intervention corresponded with the end of the fiscal year on October 1, 1980, when annual merit pay adjustments began to be distributed in monthly paychecks and the second year of merit pay started.

Statistical Methods

The measurements of the four indicators of organizational performance at regular intervals form four time series of observations. We constructed a statistical model describing each time series, and then added the dates of the three interventions to the model. If an intervention produced a significant effect on the time series — that is, a change in level or slope not predictable from the model describing the series — we could conclude that merit pay had an effect on organizational performance.

An important first step in testing the effects of the merit pay interventions was constructing a statistical model of each time series. The reasons why ARIMA modeling was preferred to the alternatives are discussed in the Appendix.

Because of its ability to model the systematic components in the time series, we chose ARIMA modeling for this analysis; however, ARIMA modeling has certain drawbacks. The technique requires lengthy time series; most analysts recommend time series of at least 50 observations in order to identify the parameters of the model. In the present study, the four time series included from 48 to 53 observations. ARIMA modeling could also be criticized because the removal of trend and the estimation of autoregressive and moving average parameters are atheoretical and represent the removal of the effects of unmeasured variables. On the other hand, this technique is no more atheoretical than adjustments for autocorrelated errors made in econometric models, and with lengthy time series, may provide a more accurate model for estimating the effects of interventions (Albritton, 1981; Hibbs, 1977).

Interventions are added to the ARIMA model by specifying a transfer function that translates the effect of an intervention into an expected effect on the series. The effect hypothesized by the analyst may take a variety of

forms (Box & Tiao, 1975; Hibbs, 1977). For example, an intervention like a new law reducing the hydrocarbons in gasoline may be expected to have a sudden, abrupt effect on air pollution in the Los Angeles basin (Box & Tiao, 1975); another intervention, such as a new law requiring seat belts in new automobiles, may be expected to produce a gradual, constant change in the automobile death rate as new automobiles are purchased (Bhattacharyya & Layton, 1979). In the present case, assuming that managers cannot cause instantaneous changes in organizational performance, we hypothesized that the implementation of merit pay would produce a gradual and permanent change in organizational performance over a period of months, a process that can be represented as a transfer function (McCleary & Hay, 1980):

$$Y_t = \frac{U_o}{1 - S_1 B} I_t + N_t$$

where Y_t = the original time series,
U_o = a parameter representing the initial impact of the change,
S_1 = a parameter representing the rate of change after the impact,
B = the backshift operator — when applied to a variable, the variable is shifted backward one time point (Box & Jenkins, 1976),
I_t = the impact variable, equal to 0 before intervention, to 1 afterward,
N_t = the ARIMA noise model,

and where $-1 < S_1 < 1$.

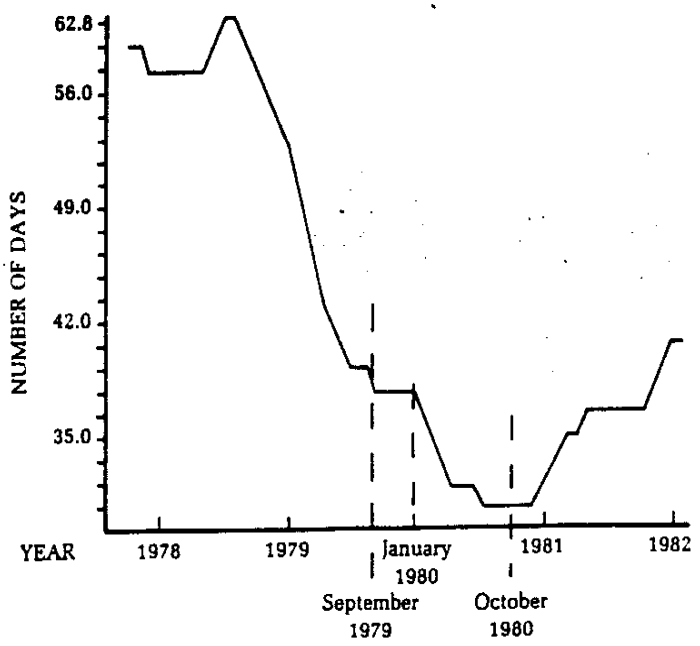
The rate of change variable S_1 is constrained to be less than $\pm$ 1 to insure a stable impact. If both the Uo and S_1 parameters were statistically significant, the implementation of merit pay for managers would have had a significant gradual, constant impact on organizational performance. If the Uo parameter *alone* were significant, the implication would be that the initial impact was instantaneous, and therefore, the rate of change parameter (S_1) was unnecessary. In this case, the transfer function may have been misspecified and a transfer function reflecting an instantaneous change in the series may have been more appropriate. If the Uo parameter were not significant, then the implementation of merit pay had no initial effect, and the S_1 parameter was irrelevant.

RESULTS

Figure 1 presents plots of the four performance measures over time. We smoothed the data, reducing variation around the general trend by calculating running medians of 4, then 2, then 3, and then calculating a running average, and then reapplying the entire process, in order to clarify the pattern of the data. This process, implemented by the MINITAB interactive

FIGURE 1
Smoothed Time-Series for Four Performance Measures

(a) Days for a Retirement/Survivor's Claim to Be Paid or Denied (Measure 1)



(b) Days for an Aged Supplemental Income Claim to Be Paid or Denied (Measure 2)

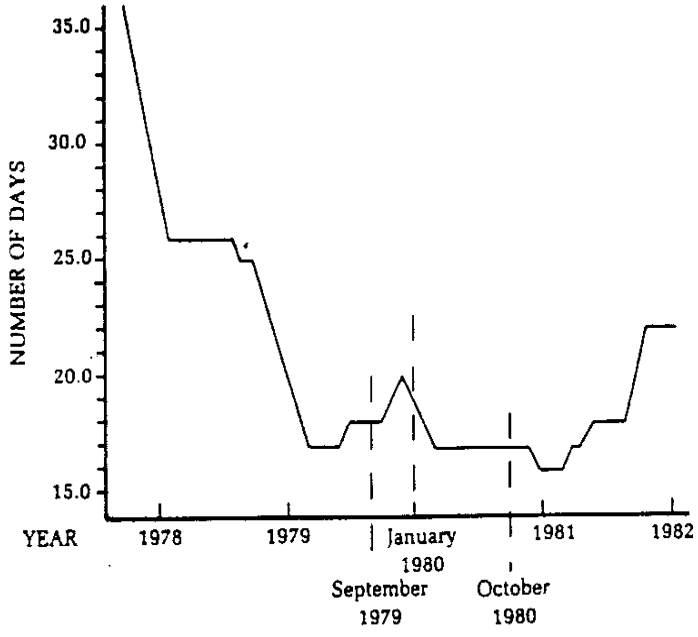
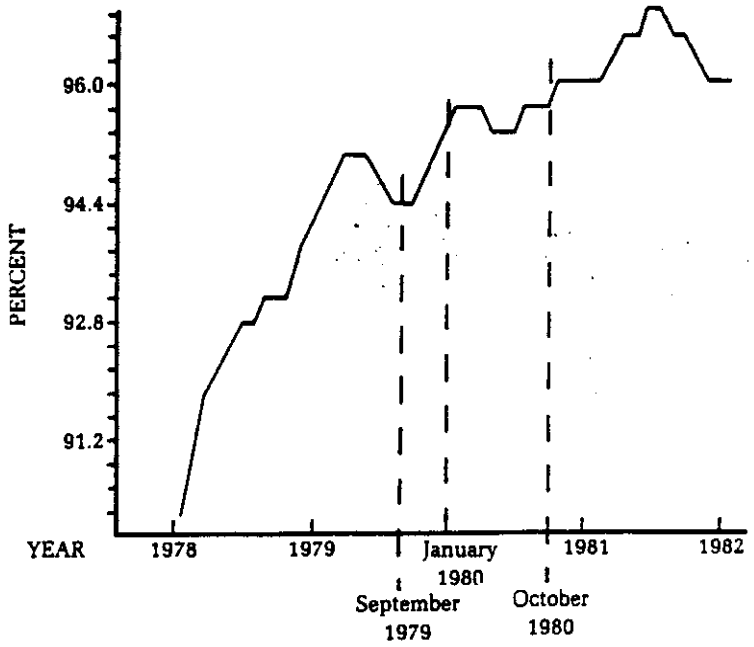
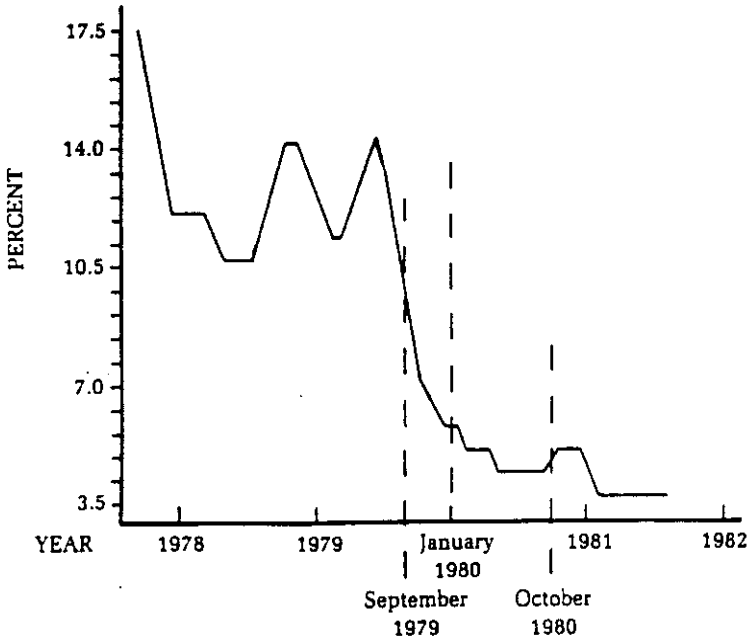


FIGURE 1 (continued)

(c) Percentage of Supplemental Income Claims with Accurate Documentation (Measure 3)



(d) Percentage of Post-Entitlement Actions That Took Over 30 Days (Measure 4)



computer program (Ryan, Joiner, & Ryan, 1981), provides a smoothing procedure resistant to extreme values but retaining the overall pattern of data (Velleman & Hoaglin, 1981).[1]

As can be seen in the figures, performance was improving before the implementation of merit pay. Our data do not extend far enough back in time to detect the origin of the trend, but it is clear that there is a general upward trend in performance over the study period. with no obvious changes in direction due to the implementation of merit pay.

We supplemented these descriptive results with formal hypothesis testing using ARIMA analysis (McCleary & Hay, 1980); Table 1 presents the results. Before the analysis, we removed trends in the data, evident in the figures, by differencing. Then, we formulated a model describing the time series in terms of any month-to-month repetition and thus autoregressively correlated data points or repetitive moving average random shocks. Any systematic component in the data based on more than month-to-month repetition could have been removed by adding seasonal components to the model, but this was unnecessary. Because several of these time series exhibit floor or ceiling effects — that is, the series asymptomatically approach an upper bound of performance that may be impossible to surpass, for instance 100 percent accuracy — and because several series approach this boundary nonlinearly, all of the time series except that for supplemental security income claims were transformed to their natural logarithms (McCleary & Musheno, 1981).

The appropriate models are displayed in Table 1 in Box and Jenkins (1976) "*p d q*" notation where *p* indicates the order of the autoregressive parameter, *d* indicates the degree of differencing, and *q* denotes the order of the moving average parameter. First, we estimated all models with a trend constant to account for any additional trend after first differencing. If the trend constant was not statistically significant it was deleted, and the equation was reestimated. The coefficients in the initial models were statistically significant (twice their standard errors) except for the coefficients of performance measures 2 and 4, for which transforming the data to logarithms and taking a first difference to remove trends were adequate to model the data.

Once the ARIMA models were specified, analysis proceeded to testing the effects on the time series of events treated as interventions by adding a transfer function to the model. If the parameters of the transfer function are significant, the intervention had had a significant effect on the time series above and beyond any trends in the data and autoregressive and moving average regularities. As can be seen in Table 1, the gradual, constant intervention hypothesis was not supported. The parameters of the transfer function added to the ARIMA model were not significantly different from zero for any of the performance measures, except for the September 1979 training effect for the first difference logarithm of performance measure 4. This one

[1] However readers are cautioned that smoothing data does remove some of the important detail: we relied upon statistical analysis of the raw data in the testing of our hypothesized intervention effects.

significant result could be taken as evidence of some slight positive effect of merit pay, but in order for this result to be considered substantive support for the effects of merit pay plans on performance, we would have to assume that managers began to manage in a way that brought about an increase, beginning during the training period, in the speed of processing one particular type of claim, even though managers did not know during the training period *exactly* which indicators from among those available would be used to evaluate their performance. Substantively, however, it seems more likely that a positive effect of merit pay would be manifested in more than one performance indicator. Indeed, if these tests are not considered to be independent of each other and the probability level for statistical significance is appropriately altered, the statistically significant effect for performance measure 4 vanishes. Overall, then, positive effects of the implementation of merit pay, whether conceived of as caused by a training effect on September 1979, a simple implementation effect on January 1980, or a delayed effect on October 1980, were not supported by the data.

DISCUSSION

Our analysis of the effects of the implementation of a performance-contingent pay program for managers indicated that its implementation had no statistically significant, gradual, permanent effect on the general trend of organizational performance in 11 out of 12 tests. These statistical results confirm the pattern seen in an examination of plots of 4 measures of organizational performance from October 1977 to February 1982. For whatever reason, organizational performance was improving in the Social Security Administration offices well before the passage of the Reform Act, and neither the implementation of merit pay as a system, nor the first year of rewarding managers with merit pay had any additional effects.

There are limitations to this study that prevent drawing definitive conclusions about the effect of merit pay on organizational performance. First, of necessity, the majority of our statistical tests focus on the implementation of merit pay. The program was clearly designed to improve organizational performance, and 8 of our 12 tests assess the effect of training and the start of the program on organizational performance, an emphasis somewhat different from testing changes in organizational performance after merit pay rewards were distributed. Thus, although we did examine four performance measures at one point after rewards began to be distributed, we were more oriented to the question of whether implementation of the program had effects, rather than to possible effects of rewards over a longer period of time. This merit pay program has continued in operation, and further testing may reveal long term positive or negative effects on organizational performance.

Second, there is evidence that the implementation of this federal merit pay program was flawed in several ways. The program was implemented amid court challenges and disputes among responsible agencies, such as the Office of Personnel Management and the General Accounting Office, over its

TABLE 1
ARIMA Estimates of the Effects of Events Implementing Merit Pay on Four Time Series of Organizational Performance

Performance Measure	Model[a]	Event Date	Trend[b]	Noise[b]	U_0[b]	S_1[b]
1: Days for a retirement/ survivor's claim to be paid or denied (log) (n = 53)	(011)	–	–	.3495 (2.59)*	–	–
		Startup/ January 1980	–	.1815 (1.25)	.0021 (0.55)	−1.1387 (13.59)*
		Training/ September 1979	–	.3406 (2.54)*	−.0172 (0.51)	−.5176 (0.35)
		Payout/ October 1980	–	.3280 (2.46)*	.0116 (0.35)	−.4364 (0.19)*
2: Days for an aged supplemental income claim to be paid or denied (log) (n = 53)	(010)	–	–	–	–	–
		Startup/ January 1980	–	–	.0227 (0.52)*	−.3065 (0.18)
		Training/ September 1979	–	–	.0566 (1.31)	.3040 (0.46)
		Payout/ October 1980	–	–	−.0330 (0.83)	−.6413 (1.12)

TABLE 1 (continued)

Performance Measure	Model[a]	Event Date	Trend[b]	Noise[b]	U_0[b]	S_1[b]
3: Percentage of supplemental income claims with accurate documentation (log) (n = 49)	(011)	–	.1135 (2.15)*	.4366 (3.55)*	–	–
		Startup/ January 1980	.1786 (2.99)*	.5258 (4.50)*	−.0522 (0.60)	1.0929 (11.95)*
		Training/ September 1979	.0985 (1.86)	.4446 (3.58)*	.9942 (1.56)	−.4445 (0.83)
		Payout/ October 1980	.1629 (2.62)*	.4398 (3.23)*	−.0625 (0.49)	1.1660 (4.87)*
4: Percentage of post-entitlement actions that took over 30 days (n = 48)	(010)	–	–	–	–	–
		Startup/ January 1980	–	–	.0069 (0.45)	−1.1212 (7.99)*
		Training/ September 1978	–	–	−.1572 (2.32)*	.7115 (4.18)*
		Payout/ October 1980	–	–	.0229 (0.28)	.5131 (0.23)

[a]Models follow the Box-Jenkins (p d q) notation where p = autoregressive order, d = the degree of differencing, and q = the moving average order.
[b]t-ratio in parentheses
*$p < .05$

salient features; these disputes could have reduced managers' expectations that pay would be made contingent on measured organizational performance. In their surveys of managerial perceptions, Perry and Porter (1981) found that many managers did not trust the motives behind this compensation program, seeing it as political "window dressing" by the Carter and Reagan administrations; some managers apparently believed that this program was intended by the political leadership to communicate its dissatisfaction with bureaucratic inefficiency to the electorate rather than to actually reward high performance (Perry & Porter, 1981).

Third, in this research, as in so many real world quasi-experimental designs, it was not possible to study a comparable control group, although looking at 4 years of monthly performance measures gave us some control over rival hypotheses. The trend towards improved performance that existed before the implementation of merit pay was not significantly altered by training or implementation of the merit pay system, but, even though performance did not improve beyond existing trends, without a control group it was not possible to eliminate the rival hypothesis that performance would have deteriorated without the implementation of merit pay.

With the above caveats in mind, the evidence presented indicates that the implementation of merit pay had no significant effects on organizational performance. These empirical results, when combined with the absence in the scholarly literature of any reported successes of performance-contingent pay for managers, tentatively suggest that the concept of tying managerial compensation to organizational performance may deserve reexamination. It is possible that the concept itself may be invalid because (1) the nature of managerial work is too complex to be adequately captured in organizational performance measures, and (2) organizational performance is something over which managers have only limited control.

Much has been written about the open-ended, nonroutine nature of managerial work. Mintzberg (1973) found that chief executive officer jobs were characterized by brevity, variety, fragmentation, and an unrelenting pace, that managers were forced to react to immediate events, and that their schedules were frequently interrupted by crisis. Further evidence indicates that lower-level managers' jobs require even more frequent reactions to events (Chapple & Sayles, 1961) than do those of upper-level managers. Corroborating evidence can be found in the goal-setting literature: In his review of goal-setting research, Latham (1975) found that goal-setting programs for managers had encountered more problems than those for "simple jobs." He suggests that the complexity of managerial work may account for the lack of consistent success of managerial goal-setting programs.

These complexities suggest that objective measures of managerial performance may not be specifiable in advance. Therefore, someone — either peers, or more likely, the manager's supervisor — must judge performance; Lawler (1971) suggests that under these circumstances a combination of objective and subjective judgments be used in managerial evaluation, as was done in the merit pay program that figures in the present study. This approach may

solve the problem of devising fair performance appraisals for managers, but avoids the difficult question of whether a merit pay program based on such measures will improve organizational performance.

Finally, there is evidence from a body of organizational theory and research indicating that managers have little direct and immediate control over organizational performance. Pfeffer and Salancik (1978), among others, suggest that managerial actions account for as little as 10 percent of the variance in organizational performance and that more attention should be given to environmental influences on organizational peformance. Mayors are elected to provide leadership for cities, yet research indicates that, compared to outside influences, they exert little control over city budgets (Salancik & Pfeffer, 1977); the appointment of new corporation presidents can make headlines in the business sections of newspapers, but Lieberson and O'Connor (1972) found leadership change to have no effect on organizational indicators such as profits; coaches of athletic teams are changed and win/lose records do not seem to improve (Brown, 1982). Control over organizational performance is complex, and the role of management is not simply to supervise employee productivity, even in organizations employing a simple technology like the distribution of social security benefits.

In conclusion, one study cannot definitively prove or refute the effectiveness of merit pay for managers. However, this study has illustrated the advantages of assessing attempts at organizational change over time. By examining performance for several years before and after an organizational change, it was possible to isolate the impact of a new merit pay program from any trends, transient improvements, and systematic oscillations in performance. Since organizational performance was improving before implementation of merit pay and continued to improve at a similar rate after that intervention, a simple before-and-after comparison would have led to the misleading conclusion that merit pay had a favorable effect on organizational performance. Future longitudinal studies of merit pay plans in other organizational settings should be able to determine under what conditions, if any, merit pay plans produce improvements in organizational performance.

APPENDIX

A variety of techniques for analyzing the impact of events affecting the performance measures were available. This appendix provides a discussion of alternative techniques and explains the advantages of Box-Jenkins intervention analysis. One alternative was to simply compare data from before and after the implementation of merit pay, but such a comparison would not have taken into account any upward or downward trends in the series. Thus, although improvement or decline in performance may have been occurring for some time independent of any changes in compensation to managers, before-and-after testing could have erroneously attributed changes to the implementation of merit pay. Therefore, it was desirable to construct a model that took account of trends in performance over time before testing the effects of merit pay.

A second alternative was to construct an econometric linear regression model fitting a regression line through the performance data over time, which could have been done by estimating two equations, one for performance data before the intervention and one for data after

intervention. The equations would have had time as an independent variable, and the differences in their slopes and intercepts would reflect differences in performance before and after the implementation of merit pay.

A third, equivalent alternative would have been to test the differences in the slope and intercept of the regression line predicting performance over time in one equation by using the following as independent variables: a dummy variable equal to zero before the intervention and to one afterwards; a variable representing time; and an interaction term constructed by multiplying the dummy variable by the time variable (Rao & Miller. 1971).

In either form, such a model is more sophisticated than simple before-and-after testing, in that it accounts for trends in the data and can include additional independent variables to explain organizational performance. However, such econometric time series models are inadequate if observations on the dependent variable are not independent of each other from one time point to the next. It is well-known that violations of the assumption of independence of observations result in incorrect estimates of the residual variance associated with the regression equation, and, even though coefficient estimates remain unbiased, significance tests of coefficients in the regression equation become unreliable. Modifications to regression analysis such as generalized least-squares regression (GLS) are possible, but GLS estimation can only take account of simple correlations of residual variance from one time point to the next.

Unfortunately, observations can be associated over time in several ways. A time series can be autocorrelated: that is, an observation may be correlated positively or negatively with the immediately preceeding observation or with more than one previous observation. A time series can also exhibit a moving average process in which an observation is related to the previous observation, or to more than one previous observation, by a positive or negative random shock. Occasionally, a time series can be characterized by both autoregressive and moving average parameters.

The Box-Jenkins autoregressive integrated moving average (ARIMA) model — after detrending data, if necessary, by subtracting one value from the next — can take account of autoregressive and moving average processes. The ARIMA model differs from the better known regression model, in which independent variables are used to account for variance in the dependent variable, in that the former models a time series only in terms of autoregressive and moving average parameters that characterize a series itself. Given output from this modeling process — a residual series of data from which any recurring systematic components have been removed — a researcher can test an intervention into the series to see if it reflects a significant change above and beyond any recurring systematic components.

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Jone L. Pearce is Assistant Professor and Associate Dean in the Graduate School of Management, Univeristy of California, Irvine. She received her doctorate in Administrative Sciences from Yale University. The central theme of her research concerns the behavioral and interpersonal effects of various modes of compensation and related personnel practices.

William B. Stevenson earned his Ph.D. in Sociology from the University of California, Riverside. He is currently Assistant Professor of Management in the Graduate School of Management, University of California, Irvine. His current research interests include the relationship between coalition formation, social networks, and organizational structure.

James L. Perry is Professor of Management and Political Science at the University of California, Irvine. He received his Ph.D. from the Maxwell School, Syracuse University. His current research interests include organizational structure and performance in the public sector.

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MERIT PAY IN THE PUBLIC SECTOR: THE CASE FOR A FAILURE OF THEORY[1]

James L. Perry
School of Public and Environmental Affairs
Indiana University - Bloomington

ABSTRACT

Contingent pay has become very popular in response to criticisms of traditional pay policies in government. The new systems, however, have generally failed to increase productivity. Although many scholars have attributed failures of merit pay to poor implementation or weak top management commitment, an alternative explanation is that the theory on which merit pay is based is flawed. It is argued here that merit pay is not appropriate for managerial work, imposes excessive information demands on an organization, and diminishes an organization's ability to coordinate interdependencies.

INTRODUCTION

Merit pay has had a long history in the U.S. civil service. Graduated pay systems were introduced in the federal civil service shortly after passage of the Pendleton Act (Van Riper, 1958). Step-in-grade systems enjoyed widespread popularity among all levels of government until the 1970s when they came under increasing attack (see, e.g., Patton, 1974; Savas and Ginsburg, 1973). They were criticized for being automatic and for failing to differentiate employee rewards based upon performance. These shortcomings led to a search for alternatives that resulted in the merit pay provisions of the federal Civil Service Reform Act of 1978 (CSRA) (Hunter and Silverman, 1980; Perry *et al.*, 1982) and similar reforms in a variety of states and localities (Griener *et al.*, 1981).

The CSRA pay reforms were short-lived. In 1984, Congress approved the Performance Management and Recognition Act (also known as the Merit Pay Improvement Act) to correct a litany of problems in the CSRA systems. Among the problems were inadequate funding, pay inequities and ratings manipulation. The 1984 law restored the step-in-grade feature of the old system and instituted a new bonus program to reward performance.

Despite the recent rocky experience with merit pay, there is no indication that it has become less popular with political leaders or the public. The Reagan administration recently has introduced legislation to extend pay-for-performance principles to Grades 1-12 of the General Schedule (*Public Administration Times*, 1986:1). The reported failures of public-sector systems and the undaunted

response of politicians to merit-pay experience parallels reactions to the failure of such systems in the private sector. Failures of merit pay in private sector organizations have variously been attributed to a lack of commitment to pay for performance (Patton, 1972; Redling, 1981), problems encountered when implementing the theory (Hamner, 1975), or poor judgments which resulted in applying contingent pay to inappropriate situations (Lawler, 1981; Patton, 1972; Ungson and Steers, 1984).

The prospect that merit pay failures are a sign of problems fundamental to the underlying theory has been explored by only a few scholars. Deci (1975) has argued that money is an ineffective motivator because it relies upon extrinsic rewards and, therefore, stifles intrinsic motivation. The ultimate result of diminished intrinsic motivation is to remove the most powerful and enduring motivators. Meyer (1975) has contended that merit pay damages employee self esteem. He concluded that an incentive system that lowers an employee's self esteem is more destructive than constructive.

In addition to these potential threats to merit pay, which are grounded in alternative theories about its psychology, there is another theoretical basis for questioning the viability of merit pay. Pay-for-individual performance is based on the assumption that organizational performance is the simple additive combination of individuals' separate performances. Yet theorists note that organizations are intricate social environments that cannot be understood as simple aggregations of employees. Therefore, a mismatch exists between the simplicity inherent in merit pay programs and the complexities of organizations (Pearce, in press). This mismatch is at the root of many of merit pay's failures.

This article develops a critique of merit pay theory as it has been applied to government. At the outset, it is important to identify the scope of our theoretical critique. The focus is individually-contingent pay for public managers, what will be called pay-for-individual performance or, simply, merit pay. The critique is not intended to apply to group-contingent pay or to non-managerial employees. The article begins with a brief discussion of the psychological theory that is the rationale for merit pay. An alternative theoretical framework is then presented for understanding the dynamics of pay-for-individual-performance in an organizational context. The predictions of this theoretical framework are discussed in light of research on merit pay in the public sector.

THE THEORY BEHIND PAY-FOR-INDIVIDUAL-PERFORMANCE

Lawler (1971; 1981) developed the first and probably most compelling theoretical argument for the motivating potential of individually-contingent compensation. His psychological model of pay is based on Vroom's (1964) cognitive theory of motivation. Lawler (1971) argued that pay acquires a valence or importance as a function of its perceived instrumentality for obtaining other desired outcomes. Pay is probably one of the most powerful rewards that organizations can offer: "Because it is important to most people, pay has the power to influence their membership behavior and their performance" (Lawler,

Because pay can be an attractive reward, it is assumed to motivate members' actions more effectively if it is made contingent on those actions. Using the expectancy theory argument, Lawler (1971; 1981) noted that individually-contingent pay plans tie a presumably valuable reward (pay) directly to an individual's performance and, therefore, should result in a high subjective probability that performance will result in receipt of the valued outcome. Thus, a powerful motivational effect will result when pay is based on individual job performance.

Although research on the effects of pay-for-performance has usually lacked methodological rigor and has concentrated almost exclusively on routine, non-managerial jobs, it generally indicates that contingent pay results in higher performace than non-contingent pay. Reports of improvements in individuals' productivity range from 12.2% (Roethlisberger and Dickson, 1939), to 30% (Locke, *et al.*, 1980), to 39% (Viteles, 1953). Based on a comprehensive review of prior research, Lawler (1971) concluded that individual incentive plans can potentially increase individuals' productivity between 10 to 20 percent.

Not all scholars contend that pay-for-individual-performance results in improved productivity. Research by Deci (1975) and Meyer (1975) is among the most critical. Deci conducted a series of laboratory studies on the effects of external-mediated rewards, such as pay, on subjects' intrinsic motivation. He concluded that contingent pay is undesirable because it reduces intrinsic motivation and leads individuals to develop strategies to achieve rewards with minimum effort. Meyer (1975) argued that most employees have a highly favorable self image, but that the feedback implicit in merit pay awards undercuts this self image. The effect is to damage employee self esteem, a factor important in individual and organizational productivity.

Lawler also acknowledges that merit pay is subject to negative side effects, including the restriction of output and conflict among employees working on interdependent tasks. Bass, Hurder and Ellis (reported in Bass, 1965) found that individual monetary incentives resulted in increased performance by those engaged in a simple task, but *decreased* performance on a more complex one. Bass (1965) suggested that these subjects were already motivated and the addition of financial incentives resulted in a motivational level that was so high that it interfered with performance on the complex task. Similar results are reported by Konovsky and Podsakoff (1984) who found that individual incentives had no impact on performance on an interdependent laboratory task, and that contingent pay actually decreased performance on a task in which subjects' performances were interdependent.

Only one field study has been conducted on the performance consequences of individually-contingent managerial pay. Pearce, Stevenson and Perry (1985) tested the performance effects of the introduction of merit pay for federal managers. The performance measure included four indicators of the productivity of the offices for which these managers were responsible. Productivity measures were available two years before the commencement of merit pay and for the first two years that managers' merit increases were based on these per-

formance measures. They found that office productivity gradually improved over the four-year period, but that the merit pay intervention did not result in a significant change in this trend. Thus, merit pay did not result in improved performance.

The generally favorable reactions merit pay has elicited from senior executives and politicians have impeded its critical assessment. The evidence about the limitations of merit pay presented above hints that its failures represent more than faulty implementation and, in fact, may reflect shortcomings of theories of individual motivation in complex organizations. A theoretical framework which helps to explain the frequent failures of pay-for-individual-performance is developed below.

AN ALTERNATIVE THEORETICAL PERSPECTIVE

A series of theoretical statements which explain merit pay failure in government organizations is presented in Figure 1. It is necessary to begin with some initial premises or axioms about organizations, managerial behavior and managerial jobs to explain the reasoning behind this set of theoretical linkages. The first premise is that public organizations are systems of cooperative activity which are chartered to act for some common interests. As a system of cooperative activity (Barnard, 1938), a range of participants (e.g., employees, managers, suppliers and clients) contract with the organization, both implicitly and explicitly, to exchange their contributions (e.g., expertise, time, loyalty) for inducements the organization offers (March and Simon, 1958). The inducements an organization offers for members' contributions are likely to vary among categories of participants.

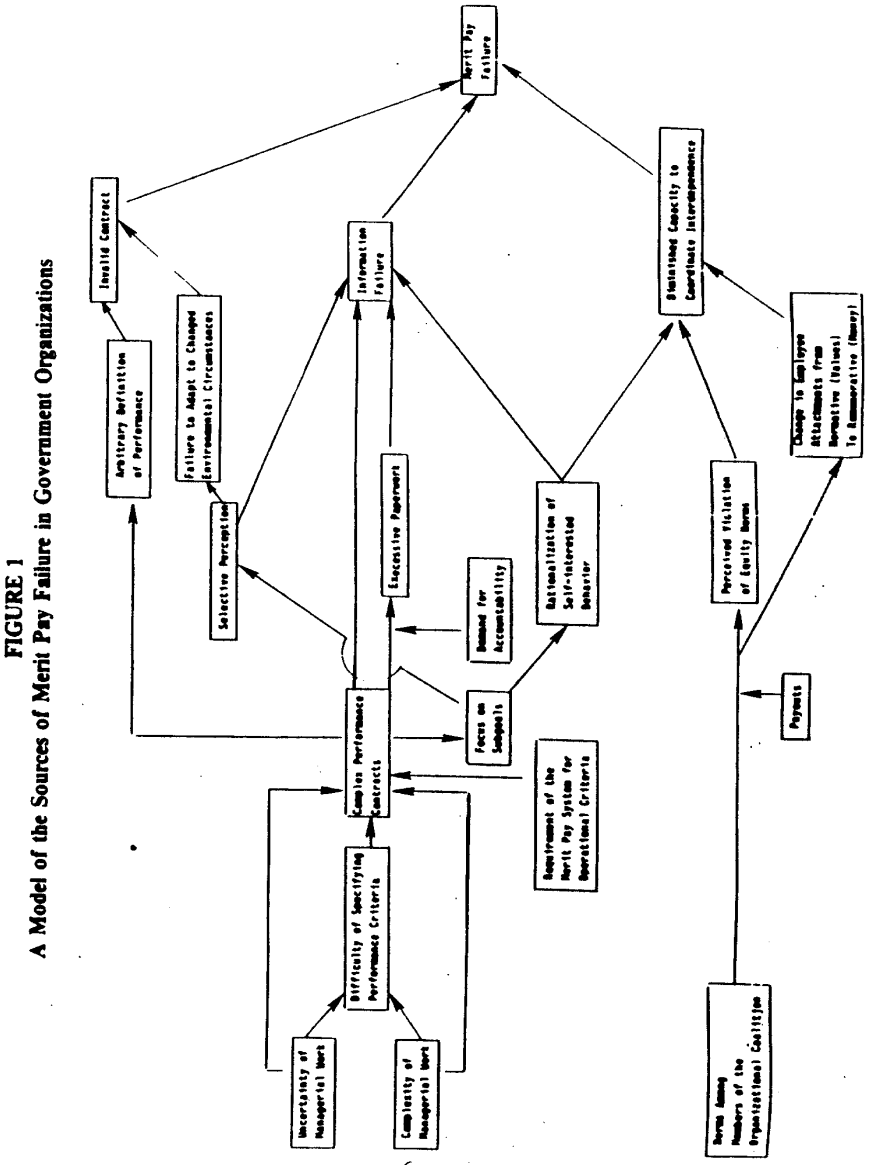
Another premise underlying the theoretical statements is that managerial jobs are characterized by complexity and uncertainty, resulting from the nature of the work performed (Doeringer and Piore, 1971; Mintzberg, 1973; Williamson, 1975). Mintzberg (1973) found that managerial activities were characterized by brevity, variety and discontinuity, indicative of the uncertainty and complexity of managerial work. By their very nature, managerial positions are designed to absorb uncertainty. The scope of managerial work requires a wide range of specific skills that enhances the idiosyncratic nature of managerial jobs. Furthermore, the problems created by uncertainty/complexity cannot be completely mitigated because a manager's rationality is bound by knowledge, skill and time limitations (Simon, 1957).

The premises above are implicit in the theoretical relationships identified in Figure 1. The figure indicates that any one of three conditions — invalid contracts, information failure or diminished capacity to coordinate interdependence — are sufficient to produce merit pay failure. These three conditions and how they come about are discussed below.

IMPRACTICALITY OF FIXED CONTRACTS

Simon (1957) has argued that open-ended employment contracts allow

FIGURE 1
A Model of the Sources of Merit Pay Failure in Government Organizations



organizations the flexibility to respond to future uncertainty. Open-ended contracts permit employers to call upon the undifferentiated time of employees. Given this flexibility, organizations are ideally situated to respond to uncertainty.

Merit pay involves a significant restriction of an organization's flexibility. The fixed-performance contracts characteristic of merit pay, such as those developed under the Civil Service Reform Act of 1978 (CSRA), are difficult to adapt to changing internal and external circumstances. Williamson (1975) contends that fixed contracts are rigid and completely unsuited for circumstances characterized by uncertainty, a condition that is typical for managerial work, particularly in the public sector. If managerial performance requirements are indeed uncertain, fixed contracts restrict the ability of managers to respond to changes. These contracts can, at best, cover only a portion of desired actions, and, therefore, are artificial representations of the kind of performance that would be most effective for an organization. A related and equally serious liability of fixed contracts is that they discourage deviations from performance agreements even when such deviations may be necessary or appropriate (O'Toole and Churchill, 1982).

Experience in the federal government illustrates the artificiality of fixed contracts. For example, Social Security Administration field offices experienced significant disruptions because of efforts to develop objective performance indicators such as processing time (Pearce and Perry, 1983). Although this is a very specific illustration of the artificiality of fixed-performance contracts, it was not an isolated instance of the difficulty of writing performance contracts under CSRA. The General Accounting Office (United States General Accounting Office, 1984b) found in a two-year study of three agencies that despite the legal requirement that performance appraisals rely on objective criteria, less than half the performance standards contained objective measures.

Despite the very real limitations of fixed contracts, many organizations behave as if these shortcomings can be overcome by establishing elaborate control systems which are used to write comprehensive contracts for their managers. Reports about the consequences of such contracts have largely been anecdotal, but they do not appear to remedy, and perhaps exacerbate, performance management problems. For example, one of the side effects of CSRA-mandated merit pay was an estimated billion dollars for operating costs in the first year (Harron, 1981), partly attributable to supervisory effort in developing elaborate performance agreements. Federal agencies consistently reported excessive paperwork as a result of merit-pay performance appraisals (Perry and Porter, 1980).

Although it may be impossible to predict future states of affairs given uncertainty/complexity and, therefore, to write adequate fixed contracts, it is conceivable that such contracts could be re-written periodically to reflect new circumstances. This strategy also imposes significant costs on managers. The costs of re-writing the contract and re-formulating the pay-for-performance linkage are likely to be prohibitive, particularly if change is rapid. GAO reports (United States General Accounting Office, 1984a) that in 1982 the responsibilities of 20% of federal senior executives changed during the rating period, but a majority (55%) did not have their plans revised. Thus, the contracts of more than 10% of senior executives, and probably a much larger proportion of subordinates reporting to them who were covered by merit pay, were invalid simply because they were not updated.

As an alternative to re-writing the contract, individually-contingent pay programs are frequently adapted to uncertainty by combining subjective and objective measures (Lawler, 1981). This adaptation helps to preserve flexibility, but it has other consequences for pay-for-performance. For example, Carroll and Schneier (1982) note that the more subjective the rating criterion, the more rater judgment is required not only regarding the degree to which the ratee meets the criterion, but also regarding what the measure actually means. The combination of objective and subjective measures is probably an unreliable solution to the performance measurement problem in government. Public sector performance environments are likely to impose severe strain on a manager's ability to make successful subjective determinations because of real or perceived concerns about politicization (Pagano, 1985).

INFORMATION FAILURE

Fixed contracts are not only likely to be invalid when applied to managerial work, but the information that is the rationale for fixed-contracts is likely to be a focus for manipulation. The manipulability of information could occur under several circumstances which are inherent in the situation. A supervisor's lack of expertise in a subordinate's job content or difficulty obtaining feedback about a subordinate's performance could permit a subordinate to withhold negative information or pass along positive information, thereby enhancing the subordinate's evaluation. For instance, a subordinate's attempt to beat the appraisal system by seeking an easy contract, reportedly a problem encountered in both federal (O'Toole and Churchill, 1982) and local (Griener, *et al.*, 1981) merit pay systems, is possible when there is unequal information between superior and subordinate. Performance measurement and occupational characteristics of the public sector context (Perry and Porter, 1982) tend to increase the probability of such information asymmetries occurring.

Merit pay exacerbates the tendency of individuals to adhere to subgoals which, in turn, reinforces the problems of information acquisition discussed above. Merit pay tacitly legitimizes self-interested behavior by defining performance in terms of organization subgoals. According to March and Simon (1958), individuals tend to adhere to these subgoals, even when the goals conflict with those of the larger organization, because of selective perception and rationalization. These processes could produce situations in which a subordinate shirks non-contractual obligations or challenges a superior's interpretation of the contract.

When a manager perceives that it is necessary to deviate from the contract and act in accordance with a broader conception of organizational good, he or she incurs the risk of going unrewarded even when the manager perceives that the spirit of the contract has been satisfied. This appears to be precisely

how many public managers have responded. A widespread result of CSRA performance appraisals (Gaertner and Gaertner, 1985; Pearce and Perry, 1983; United States Merit Systems Protection Board, 1981) were systems that employees simultaneously rated "accurate" and "fair," but not "helpful" or conducive to "improved agency effectiveness." Managers acquired a clearer understanding of the criteria on which they were judged, but were not convinced that the criteria were the best ones to promote improved performance or agency effectiveness. One can only infer that one reason the original CSRA merit pay system failed was the decision of many managers to maximize their personal development or agency effectiveness rather than their appraised performance.

Another result of information problems is that supervisors may not closely tie pay to individually-measured performance because they are unable to judge definitively the relative contributions of employees given the limitations of performance appraisals. The difficulty of making definitive judgments about performance is particularly true for managerial jobs. The small numbers of managerial positions (Williamson, 1975) and the uniqueness of managerial jobs increase the power of managers to control the assessments levied by significant others (Thompson, 1967). This phenomenon helps to explain why raters tend to minimize differentials in rated performance and to inflate ratings (see, e.g., Gaertner and Gaertner, 1984), thus limiting the strength of pay-for-performance relationships. The propensity to minimize appraisal differentials is likely to be reinforced because supervisors bear a large part of the cost, in terms of information acquisition and interpersonal conflict, of justifying performance appraisal decisions to their subordinates.

REDUCTION OF COORDINATION

Individual performance contracts will diminish coordination by altering patterns of interdependence among organizational members. Coordination problems originate with individual performance contracts and their attention to organizational subgoals. The subgoal focus is a necessary pre-condition for linking pay to performance because of the need to hold managers responsible for results within their control (March and Simon, 1958). The focus on subgoals, however, tends to undermine the organization as a unit of cooperative activity by undermining interdependencies among organizational members.

Thompson (1967) identified three types of interdependence, pooled, sequential, and reciprocal, which, he asserted, represented ascending complexity and coordination requirements. Pooled interdependence is the dependence of each segment of the organization on the others for the well-being of the organization. Sequential interdependence involves situations in which a part of the organization depends upon another for supply of inputs, for disposal of outputs or both. Finally, reciprocal interdependence involves situations in which each unit poses a contingency for the other.

Field and laboratory research have documented the detrimental effects of merit pay upon sequential (Babchuk and Goode, 1951; Whyte, 1955) and reciprocal interdependence (Miller and Hamblin, 1963), the two most complex forms. The detrimental effects of merit pay in the public sector involve pooled interdependence as well. Merit pay undermines pooled interdependence in public organizations in at least two ways: (1) by altering an individual's attachment to the organization and (2) by creating conflicts or inequities among segments of the organization coalition.

Merit pay systems undermine involvement because they treat the manager as a labor contractor and undermine the flexibility of traditional authority relations (Barnard, 1938; Simon, 1957). Such contracts communicate that the organization is only concerned with the employee's performance as it is reflected in the contract measures. In effect, organizations signal indifference to past contributions and to any extenuating circumstances that may have influenced the recent performance measures. Employees come to focus on the pay delivery and performance measurement system rather than the organization's tasks or mission.

This contention is supported by an assessment of merit pay for federal managers. CSRA required that managerial performance contracts be drawn up before the performance period, and that half of the money made available for raises be tied directly to rated individual managerial performance. Pearce and Porter (1986) reported the effects of this new pay and performance measurement system for federal managers and employees at two agencies. They divided their sample into those who received "outstanding" and "above average" ratings (55%) and those who received "fully successful" (45%) ratings. They found that whereas the organizational commitment of the relatively highly rated managers was stable over the 30-month period, the commitment of the "average" managers dropped significantly after their first merit rating and remained at this reduced level when retested a year later in both of these agencies. Their findings indicate that merit pay significantly reduced the psychological attachments of a large subgroup of satisfactory performers.

Additional evidence of the potential for merit pay to alter pooled dependence is provided by Perry and Pearce (1985) who traced how CSRA has led to a proliferation of new interest groups. The primary purpose of these new groups is the protection of members (e.g., merit pay managers, senior executives) whose employment status was modified by CSRA. The most prominent of these groups, the Senior Executive Association (SEA), sued for restoration of bonuses to original statutory levels after Congress reduced eligibility for bonuses in the summer of 1980 from a maximum of 50 percent of Senior Executive Service (SES) positions to a maximum of 20 percent. The development of SEA and the subsequent suit vividly illustrate how pay-for-performance can alter the focus of employee attachments from the organization's mission to the pay delivery system.

Merit pay also affects pooled interdependence through its influence upon organizational climate (James and Jones, 1974) or atmosphere (Williamson, 1975). Climate and atmosphere are concepts that explain linkages between a specific transaction and attitudes that have broader organizational consequences.

The relevance of these concepts to the relationship between merit pay and pooled interdependence arises from the fact that inducements for some members of an organization are primarily remunerative and for others are primarily social or moral. Within government such variations are quite common. Nevertheless, expectations among participants about appropriate rewards for other participants are likely to have significant attitudinal implications. For example, taxpayers may have a great deal of difficulty accepting large contingent financial rewards for government managers because they perceive such rewards as "squandering their taxes."

Attitudes of other groups within the organizational coalition may operate in a pre-emptive fashion by influencing the design of merit pay systems. The result is often a design compromise that radically diminishes the probability for merit pay success. A dramatic illustration of this process occurred during the implementation of CSRA merit pay systems. Congress imposed a cap on merit pay funding because of the political sensitivity of federal pay levels. OPM developed a merit-pay-funding formula which liberally interpreted congressional intent. Simulations of the system indicated that few employees would be worse off and most would be better off (Hunter and Silverman, 1980). Agency and employee reaction to these simulations was favorable, primarily because of OPM's liberal assumptions about the payout formula. However, GAO forced OPM to rescind its formula in favor of one awarding less money shortly before the first payout because the OPM formula did not adhere to the "no-new-money" limitation in the statute. It is important to remember that, although this particular episode has been labeled an "implementation problem" by many (see, e.g., Pearce and Perry, 1983; Silverman, 1983), the OPM-GAO controversy originated because of statutory language which represented prevailing norms about appropriate reward levels for federal managers.

CONCLUSION

This article has presented a theoretical view of why merit pay has failed in many public organizations. It was argued that three conditions, i.e., invalid contracts, information failure, and diminished coordination, prevent contingent pay from contributing to improved organizational performance. The theoretical framework is useful for understanding implementation problems that accompany pay-for-performance. Such problems are, in fact, inherent in this form of motivational program in government programs.

An issue related to this analysis is whether pay-for-group-performance would fare better in light of the theory we have presented. It is quite obvious that some of the limitations of pay-for-performance are common to both individual and group programs, particularly the problem of specifying a performance contract. However, group incentives may affect individual behavior and allocate the costs of information acquisition differently than do individual incentives, thereby producing different outcomes. The relative effectiveness of individual versus group incentives clearly deserves further research.

The present analysis does not refute the instrumental value of pay as a motivator. Pay is undoubtedly a primary consideration in an individual's decision to join an organization and perform on its behalf (Nash and Carroll, 1975; Ellig, 1982; Wallace and Fay, 1983). Although there is evidence that individuals entering public organizations are relatively less motivated by money than their private sector counterparts (Rawls *et al.*, 1975), pay remains a significant factor in employee motivation. An organization's compensation system conveys a variety of signals to current and potential employees, including information about its fairness, the rewards for long-term loyalty and performance, and its labor market competitiveness. All of these factors are relevant to performance in organizations. The arguments in this paper suggest that also requiring a public organization's compensation system to harness pay for motivating short-term managerial performance is not realistic.

NOTES

[1] This paper grows out of my collaboration with Jone Pearce. My thanks to her for permitting me to borrow liberally from her ideas. See Pearce, in press.

[2] The use of the term premises follows Hage (1972). Premises are very general assumptions that help to explain why a particular theoretical relationship occurs.

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MAKING POLICY BY TRIAL AND ERROR: MERIT PAY IN THE FEDERAL SERVICE

James L. Perry
Indiana University, Bloomington

The merit pay provisions of the U.S. Civil Service Reform Act of 1978 (CSRA) were among the most radical innovations in the history of American government personnel practices. They represented a break from the long tradition of virtually automatic salary increases based on length of service. Borrowing from private sector employment practices, Title V of CSRA sought to motivate better performance and to deter poor performance by increasing grade-level 13-15 managers' salaries by amounts designated by their rated performance--much as mid-level managers in the private sector are awarded pay increases based on their companies' profits in the preceding year.

The author's familiarity with merit pay is the outgrowth of a research program that began in 1979. The research has spanned the life of the original Merit Pay System (MPS) and the current Performance Management and Recognition System (PMRS). The initial research was conducted as part of the U.S. Office of Personnel Man-agement's (OPM) organizational assessments of CSRA and it has been continued with support from the National Aeronautics and Space Administration and assistance from the General Services Administration.

This paper looks broadly at the operation and consequences of federal merit pay. It begins with brief descriptions of the two merit pay systems that evolved from the 1978 reforms. They are evaluated within the overall context of reform and its intended objectives. Several merit pay demonstrations are also discussed. The paper concludes by summarizing the learning that has occurred since merit pay's introduction and identifying unresolved issues.

THE REFORM RECORD

The case for merit pay was initially articulated by The President's Reorganization Project (1977). The Project's personnel management report concluded that it was difficult to appropriately recognize performance extremes, both high and low quality performance. They found that periodic step increases had become virtually automatic, quality step increases and cash awards were used sparingly, and supervisory action to withhold increases often met resistance from

affected employees and higher management. They concluded that this situation fostered mediocre performance.

The Merit Pay System (MPS)

In the period preceding passage of CSRA, federal middle managers received a combination of annual comparability increases and within-grade increases. Although within-grade increases, in theory, could be used to reward performance, they seldom were granted or denied on the basis of differential performance. Two other mechanisms that were designed to reward high performance, cash awards and quality step increases, were used sparingly. The Merit Pay System (MPS), which became mandatory for grade 13-15 managers in federal agencies on October 1, 1981, altered how incremental adjustments to salary were distributed. Under MPS, employees received only half of the comparability adjustment automatically. The non-automatic portion of comparability and the within-grade and quality step increase monies that would have been used to adjust pay under the General Schedule were pooled and distributed according to performance (U.S. Office of Personnel Management, 1981a).

How successful was the MPS in accomplishing the objectives established for it? The results of 12 studies of MPS are summarized in Table 1. The Table includes both summative and specialized evaluations of MPS. Research that focused on performance appraisal alone (e.g., McNish, 1986) or that preceded initial payouts (e.g., Nigro, 1982) was excluded from the review. The columns of the Table identify the four primary intended outcomes from MPS as specified in OPM's evaluation plan (U.S Office of Personnel Management, 1981b): 1) to relate pay to performance; 2) to provide flexibility in recognizing good performance with cash awards; 3) to motivate merit pay employees; and 4) to improve productivity, timeliness and quality of work.

MPS's clearest shortcoming was its failure to establish a demon-strable relationship between pay and performance. This failure is attributable to a variety of causes. One of the chief causes was lack of adequate funding for merit pay. Agencies were required by law to spend no more on MPS than they had under the previous general schedule system. This problem was exacerbated by implementation difficulties. For example, an OPM-GAO dispute about the statutorily permissible size of payouts led, in September 1981, one month before payouts, to a determination by the Comptroller General of the United States (1981) that the OPM formula for calculating merit pay was not in conformance with the statute. The ruling resulted in modified payouts that provided only small differentials between managers, again undercutting pay-for-performance principles.

MPS also failed to relate pay to performance because it did not satisfy basic standards of fairness. Managers who performed satisfactorily often found themselves receiving lesser rewards than their non-managerial counterparts at grades 13-15 whose pay was set under the General Schedule. The effects of non-performance factors (e.g., the composition of the pay pool) on payouts and arbitrary modification of ratings also diminished the basic fairness of the system.

Employees in most agencies perceived no greater likelihood that their performance would be recognized with a cash award after MPS than they had previously. The use of cash award authorities was highly variable across agencies (U.S. General Accounting Office, 1984). MPS appeared not to have significantly altered agency behavior with respect to cash awards.

The reported successes of MPS in motivating employees emanated primarily from the performance appraisal requirements of CSRA. Gaertner and Gaertner (1984; 1985) reported that developmental appraisals, those that focused on planning for the coming year and clarifying expectations, were more effective than appraisals that focused only on past performance. However, developmental appraisal strategies were seldom used and the pay administration role for appraisals tended to undermine this function. In fact, one study (Pearce and Porter, 1986) reported a significant drop in the organizational commitment of employees who received satisfactory, but not outstanding, ratings.

The ultimate purpose of merit pay was to improve the performance of government agencies. The most rigorous study of merit pay's effect on agency performance (Pearce, Stevenson and Perry, 1985) failed to find any association between the introduction of merit pay and office performance in the Social Security Administration. No published research to date has indicated that MPS had any positive effects on agency effectiveness.

The Performance Management and Recognition System (PMRS)

Although MPS did not take effect for most federal managers until 1981, it very quickly became apparent that it performed poorly when judged by the objectives established for it. Relief from MPS grew out of legislation introduced in 1984 that proposed a Performance Management and Recognition System (PMRS) (U.S. Congress, House of Representatives, 1984). PMRS was enacted on November 8, 1984, but the first payout was made retroactive to the fiscal year 1984 performance cycle. Retroactive application created a number of short-term implementation problems (U.S. General Accounting Office, 1987)

Table 1

Summary of Empirical Studies on the Federal Merit Pay System (MPS)

	INTENDED OUTCOMES			
Source	To Relate Pay to Performance	To Provide Flexibility in Recognizing Good Performance with Cash Awards	To Motivate Merit Pay Employees	To Improve Productivity, Timeliness & Quality of Work
Daley. 1987. "Merit Pay Enters with a Whimper: The Initial Federal Civil Service Reform Experience"			Merit pay did not heighten survey measures of motivation.	Merit pay recipients perceived their agency to be no more responsive or effective than non-recipients.
Gaertner & Gaertner. 1984. "Performance Evaluation and Merit Pay: Results in the Environmental Protection Agency and the Mine Safety and Health Administration"	Merit pay is not perceived as equitable; raises are too small.		Improvement in accuracy of performance standards and overall appraisal.	No positive impact on perceived agency effectiveness or employee work behavior.
Gaertner & Gaertner. 1984. "Performance Contingent Pay for Federal Managers"	Not perceived to be rewarding people fairly with significant raises.		Performance standards and appraisal improve work planning and accomplishment.	No positive impact on perceived agency effectiveness or employee work behavior.
O'Toole and Churchill. 1982. "Implementing Pay-for-Performance: Initial Experiences"	Subjectivity and lack of resources undermine pay-for-performance relationship.		Enhances communication on goals and job expectations.	Inconclusive.
Pagano. 1985. "An Exploratory Evaluation of the Civil Service Reform Act's Merit Pay System for the GS 13-15s"	Small sample of pool managers complained the monetary reward was not worth the amount of paperwork and energy expended.			
Pearce and Perry. 1983. "Federal Merit Pay: A Longitudinal Analysis"	No improvement in the pay-for-performance contingency after merit pay.		Performance criteria were clearer, but may not reflect agency effectiveness.	
Pearce and Porter. 1986. "Employee Responses to Formal Performance Appraisal Feedback"			Relatively low (satisfactory) ratings caused a significant drop in organizational commitment.	
Pearce, Stevenson and Perry. 1985. "Managerial Compensation Based on Organizational Performance: A Time-Series Analysis of the Impact of Merit Pay"				No significant effect on organizational performance.
Perry, Hanzlik and Pearce. 1982. "Effectiveness of Merit-Pay-Pool Management"	Modification of appraisal ratings to achieve agency merit pay goals reduced credibility of the system.			
U.S. General Accounting Office. 1984. *A 2-Year Appraisal of Merit Pay in Three Agencies*	Non-performance factors influenced size of merit increases more than necessary.	Provision of cash awards highly variable across agencies.	Standards perceived to be fair, job related and consistent with organizational goals.	
U.S. General Accounting Office. 1981. *Serious Problems Need to be Corrected Before Federal Merit Pay Goes Into Effect*			Performance appraisals have limitations, including overly quantitative standards and lack of pretesting.	OPM method for computing merit pay would exceed former costs by $58 to $74 million.
U.S. Merit Systems Protection Board. 1981. *Status Report on Performance Appraisal and Merit Pay Among Mid-Level Employees*	Half of all employees perceived a moderate to strong effect on performance.		Employees perceived ratings as fair and accurate, but not very helpful.	