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Abstract

While pay mix is one of the most frequently used variables in recent compensation research, its theoretical relevance and measurement remains underdeveloped. There is little agreement among studies on the definitions of the various forms of pay that go into pay mix. Even studies that examine the same theories tend to overlook the implications of differences in the measures and meanings of pay mix used in other studies. Our study explores the meaning of pay mix using several theories commonly used in recent compensation research (agency, efficiency wage, expectancy, equity, and person-organization fit). Recent studies generally use a single measure of mix (e.g., bonus/base, or stock options/total, or benefits/base). We argue that to fully understand the effects of employee compensation, the multiple forms of compensation must be taken into account. Therefore, we derived pay mix measures from the theories commonly used in compensation research. We classified the pay mix policies of 478 firms using cluster-analytic techniques. We found that the classification of organizations based on their pay mix depends on the measures used. We suggest that as more realistic measures of pay mix leads to reinterpretation of compensation research and offers directions for theory development.

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Organizational Pay Mix: The Implications of Various Theoretical Perspectives for the Conceptualization and Measurement of Individual Pay Components

A growing body of research recognizes the importance of compensation in influencing employee attitudes and organization performance (Heneman & Judge, 2000; Gerhart, 2000). Traditionally, studies have focused on how different dimensions of compensation management (e.g., pay level, pay structures) relate to employee attitudes and organizational performance (Bloom, 1999; Gerhart & Milkovich, 1990; Heneman & Judge, 2000). The literature has also long recognized compensation comes in many forms; i.e., base pay, bonus, stock options, benefits (Dreher, Ash, & Bretz, 1988; Sanders & Carpenter, 1998). Although its potential importance is well-acknowledged (Martocchio, 2001), research is only beginning to delve into how organizations mix different forms of compensation and their consequences.

This is not to say that research has ignored pay mix. Indeed, many studies included pay mix variables in their analyses. A common method of examining pay mix is to measure the ratio of bonus to base pay (e.g., Gerhart & Milkovich, 1990; Werner & Tosi, 1995). Others use the ratio of bonus to total pay (e.g., Anderson, Banker, & Ravindran, 2000; Gomez-Mejia, Tosi, & Hinkin, 1987) or the ratio of long-term incentives to total pay (e.g., Westphal, 1999; Westphal & Zajac, 1995). While quite a few studies have been conducted, and most claim to capture organization pay mix, the differences in conceptualization and measurement inhibit to generalize the meaning and consequences of pay mix.

Following Kuhn (1962), we believe that the way a phenomenon is measured affects the results obtained and interpretation drawn. This is a particularly salient issue in compensation research because different approaches to pay mix measurement can take a number of theoretical (e.g., agency, expectancy, equity) and longitudinal (e.g., long-term, short-term) perspectives. We believe the perspective adopted affects measurement of pay mix employed, hypotheses derived, and interpretation of results observed. The principal contribution of this

study is to offer an evidence about the need of reexamining the meaning of pay mix. We classified the pay mix policies of 478 high-tech firms by cluster-analytic techniques using different pay mix measures, which resulted in unexpectedly dissimilar classifications.

PAY MIX RESEARCH AND TOTAL COMPENSATION

Traditionally compensation research examining single forms of pay has drawn on several theories: agency theory (e.g., Beatty & Zajac, 1994; Eisenhardt, 1988), expectancy theory (Mowen, Middlemist, & Luther, 1981), organization justice theory (Welbourne, Balkin, & Gomez-Mejia, 1995). In contrast, when it comes to pay mix, most studies use agency theory (Jensen & Meckling, 1976) as their theoretical perspective (e.g., Gerhart & Milkovich, 1990; Westphal & Zajac, 1995; Bloom & Milkovich, 1998). Because agency theory discusses incentives can serve to align the interests of agents with those of principals, empirical studies generally use the relative importance of incentives as a proxy for the degree to which the compensation for the agents is linked to the principals' interest.

However, when we look into specific measures used in the past agency theory-based pay mix research, we notice employed pay forms disagree across studies. For numerator variables, some studies use an individual component of compensation such as bonus (e.g., Gerhart & Milkovich, 1990; Gomez-Mejia et al., 1987) and stock options (e.g., Anderson et al., 2000), and others use sets of pay forms such as long-term incentives (e.g., David, Kochlar, & Levits, 1998; Westphal & Zajac, 1995) and the sum of incentives (e.g., Montemayor, 1996; Roth & O'Donnell, 1996). Different articles provide different rationales concerning their choice of numerator such as "although incentive pay takes a variety forms, bonuses are among the most common" (Bloom & Milkovich, 1998: 287), or "Compensation contingency was calculated for each year as the total value of long-term incentive grants divided by total compensation…. Short-term bonuses were not included in this measure because they are notoriously vulnerable to tampering" (Westphal & Zajac, 1995: 71). Concerning denominator variables, some use base

pay (e.g., Gerhart & Milkovich, 1990), and others use total pay (e.g., Westphal & Zajac, 1995). In general, past studies do not discuss the validity of employed pay mix measures very extensively, and some studies do not even discuss it. It is not clear from the past research how these different measures describe organization pay mix policy in a different way.

Total compensation and pay mix

Another limitation of the past pay mix research is that it often fails to include the major components of total employee compensation package. For instance, past pay mix research continuously neglects benefits component although it is often discussed benefits are effective for attracting certain types of potential employees (Cable & Judge 1994; Lawler, 2000) and influencing employee behaviors (Martocchio, 1998). To fully understand the effects of employee compensation, researchers must take account of not only the relative importance of incentives but also that of base and benefits. In effect, we believe we can improve our knowledge of pay mix with more inclusive consideration of total compensation. Total compensation, defined as "the complete pay package including all forms of money, bonuses, benefits, services and stock" (Milkovich & Newman, 2002: 670), captures a more holistic and comprehensive view of employee compensation.

Once a total compensation perspective is adopted, we have the need to acknowledge the multidimensional aspects of organization pay mix. Let's take an example. The compensation packages of Firm A and Firm B are shown as ($70K, $3.5K, $50K, $20K) and ($60K $3K, $0, $25K) for (base pay, short-term incentives, long-term incentives, benefits). While the two firms indicate the same ratio of short-term incentives to base ($3.5K/$70 K = $3K/$60K = 0.05), clearly these two firms' pay mix policies are not the same; Firm A's pay mix has greater emphasis on long-term incentives relative to short-term incentives ($50K/$3.5K = 14.29 for Firm A, and $0/$3K = 0 for Firm B), less emphasis on benefits relative to base pay ($20K/$70K = 0.29 for Firm A, and $25K/$60K = 0.42 for Firm B).

This example demonstrates that relative importance of a single pay form does not fully capture an organization's pay mix policy. Nevertheless, virtually all past research looks at only a single aspect of pay mix ratio (an incentive form of pay divided by either base or total pay) or some exceptional cases two ratios (c.f. Anderson et al., 2000; Gomez-Mejia et al, 1987). Our study deals with a set of pay mix measures that capture multiple dimensions of pay mix simultaneously. Its advantage is shown in proceeding cluster analyses that offer us multi-categorical classification of organization pay mix policy rather than dichotomous classification based on a single pay mix measure (e.g., whether the relative importance of incentive is high or not).

RELEVANT THEORETIC MODELS AND THEIR PAY MIX IMPLICATIONS

This section explores alternative explanations for organization pay mix policy by examining several theoretic models relevant to compensation research. We begin our discussion with agency theory, and then we describe and analyze, expectancy theory, efficiency wage theory, equity theory, prospect theory, and person-organization fit model. In Table 1, we contrast the basic premises, key assumptions, and pay mix implications of these six theoretic models.

TABLE 1
Theoretical Premises and Implications for Pay Mix

Theory	Basic premise	Key assumptions	Implication to pay mix
Agency theory	• Organization structures and human resource practices are developed to achieve an optimal contract under agency problems. • Principals choose either behavior-based contract or outcome-based contract considering the cost involved with the contracts. • Outcome-based pay aligns the interests of agents to those of principals.	• Principals engage agents to perform some service in exchange for rewards. • Agents are self-interested and rational. Goal conflict between principals and agents. Difference in the attitudes toward risk between two actors (agents are more risk averse.)	• Incentive alignment / outcome-based pay encourages the agents to work hard for achieving desired outcomes. • Relative importance of incentives affects employee motivation and organization performance.
Expectancy theory	• Motivation is a multiplicative function of (1) *expectancy*, (2) *instrumentality*, and (3) *valence*. • The greater the valence (pay level) the greater the motivation effects. • The greater the instrumentality (pay-performance link) the greater the motivation effects.	• Individuals' subjective estimates on the three perceptions determine the behavior.	• Motivation effects may differ across pay forms because of the difference in instrumentality and personal preference. • The greater the level of each pay forms, the greater motivation effects, and the better the organization performance.
Efficiency wage theory	• Market position of pay matters. • Above-market pay level is associated with higher quality of employees, lower turn-over, and greater effort.	• Individuals compare their pay with external job opportunity.	• The higher the level of each pay forms measured in their market positions the better the organization performance.
Equity theory	• Individuals compare their input-outcome ratio with others' • When individuals find their input-outcome ratio is not equal to the others', they feel inequity. • Inequity negatively affects employee behavior and organization performance.	• The strength of motivation is associated with individual perception of inequity.	• Levels of each pay forms after controlling input level are associated with employee motivation and organization performance.
Prospect theory	• Individuals choose risk-averse behavior when the outcomes are framed in terms of potential gains, whereas they choose risk-taking behavior when the outcomes are framed in terms of potential loss.	• Individual perceptions change their behaviors. • People change their attitudes toward risk.	• Incentives work more effectively when it is framed in terms of positive rewards. • Not only the relative importance of incentive pay, but also the market position of total pay, influences employees' attitudes and organizational performance.
Person-organization fit model	• Certain pay characteristics (high pay level, flexible benefits, individual-based pay, and fixed pay) are more attractive to job candidates.	• Pay systems have significant influence on attracting job candidates. • Individuals are risk averse.	• The greater the relative importance of fixed pay the more effective in attracting job candidates. The higher the level of total pay the more effective in attracting job candidates.

Agency Theory- Incentive Ratio. Agency theory addresses how an optimal contract is achieved in situations in which principals delegate work to agents in exchange for rewards (Jensen & Meckling, 1976). This theory focuses on two problems associated with this agency situation: (a) goal conflicts between the principals and agents, and (b) difference in their attitudes toward risks. Essentially, two alternatives are available for principals (behavior-based contract and outcome-based contract), and principals choose the lowest cost alternative. When principals can observe the agents' actions easily at low cost, they choose behavior-based contract. In this case, rewards are paid as salary (Eisenhardt, 1988). In contrast, when principals cannot monitor the agents actions at low cost, they choose an outcome-based contract, and rewards are paid as incentives designed to elicit actions that are linked to the desired outcomes. Since the rewards vary with performance, they transfer performance risk from principals to agents. The agents, who are assumed to be risk-averse accept such contracts only when adequate risk premiums are offered.

In the field of compensation, agency theory-based research has almost exclusively focused on the incentive forms of pay. Empirical studies typically apply this theory to the relationship between stockholders (principals) and top executives (agents), and examine the relative importance of incentive forms of pay in executive compensation. These studies often analyze organization performance as the consequence of the relative importance of incentives, testing the proposition that the grater the relative importance of incentives the greater the executives' efforts and the better the organization performance (e.g., Anderson et al., 2000; Gerhart & Milkovich, 1988). Although recent studies report several factors are influential to the relationship between incentives and performance such as governance structure (e.g., Werner & Tosi, 1995) and risk (Beatty & Zajac, 1994; Bloom & Milkovich, 1998), agency theory-based research presumes the greater emphasis on incentives influences agents' behaviors and organization performance.

(Agency theory pay mix implication)

Relative importance of incentives is associated with organization performance.

Expectancy Theory – Absolute level. Expectancy theory (Vroom, 1964) depicts motivation as a multiplicative function of (a) *expectancy*, the probability that effort leads to specific performance, (b) *instrumentality*, the probability that the performance leads to specific outcome, and (c) *valence*, the value of the specific outcome. The implication of this theory is employee compensation system motivates employees most effectively when employees believe "they can do what it takes to earn money and when they value money as a reward" (Bartol & Locke, 2000: 111). As long as employees value money, the greater the pay level (valence), the greater is the motivation effects of the compensation system and the better organization performance.

Researchers using expectancy theory attribute distinct motivation effects of pay forms to the difference in their instrumentality (e.g., Mowen et al., 1981). For instance, pay forms that are variable and based on company-wide performance (e.g., bonus, profit sharing, stock options) may be associated with lower instrumentality (Bartol & Locke, 2000) as compared with the forms that are fixed or based on individual performance (e.g., merit pay, individual bonus). Further, when bonus and stock options are compared, the latter may have less instrumentality for non-managerial employees because stock prices are less controllable for lower level of employees. In addition to the difference in instrumentality, people may display different motivation levels in response to different pay forms since valence is based on individual perception.

Based on the notion that each form may be associated with a different instrumentality and valence, we argue researchers can understand the motivation effects of a compensation system based on expectancy framework when they analyze different pay forms separately. While agency theory suggests the ratio of different pay forms matters, expectancy theory suggests absolute level of each pay forms matters. We believe analyzing pay levels is not inconsistent with our pay mix framework if the levels of all forms are analyzed simultaneously since one can calculate any combinations of pay mix ratio if the levels of all pay forms are available. For instance, we know the absolute levels of each pay forms in the Firm A are ($70K, $3.5K, $50K, $20K) in the previous example, from which we can calculate any pay mix ratios in the Firm A.

As we discussed, original expectancy theory implies pay level influences employee motivation and organization performance, and thus we posit that levels of each pay forms are associated with employee motivation and consequently with organization performance.

(Expectancy theory pay mix implication)

Absolute levels of each pay forms are associated with organization performance.

Efficiency Wage Theory – Market Position. Efficiency wage theory (Shapiro & Stiglitz, 1984) discusses above-market wage is associated with increased efficiency, lower labor cost and employees' greater efforts to achieve organizational objectives. Its rationales are (a) above-market wage attracts high quality applicants (Rynes & Boudreau, 1986), (b) greater opportunity cost of quitting encourages employees to stay in the organization (Levin, 1993), and (c) the risk of economic loss if fired due to shirking results in less shirking (Levin, Belman, Charness, Groshen, & O'Shughnessy, 2001). In spite of mixed empirical evidence about the effects on organization level performance (e.g., Levine, 1992; Pfeffer, Davis-Black, & Julius, 1995), efficiency wage theory essentially discusses the higher the market position the better the organization performance. In summary, using agency theory as the lens, pay level will be conceptualized in terms of its market position rather than its absolute value.

With regard to pay mix issue, past efficiency wage research is silent. This theory implicitly assumes employees aggregate different pay forms and compare the level of total pay with competing opportunities in the labor market. Thus, efficiency wage theory is ambiguous about the possible individual differences in employee perceptions of different pay forms. We argue it is likely that people assess the market positions of different pay forms separately (e.g., health care vs. bonuses). Some people may perceive one pay form's market position is more important than another pay form's market position for their job choice and effort level. Therefore, examining market positions of each pay forms separately will offer better understandings of organization pay mix policy. Consequently, we can posit market positions of each pay forms, rather than their absolute levels, are associated with organization performance.

(Efficiency theory pay mix implication)

Market positions of each pay forms are associated with organization performance.

Equity Theory – Levels after Controlling Base Pay or Total Pay. Equity theory (Adams, 1965) argues individuals compare the ratio of their outcomes (such as rewards) and inputs (such as effort, performance) with others' ratios. Those who find their ratio is not equal to those similar to them feel inequity, and take action to reduce it. The strength of motivation is associated with the magnitude of inequity, and the bigger the inequity the greater is the motivation to reduce it. In a compensation context, if employees perceive underpaid, they react negatively (Bretz & Thomas, 1992; Greenberg, 1990; Summers & Hendrix, 1991), and organization performance will be diminish.

Equity theory generally looks at compensation in terms of how much is paid rather than how it is paid. Indeed, we do not have any study that discusses pay mix from an equity theory perspective. Past equity theory studies focus on total pay, and fail to consider the possibility that people may evaluate different pay forms separately. We argue it is likely that employees calculate a set of ratios of separate pay forms, and thus researchers can have better understandings if equity comparison is framed according to each pay forms.

The difficulty of developing pay mix measures based on equity theory is to select input variables. Our study employs base pay and total pay for input variables because they are often strongly associated with the level of different pay forms (e.g., Dreher et al, 1988), and thus people plausibly have certain expectations on each pay forms based on base pay or total pay. Put differently, employees evaluate the levels of different pay forms after controlling the levels of their base pay or their total pay. We will describe how we control the levels of base pay and total pay to derive sets of pay mix measures in method section.

(Equity theory pay mix implication)

Levels of each pay forms after controlling base pay levels or total pay level are associated with organization performance.

Prospect Theory – Incentive Ratio and Market Position of Total Pay. While agency theory assumes agents or employees are always risk averse, prospect theory (Kahneman & Taversky,

1979) argues individuals change their attitudes toward risk according to projected gain and loss. Kahneman and Taversky (1979) show individuals choose risk-seeking behaviors when they are offered two alternatives whose outcomes are framed in terms of possible loss, whereas they choose risk-averse behaviors when they are offered two alternatives whose outcomes are both framed in terms of possible gains.

Compensation research has long been viewed outcome-based incentives as pay "at risk," because they transfer organization performance risk from employers to employees. In agency theory, agents are assumed to be risk-averse, and therefore they try to avoid outcome-based incentives. In prospect theory framework, however individuals change their attitudes toward outcome-based compensation depending on how it is framed. Specifically, Bartol (1999) suggests outcome-based incentives may lead to higher performance when it is framed in terms of positive rewards since it leads to greater persistence in spite of obstacles.

If positive framework affects the effectiveness of outcome-based incentives, a measure associated with employees' framework needs to be included in pay mix research. Kahneman and Taversky (1977) suggest employees change their framework when their total pay surpasses their expected income level. We think market level of total pay indicates potential income level available outside the organization, and thus is a reasonable estimates of the employees' expectation of their income. Consequently, we argue employees change their framework considering the market position of their total pay. In summary, prospect theory posits the combination of greater relative importance of incentive pay and above-market total pay is associated with greater motivation effects and better organization performance.

(Prospect theory pay mix implication)

Relative importance of incentives and the market position of total pay are associated with organization performance.

Person-Organization Fit Model –Fixed Pay Ratio and Level of Total Pay. Cable and Judge (1994) discuss people's preferences to pay influences their job choice decisions. They show that compensation system characterized by (a) high pay level, (b) flexible benefits, (c)

individual-based pay, and (d) fixed pay policies is more attractive to job seekers. A straightforward implication of this model is that greater relative importance of fixed pay is more attractive to job applicants. According to Cable and Judge, fixed pay policies are more attractive because job applicants are risk-averse, and are unwilling to accept variable pay, which is often influenced by unstable factors rather than their own efforts (e.g., economic climate). Because Cable and Judge focused on fixed pay and contingent pay as a whole, we will examine the relative importance of total fixed pay to total pay rather than looking at different pay forms separately.

In addition, because Cable and Judge show that high total pay level is more attractive to job candidates, we include the level of total pay variable. The other characteristics (flexible benefits and individual-based pay) are not included due to irrelevance to organization pay mix. In short, the implication of person-organization fit model is that the relative importance of fixed pay and the level of total pay are associated with the attractiveness of compensation systems to job candidates. Human resource systems with greater attractiveness to job seekers enable the company to employ job candidates with higher human capital, and these companies can be more productive.

(Person-Organization fit model pay mix implication)

Levels of total pay and relative importance of fixed pay are associated with organization performance.

PAY MIX MEASURE DEVELOPMENT

Categorizing Pay Forms

Compensation researchers consistently categorize pay components into base pay, incentives, and benefits. Base pay is the cash compensation that is fixed and “tends to reflect the value of the work or skills" (Milkovich & Newman, 2002: 654). Incentives are pay forms that change according to performance, but are not added to base pay. Incentives can take both cash

form (e.g., bonus, profit sharing) and non-cash form (e.g., stock options, stock grants), but are paid directly to employees. Benefits are non-cash compensation paid indirectly to employees (e.g., insurance, perquisite).

While some studies develop a category of total incentives (e.g., Roth & O'Donnell; 1996; Montemayor, 1996), past pay mix research usually distinguishes bonus from long-term incentives (e.g., Anderson et al. 2000; Westphal & Zajac, 1995). Our study also makes distinction between bonus and long-term incentives because: (1) bonus is generally paid in cash (Milkovich & Newman, 2002), (2) the amount is based on individual and/or group performance (Sturman & Short; 2000), and (3) it is paid annually or more frequently (Martocchio, 1998; Milkovich & Newman, 2002), whereas long-term incentives are: (1) generally paid in equity form (Milkovich & Newman, 2002), (2) whose amount is generally based on stock price, and (3) it takes multiple years for employees to earn them. Distinction between bonus and long-term incentives is particularly important for agency theory, expectancy theory, and prospect theory. Agency theory and prospect theory posit that employees' perception of risk affects their behaviors, and bonus and long-term incentives are distinct in their inherent risks (Gerhart, 2000). Expectancy theory states instrumentality influences the strength of motivation, and the perceived instrumentality will be different between bonus and long-term incentives as we already discussed.

We included other short-term cash incentives such as profit sharing award, and develop a category of short-term incentives. Eventually, we categorized pay forms into base pay, short-term incentives (STI), long-term incentives (LTI), and benefits.

Pay Mix Measures

Agency theory. Agency theory's implications to pay mix research is that greater relative importance of incentive pay is associated with better organization performance. As we discussed, we believe capturing multi-dimensional aspects of pay mix will give us more accurate view of organization pay mix, and therefore the measures included not only the relative importance of incentives but also those of base pay and benefits. Concerning denominator

variables, past research uses either base pay (e.g., Bloom & Milkovich, 1998; Werner & Tosi, 1995) or total pay (e.g., Westphal & Zajac, 1995). Since significant results are generally provided for both types of denominators, we developed two sets of pay mix measures: one with the denominator of base pay, and the other with the denominator of total pay.

(Agency theory based pay mix measures 1)

STI/Base pay, LTI/Base pay, and Benefits/Base pay.

(Agency theory based pay mix measures 2)

Base pay/Total pay, STI/Total pay, LTI/Total pay, and Benefits/Total pay.

Expectancy theory. The implication of expectancy theory to pay mix research is that the levels of each pay forms are associated with employee motivation and organization performance. The set of pay mix measures consists of the levels of each pay forms. Consistent with prior research, each measure is transformed into natural logarithm to correct non-normal distribution.

(Expectancy theory-based pay mix measures)

ln (base pay), ln (STI), ln (LTI), and ln (Benefits).

Efficiency wage theory. Efficiency wage theory implies that market positions of each pay forms are associated with organization performance. To get the indices that show market position of each pay forms, we standardized the levels of each pay forms using the means and standard deviations of company-mean pay level.

(Efficiency theory based pay mix measures)

Base pay $_{(\text{market position})}$, STI $_{(\text{market position})}$, LTI $_{(\text{market position})}$, and Benefits $_{(\text{market position})}$.

Equity theory. Equity theory implies that the levels of each pay forms after controlling either base pay or total pay are associated with organization performance. To develop sets of pay mix measures, we ran two regressions: (1) one which regressed three forms of pay (STI, LTI, and benefits) on base pay, and (2) one which regressed four forms of pay (base pay, STI, LTI, and benefits) on total pay. The results of the regressions showed all the coefficients were significant in $p < 0.05$ level. Then, we calculated and standardized the residuals (actual values - estimated values) of each pay forms, which will be used as equity theory based pay mix measures.

(Equity theory based pay mix measures 1 - controlling base pay)

STI $_{(Base\ pay)}$, LTI $_{(Base\ pay)}$, and Benefits $_{(Base\ pay)}$.

(Equity theory based pay mix measures 2 - controlling total pay)

Base pay $_{(Total\ pay)}$, STI $_{(Total\ pay)}$, LTI $_{(Total\ pay)}$, and Benefits $_{(Total\ pay)}$.

Prospect theory. Prospect theory implies relative importance of incentives and market position of total pay is associated with organization performance. The corresponding sets of pay mix measures are those that combine the pay mix measures developed in agency theory framework with a measure associated with the market position of total pay. For calculating the market position of total pay, we standardized the level total pay.

(Prospect theory based pay mix measures 1)

Total pay $_{(market\ position)}$, STI/Base pay, LTI/Base pay, and Benefits/Base pay.

(Prospect theory based pay mix measures 2)

Total pay $_{(market\ position)}$, Base pay/Total pay, STI/Total pay, LTI/Total pay, and Benefits/Total pay.

Person-organization fit model. Person-organization fit model implies the level of total pay and relative importance of fixed pay are associated with attractiveness of compensation system for job seekers and subsequent organization performance. As we included the relative importance of base pay and benefits in agency theory-based pay mix measures, we included not only the relative importance of fixed pay, but also that of variable pay. We developed fixed pay and variable pay variables by combining base pay and benefits, and STI and LTI, respectively. Concerning pay level variables, we decided to use the actual pay level because Cable and Judge (1994) used actual amount in their experimental study.

(Person-organization fit model pay mix measures)

Total pay, Fixed pay/Total pay, and Contingent pay/Total pay.

Consequently, we developed nine sets of pay mix measures based on six theoretic models (agency theory – 2, expectancy theory – 1, efficiency wage theory – 1, equity theory – 2, prospect theory – 2, person-organization fit model – 1).

METHODS

Data

The data were drawn from SC/CHiPS compensation survey compiled by Clark/Bardes, formally known as Executive Alliance. The compensation data contains employee compensation data below executive level as well as the information such as employee job classification, job level, office location for 760 companies in high-tech industry (computer, networking, semiconductor, software, internet/telecom, electronic manufacturing, etc.) for the years 1994 through 1999. Compensation data for 1997 though 1999 are composed of individual compensation data (931,235 individual compensation data from 464 companies), while the data for 1994 though 1996 are already aggregated into job level (38,477 job level compensation data from 296 companies) with the information on the number of employees in each job levels. The value of stock options was calculated using Black-Scholes model. Benefits were valued as the cost if an employee purchases equivalent in the marketplace.

Aggregation to Organization Level Pay Mix Data

Because we are interested in organization pay mix policy, we first aggregated job-level data (1994-1996) and individual level data (1997-1999) into company level data by taking means. Job level data were weighted by the number of employees in the job levels. These compensation data were adjusted by consumer price index (CPI).

While variance in pay mix across employees within an organization may differ across companies, our analysis of variance (ANOVA) shows significant amount of variances of pay mix measures are explained by company differences. For example, the ANOVA of Agency 2 pay mix measures (Base pay/Total pay, STI/Total pay, LTI/Total pay, Benefits/Total pay) for individual employees using the 1997-1999 data shows these measures are significantly different across companies (F = 3524.16, 3211.75, 2800.02, and 2938.93, respectively, which are all $p<0.001$ level. df = 284).

Using the data set spanning 6 years, we created a panel data set. Because all the companies did not participate in the survey every year, the compensation data for 478 samples were eventually available for our analyses. The number of companies that were actually included in the data set was 159.

Cluster Analysis

Next step is to examine how nine sets of pay mix measures classify organization pay mix using cluster analyses. When running nine cluster analyses, we imposed a restriction about the number of clusters so that we could calculate agreement of cluster solutions by Cohen's kappa. Calculation of kappa requires two variables to have the same number of categories, and therefore we first had to decide the number of clusters applied to all the cluster analyses. We recognize an appropriate number of clusters is variable when we run cluster analyses using different variables. However, we believe restricting the number of clusters is a necessary compromise because a part of our study's goal is to examine the degree to which different pay mix measures classify organization pay mix differently.

To determine the number of clusters applied to all cluster analyses, we first cluster analyzed Agency1 pay mix measures (STI/Base pay, LTI/Base pay, Benefits/Base pay). We chose these measures because STI/Base pay is one of the most commonly used pay mix measures (e.g., Gerhart & Milkovich, 1990; Werner & Tosi, 1995), and we were interested in comparing the cluster solutions calculated from a set of conventional measures with those calculated from contrasting sets of measures. We first ran a hierarchical cluster analysis on Agency1 pay mix measures with 5 most popular agglomerative algorithms: single linkage, complete linkage, average linkage, centroid method, and Ward's method (Hair, Anderson, Tatham, & Black, 1998; Kethen, & Shook, 1996). Khattree and Naik (2000) suggest researchers can use R-square, root mean square standard deviation (RMSSTD), and semi partial R-square (SPRSQ) to assess the quality of clustering and determine the appropriate number of clusters. A large value of R-square is desirable while RMSSTD and SPRSQ should be small. When we examined these measures, we found similar patterns across five analyses using different

agglomerative algorithms. Specifically, R-square dropped substantially when the number of clusters fell from three to two, and RMSSTD and SPRSQ were satisfactorily smaller when the number of clusters were three. From these analyses, we concluded a three-cluster solution was to be optimal for the analysis using a set of Agency1 pay mix measures. Consequently, we decided to use a three-cluster model in all subsequent cluster analyses. For all the sets of pay mix variables derived from different theories (including Agency1 pay mix variables), we used *k*-means cluster method with specifying a three cluster solution (therefore, k = 3).

When we cluster analyzed using ratio variables and pay level variables simultaneously (Prospect 1, Prospect2, and Person-organization fit model), we standardized all the variables because variables measured in larger scale affect cluster solutions more strongly (Hair, Anderson, Tatham, & Black, 1998). As a result of standardization, the level of total pay variable in Person-organization fit model became identical to the market position of total pay.

RESULT

Classification of Organization Pay mix

Table 2 contains a summary of descriptive statistics for pay mix variables and organization performance variables. It shows some pay mix variables are highly correlated with each other, but others are not. Table 3 summarizes the final mean value of each pay mix measures assigned to each clusters. Table 4 describes how different pay mix measures classified organization pay mix policies.

In the results of cluster analysis using Agency1 measures, the first cluster consists large portion of our samples (402 companies). These companies indicate very small ratio for both the ratio of STI to base pay (0.05) and that of LTI to base pay (0.06). This result is somewhat surprising to us because our sample consists of high-tech companies and it is often described these companies use stock options for compensating their employees more aggressively (Anderson et al, 2000). The second cluster includes 68 companies whose ratio of STI to base pay (0.09) is higher than the companies in cluster 1, and the ratio of LTI to base pay is

moderately higher (0.56). The third cluster consists of only 8 companies. Their ratio of STI to base pay (0.05) is the same as that of cluster 1, but indicates substantially high ratio of LTI to base pay (1.49). Because the ratio of benefits to base pay does not differ substantially across clusters (0.26 for cluster1, and 0.25 for cluster 2 and 3), we summarize that the cluster analysis using Agency1 pay mix measures classify companies to either (1) weak emphasis on STI and LTI (cluster1), (2) strong emphasis on STI and moderate emphasis on LTI (cluster2), or (3) weak emphasis on STI and strong emphasis on LTI (cluster3).

The result of cluster analysis based on Agency2 pay mix variables displays somewhat different classifications of organization pay mix policy. Companies in cluster 1 (358 companies) rely heavily on base pay (75% of total compensation is paid as base pay) and benefits (19%). Instead, they use incentives little (3% for both STI and LTI). Companies in cluster2 (84 companies) indicate the highest STI (6%) and moderately higher LTI (18%). Cluster3, which includes 36 companies that have weak emphasis on base pay (44%) and benefits (11%), but use LTI much more extensively (40%). In summary, the cluster analysis using Agency2 pay mix variables classify companies to either (1) strong emphasis on base pay and benefits (cluster1), (2) strong emphasis on STI and moderate emphasis on LTI (cluster2), or (3) weak emphasis on base pay and benefits, and strong emphasis on LTI (cluster3).

In a similar vein, the analysis using expectancy theory pay mix variables classified companies into either (1) the levels of all pay forms are the lowest (cluster1, 247 companies), (2) STI and benefits are the highest and the level of LTI is moderate (cluster2, 117 companies), or (3) the levels of base and LTI are the highest and the level of STI is moderate (cluster3, 114 companies). The analysis using Efficiency wage theory measures classified companies into either (1) all pay forms lag from the market (cluster1, 432 companies), (2) the level of STI substantially leads the market and LTI and benefits lead the market moderately (cluster2, 6 companies), or (3) all pay forms lead the market; base pay and STI lead the market moderately and LTI substantially leads the market (cluster3, 40 companies).

The results of the other cluster analyses are as follows. Analysis using Equity1 measures classified companies into either (1) low STI and LTI after controlling base pay level (cluster1, 226 companies), (2) high STI, LTI, and benefits after controlling base pay level (cluster2, 134 companies), or (3) high LTI but low benefits after controlling base pay level (cluster3, 118 companies). Companies were classified by the analysis using Equity2 pay mix measures into either (1) high base pay and benefits, and low LTI after controlling total pay level (cluster1, 236 companies), (2) low STI and moderately high LTI after controlling total pay level (cluster2, 127 companies), or (3) low base pay and benefits but high STI and LTI after controlling total pay level (cluster3, 115 companies). Analysis using Prospect1 pay mix measures classified companies into either (1) weak emphasis on STI and LTI with lagging total pay (cluster1, 446 companies), (2) strong emphasis on STI and benefits with leading total pay (cluster2, 6 companies), or (3) strong emphasis on LTI with substantially leading total pay (cluster3, 26 companies). Similarly, the analysis using Prospect2 pay mix measures classify companies into either (1) weak emphasis on STI and LTI with lagging total pay(cluster1, 420 companies), (2) strong emphasis on STI with leading total pay (cluster2, 14 companies), or (3) strong emphasis on LTI and weak emphasis on benefits with substantially leading total pay (cluster3, 44 companies). Finally, pay mix measures based on Person-organization fir model resulted in classifications of (1) strong emphasis on fixed pay with lagging total pay (cluster1, 355 companies), (2) moderately weak emphasis on fixed pay with moderately leading total pay (cluster2, 110 companies), and (3) weak emphasis on fixed pay with substantially leading total pay (cluster 3, 13 companies). In short, our analyses suggest the cluster analyses using different sets of pay mix variables capture somewhat different aspects of organization pay mix.

Table 2
Correlations of Pay Mix Variables

Variables	Mean	s.d.	*1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	32	33	35	36	37
Agency theory 1																																						
1. STI / Base pay	0.06	0.07																																				
2. LTI / Base pay	0.16	0.27	.18																																			
3. Benefits / Base pay	0.26	0.06	.21	-.08																																		
Agency theory 2																																						
4. Base pay / Total pay	0.70	0.10	-.49	-.87	-.26																																	
5. STI / Total pay	0.04	0.04	.96	.05	.19	-.38																																
6. LTI / Total pay	0.08	0.12	.17	.97	-.13	-.88	.05																															
7. Benefits / Total pay	0.18	0.04	-.12	-.59	.82	.33	-.06	-.64																														
Expectancy theory																																						
8. Logarithm of base pay	4.25	0.13	.02	.08	-.11	-.09	.03	.13	-.14																													
9. Logarithm of STI *2	1.29	0.82	.84	.19	.20	-.51	.90	.21	-.11	.15																												
10. Logarithm of LTI *2	1.57	1.37	.23	.80	-.15	-.80	.12	.90	-.61	.24	.27																											
11. Logarithm of benefits	2.86	0.27	.18	-.03	.85	-.28	.17	-.05	.67	.41	.24	-.00																										
Efficiency wage theory																																						
12. Market position of base pay	0.00	1.00	.02	.08	-.14	-.09	.03	.13	-.17	.99	.15	.25	.38																									
13. Market position of STI	0.00	1.00	.99	.18	.19	-.49	.96	.17	-.12	.13	.86	.24	.22	.12																								
14. Market position of LTI	0.00	1.00	.17	.99	-.10	-.86	.04	.96	-.59	.15	.19	.80	-.01	.15	.17																							
15. Market position of benefits	0.00	1.00	.21	-.05	.88	-.28	.20	-.07	.69	.36	.27	-.03	.98	.34	.24	-.02																						
Equity theory 1																																						
16. STI after controlling base pay *3	0.00	1.00	.85	.18	.22	-.50	.90	.19	-.09	.00	.99	.24	.18	.00	.85	.17	.22																				
17. LTI after controlling base pay *3	0.00	1.00	.23	.80	-.12	-.80	.12	.89	-.60	.00	.25	.97	-.11	.00	.21	.79	-.12	.25																			
18. Benefits after controlling base pay *3	0.00	1.00	.19	-.07	.98	-.27	.17	-.11	.80	.00	.20	-.11	.91	-.03	.18	-.08	.91	.20	-.12																		
Equity theory 2																																						
19. Base pay after controllin total pay *3	0.00	1.00	-.29	-.53	-.23	.56	-.20	-.48	.12	.77	-.17	-.31	.18	.76	-.19	-.46	.14	-.29	.51	-.15																	
20. STI after controlling total pay *3	0.00	1.00	.76	-16	.18	-.16	.86	-.15	.05	-.15	.90	-.06	.06	-.14	.75	-.17	.11	.93	.03	.14	-.19																
21. LTI after controlling total pay *3	0.00	1.00	-.07	.36	-.34	-.29	-.14	.49	-.51	-.35	-.08	.67	-.48	-.34	.12	.33	-.49	-.03	.78	-.37	-.46	-.09														
22. Benefits after controlling total pay *3	0.00	1.00	.02	-.38	.89	.07	.05	-.42	.91	.15	.06	-.35	.91	.13	.04	-.37	.90	.04	-.40	.92	.20	.07	-.53													
Prospect theory 1																																						
23. STI / Base pay *3	0.00	1.00	1.00	.18	.21	-.49	.96	.17	-.12	.02	.84	.23	.18	.02	.99	.17	.21	.85	.23	.19	-.29	.76	-.07	.02													
24. LTI / Base pay *3	0.00	1.00	.18	1.00	-.08	-.87	.05	.97	-.59	.08	.19	.80	-.03	.08	.18	.99	-.05	.18	.80	-.07	-.53	-.16	.36	-.38	.18												
25. Beneifts / Base pay *3	0.00	1.00	.21	-.08	1.00	-.26	.19	-.13	.82	-.11	.20	-.15	.85	-.14	.19	-.10	.88	.22	-.12	.98	-.23	.18	-.34	.89	.21	-.08										
26. Market position of total pay	0.00	1.00	.36	.82	.07	-.84	.26	.81	-.42	.55	.41	.75	.34	.56	.41	.86	.32	.33	.63	.13	-.10	-.02	.03	-.08	.36	.82	.07									
Prospect theory 1																																						
27. Base pay / Total pay *3	0.00	1.00	-.49	-.87	-.26	1.00	-.38	-.88	.33	-.09	-.51	-.80	-.28	-.09	-.49	-.86	-.28	-.50	-.80	-.27	.56	-.16	-.29	.07	-.49	-.87	-.26	-.84								
28. STI / Total pay *3	0.00	1.00	.96	.05	.19	-.38	1.00	.05	-.06	.03	.90	.12	.17	.03	.96	.04	.20	.90	.12	.17	-.20	.86	-.14	.05	.96	.05	.19	.26	-.38							
29. LTI / Total pay *3	0.00	1.00	.17	.97	-.13	-.88	.05	1.00	-.64	.13	.21	.90	-.05	.13	.17	.96	-.07	.19	.89	-.11	-.48	-.15	.49	-.42	.17	.97	-.13	.81	-.88	.05						
30. Beneifts / Total pay *3	0.00	1.00	-.12	-.59	.82	.33	-.06	-.64	1.00	-.14	-.11	-.61	.67	-.17	-.13	-.59	.69	-.10	-.60	.80	.12	.05	-.51	.91	-.12	-.59	.82	-.42	.33	-.06	-.64					
31. Market position of total pay	(Same as 26.)																																					
Person-orgnaization fit model																																						
32.Fixed pay / Total pay *3	0.00	1.00	-.45	-.93	.07	.94	-.34	-.96	.62	-.13	-.46	-.88	.00	-.13	-.45	-.92	.01	-.44	-.87	.06	.51	-.12	-.42	.38	-.45	-.93	.07	-.84	.94	-.34	-.96	.62				
33. Variable pay / Total pay *3	0.00	1.00	.45	.93	-.07	-.94	.34	.96	-.62	.13	.46	.88	-.00	.13	.45	.92	-.01	.44	.87	-.06	-.51	.12	.42	-.38	.45	.93	-.07	.84	-.94	.34	.96	-.62	-1.00			
34. Total pay *3	(Same as 26.)																																					
Performance measures																																						
35. ROA	3.89	10.20	.29	.24	.09	-.33	.29	.24	-.11	-.08	.33	.17	.04	-.08	.28	.23	.05	.35	.20	.08	-.27	.28	.04	-.05	.29	.24	.09	.21	-.33	.29	.24	-.11	-.31	.31			
36. ROE	6.40	74.32	.01	.06	.12	-.09	-.01	.06	.07	-.13	.04	.03	.04	-.14	-.02	.05	.06	.06	.07	.11	-.16	.05	.07	.05	.01	.06	.12	-.00	-.09	-.01	.06	.07	-.05	.05	.40		
37. TSR	1.25	0.59	.20	.21	.09	-.28	.21	.21	-.07	-.02	.26	.18	.10	.02	.21	.22	.11	.26	.18	.10	-.16	.18	.02	.00	.20	.21	.09	.24	-.28	.21	.21	-.07	-.26	.26	.44	.20	
38. Revenue growth	0.19	0.33	.13	.36	-.13	-.32	.11	.36	-.30	-.14	.11	.27	-.17	-.13	.12	.35	-.18	.13	.32	-.13	-.32	.04	.22	-.27	.13	.36	-.13	.22	-.32	.11	.36	-.30	-.37	.37	.47	.21	.30

*1. For the pay mix variables (from 1 through 25), N = 478. Correlations greater than .09 are significant at p = .05, and correlations exceeding .12 are significant at p = .01.

*2. Added 1 to original values before log transformation

*3. Standardized

TABLE 3
Results of 3-Means Cluster Analyses with Different Sets of Pay Mix Measures

Agency theory 1	Mean	s.d	Cluster1	Cluster2	Cluster3
STI / Base pay	0.06	0.07	0.05	0.09	0.05
LTI / Base pay	0.16	0.27	0.06	0.56	1.49
Benefits / Base pay	0.26	0.06	0.26	0.25	0.25
Number of firms	478	478	402	68	8

Agency theory 2	Mean	s.d	Cluster1	Cluster2	Cluster3
Base pay / Total pay	0.70	0.10	0.75	0.61	0.44
STI / Total pay	0.04	0.04	0.03	0.06	0.04
LTI / Total pay	0.08	0.12	0.03	0.18	0.40
Benefits / Total pay	0.18	0.04	0.19	0.16	0.11
Number of firms	478	478	358	84	36

Expectancy theory	Mean	s.d	Cluster1	Cluster2	Cluster3
logarithm of base pay	4.25	0.13	4.22	4.28	4.29
logarithm of STI	1.29	0.82	0.92	2.03	1.32
logarithm of LTI	1.57	1.37	0.48	2.10	3.37
logarithm of benefits	2.86	0.27	2.83	2.95	2.83
Number of firms	478	478	247	117	114

Efficiency wage theory	Mean	s.d	Cluster1	Cluster2	Cluster3
Market position of base pay	0.00	1.00	-0.05	-0.08	0.58
Market position of STI	0.00	1.00	-0.10	5.17	0.33
Market position of LTI	0.00	1.00	-0.25	0.44	2.62
Market position of benefits	0.00	1.00	-0.02	0.90	0.07
Number of firms	478	478	432	6	40

Equity theory 1	Mean	s.d	Cluster1	Cluster2	Cluster3
STI after controlling base pay	0.00	1.00	-0.56	0.93	0.02
LTI after controlling base pay	0.00	1.00	-0.68	0.60	0.62
Benefits after controlling base	0.00	1.00	0.15	0.74	-1.14
Number of firms	478	478	226	134	118

Equity theory 2	Mean	s.d	Cluster1	Cluster2	Cluster3
Base pay after controlling tota	0.00	1.00	0.41	0.19	-1.06
STI after controlling total pay	0.00	1.00	0.27	-1.03	0.58
LTI after controlling total pay	0.00	1.00	-0.72	0.49	0.93
Benefits after controlling total	0.00	1.00	0.54	-0.37	-0.70
Number of firms	478	478	236	127	115

Prospect theory 1	Mean	s.d	Cluster1	Cluster2	Cluster3
STI / Base pay *	0.00	1.00	-0.09	5.30	0.33
LTI / Base pay *	0.00	1.00	-0.20	0.66	3.30
Benefits / Base pay*	0.00	1.00	-0.02	1.60	-0.05
Market position of total pay	0.00	1.00	-0.17	1.34	2.66
Number of firms	478	478	446	6	26

Prospect theory 2	Mean	s.d	Cluster1	Cluster2	Cluster3
Base pay /Total pay*	0.00	1.00	0.28	-1.38	-2.21
STI / Total pay*	0.00	1.00	-0.11	3.29	-0.02
LTI / Total pay*	0.00	1.00	-0.27	0.26	2.51
Benefits / Total pay*	0.00	1.00	0.16	-0.22	-1.49
Market position of Total pay	0.00	1.00	-0.25	0.90	2.14
Number of firms	478	478	420	14	44

Person-organization fit	Mean	s.d	Cluster1	Cluster2	Cluster3
Fix pay / Total pay*	0.00	1.00	0.49	-1.20	-3.20
Variable pay / Total pay*	0.00	1.00	-0.49	1.20	3.20
Total pay*	0.00	1.00	-0.42	0.93	3.51
Number of firms	478	478	355	110	13

* Pay mix measures are standardized.

TABLE 4
Empirical Organization Pay Mix Policies

Agency theory 1 (Incentive ratio)
Cluster 1: Weak emphasis on short-term incentives (STI) and long-term incentives (LTI).
Cluster 2: Strong emphasis on STI and moderate emphasis on LTI.
Cluster 3: Weak emphasis on STI and strong emphasis on LTI.

Agency theory 2 (Incentive ratio)
Cluster 1: Strong emphasis on base pays and benefits.
Cluster 2: Strong emphasis on STI and moderate emphasis on LTI.
Cluster 3: Weak emphasis on base pay and benefits and strong emphasis on LTI.

Expectancy theory (Absolute level)
Cluster 1: Low pay levels for all forms.
Cluster 2: High STI and benefits, and moderate LTI.
Cluster 3: Moderate STI and high LTI.

Efficiency wage theory (Market position)
Cluster 1: Lagging from the market for all forms.
Cluster 2: Substantially leading STI, and moderately leading LTI and benefits.
Cluster 3: Leading the market for all forms; moderately reading base pay and STI, and substantially leading LTI.

Equity theory 1 (Level after controlling base pay)
Cluster 1: Low STI and LTI after controlling base pay level.
Cluster 2: High STI, LTI, and benefits after controlling base pay level.
Cluster 3: High LTI and low benefits after controlling base pay level.

Equity theory 2 (Level after controlling total pay)
Cluster 1: High base pay and benefits, and low LTI after controlling total pay level.
Cluster 2: Low STI and moderately high LTI after controlling total pay level.
Cluster 3: Low base pay and benefits, and high STI and LTI after controlling total pay level.

Prospect theory 1 (Incentive ratio and level of total pay)
Cluster 1: Weak emphasis on STI and LTI with lagging total pay.
Cluster 2: Strong emphasis on STI and benefits with leading total pay.
Cluster 3: Strong emphasis on LTI with substantially leading total pay.

Prospect theory 2 (Incentive ratio and level of total pay)
Cluster 1: Weak emphasis on STI and LTI with lagging total pay.
Cluster 2: Strong emphasis on STI with leading total pay.
Cluster 3: Strong emphasis on LTI and weak emphasis on base pay with substantially leading total pay.

Person-organization fit model (Fixed pay ratio and level of total pay)
Cluster 1: Strong emphasis on fixed pay with lagging total pay.
Cluster 2: Moderately weak emphasis on fixed pay with moderately leading total pay.
Cluster 3: Weak emphasis on fixed pay substantially leading total pay.

Agreement of Cluster Solutions

Next, we calculated Cohen's kappa to investigate the degree to which the cluster solutions derived from different sets of pay mix measures agree with each others. Table 5 shows the Cohen's kappa across cluster solutions. Cohen's kappa is equal to 1 if perfect agreement occurs, and it is equal to 0 if the agreement is merely equal to that expected under independence (Agresti, 1996). We calculated kappa statistics of all the possible combinations of two cluster solutions (3! = 6), and reported the maximum values.

While all the kappa statistics are significant in $p<0.05$ level, the statistics ranges very widely. First we compared the agreement of two most frequently used sets of pay mix measures (Agency1 and Agency2). Their maximum value of kappa statistics is 0.46, which is moderately high as compared with kappa statistics of the other combinations. The cluster solutions based on Agency1 pay mix measures agree strongly with the solutions based on Efficiency wage theory (kappa = 0.57), Prospect theory2 (0.58), and Person-organization fit model (0.67) pay mix measures. In contrast, they show lower agreement with the solutions based on Equity theory1 (kappa = 0.20) and Equity theory2 (0.20) pay mix measures. Similarly, the solutions based on Agency2 pay mix measures agree strongly with Prospect theory2 (kappa = 0.50) and Person-organization fit model (0.82) pay mix measures, but weakly with Equity theory1 (0.20) pay mix measures.

Cluster solutions derived from Expectancy theory pay mix measures agree most strongly with cluster solutions derived from Equity theory1 pay mix measures (kappa = 0.52). Cluster solutions derived from Efficiency wage theory pay mix measures agree strongly with cluster solutions derived from Prospect theory1 (kappa = 0.78) and Prospect theory 2 (0.79) pay mix measures. Two cluster solutions derived from sets of equity theory pay mix measures (Equity1 and Equity2) indicate low agreement with each other (kappa = 0.24). The low agreement of two cluster solutions derived from the same theoretical framework but using different pay measures suggests that not only how pay mix is conceptualized, but also how it is measured can influence classification of organization pay mix policy. In contrast, the solutions derived from sets of two

prospect theory pay mix measures (Prospect1 and Prospect2) agree strongly (kappa = 0.69). Cluster solutions derived from Person-organization fit model agree strongly with the solutions derived from both sets of agency theory pay mix measures (kappa = 0.67 and 0.82).

Although not reported here, we also ran cluster analyses with specifying the number of clusters for two (k = 2) and four (k = 4) using the same sets of pay mix measures. Calculated kappa statistics are generally lower than our original statistics reported in Table 5 (k =3). In summary, our analysis confirms our discussion that theoretic model of pay mix matters. Even if the same theoretic model is used, employing different measures can result in dissimilar classification of organization pay mix policy as we see in the low agreement between two sets of equity theory pay mix measures.

TABLE 5
Kappa Measure of Agreement across Different Measures

	Agency Theory 1	Agency Theory 2	Expectancy Theory	Efficiency wage Theory	Equity Theory 1	Equity Theory 2	Prospect Theory 1	Prospect Theory 2
Agency Theory 1								
Agency Theory 2	0.46							
Expectancy Theory	0.33	0.38						
Efficiency wage Theory	0.57	0.41	0.23					
Equity Theory 1	0.20	0.31	0.52	0.13				
Equity Theory 2	0.20	0.20	0.24	0.08	0.24			
Prospect Theory 1	0.38	0.37	0.17	0.78	0.09	0.08		
Prospect Theory 2	0.58	0.50	0.28	0.79	0.17	0.11	0.69	
Person-Org. Fit Model	0.67	0.82	0.42	0.36	0.31	0.22	0.42	0.27

1. All the Kappa statistics are significant in $p < 0.05$ level.
2. Statistics shown in this table are maximum values

Performance Difference across Clusters

Because all the theoretic models we discussed for developing pay mix measures are more or less concerned with increased organization performance, we examined how organization performance varies across companies in different clusters. As is the case with pay mix measures, what measurement we use for organization performance is influenced by what theoretical perspective we use (Venkatraman & Ramanujam, 1986). Since it is beyond our intention to discuss what performance measure is appropriate in pay mix research, we chose four frequently used organization level performance measures: return on asset (ROA), return on equity (ROE), total shareholders' return (TSR), and revenue growth. These data were collected from COMPUSTAT.

Table 6 shows the means of ROA, ROE, TSR, and revenue growth for companies in each clusters. We also conducted analysis of variance (ANOVA) to check if these performance measures are statistically different across clusters. Concerning the cluster solutions derived from Agency1 pay mix measures, ROA, TSR, and revenue growth are significantly different across clusters, whereas ROE is not. Companies in cluster 3, characterized by weak emphasis on STI and strong emphasis on LTI surpass the performance of companies in cluster 1, characterized as weak emphasis on STI and LTI, in terms of ROA ($p = 0.005$ in pooled t-test), TSR ($p = 0.023$), and revenue growth ($p < 0.001$). On the other hand, the differences in performance measures between cluster 3 and cluster 2, which are characterized as strong emphasis on STI and moderate emphasis on LTI, are all insignificant ($p = 0.371$ for ROA, $p = 0.751$ for ROE, $p = 0.238$ for TSR, and $p = 0.080$ for revenue growth). Thus, cluster analysis using Agency1 pay mix measures cannot distinguish cluster2 from cluster 3 in terms of these performance measures.

Clusters based on Agency2 pay mix measures show a little different picture on organization performance. The companies in cluster 3, characterized by weak emphasis on base pay and benefits and strong emphasis on LTI display better performance than companies in cluster1 that are characterized by strong emphasis on base pay and benefits, in terms of

three performance measures: ROA ($p < 0.001$), TSR ($p < 0.001$), and revenue growth ($p < 0.001$). Moreover, cluster solutions based on Agency2 pay mix variables perform better in differentiating cluster 2 and cluster 3 because their differences are significant in ROA ($p = 0.010$) and revenue growth ($p = 0.002$) although the difference in ROE ($p = 0.530$) and TSR ($p = 0.238$) are not significant.

Table 6 shows all the cluster analyses can differentiate ROA, TSR, and revenue growth adequately across clusters, but the ability of differentiating ROE varies across theoretical perspectives. Cluster analyses using pay mix measures derived from Efficiency wage theory, Equity theory2, and Prospect theory2 can significantly differentiate company ROE, but the analyses using pay mix measures derived from the other theoretic models do not.

TABLE 6
Difference in Performance Measures acorss Clusters

Agency theory 1	Cluster1	Cluster2	Cluster3	*F* (ANOVA)
ROA	2.82	9.28	12.68	15.22***
ROE	4.16	18.10	20.38	1.15
TSR	1.20	1.49	1.80	11.18***
Revenue Growth	0.15	0.38	0.64	24.16***

Agency theory 2	Cluster1	Cluster2	Cluster3	*F* (ANOVA)
ROA	2.31	7.23	12.02	21.79***
ROE	2.72	16.86	19.02	1.78
TSR	1.17	1.43	1.60	14.51***
Revenue Growth	0.13	0.29	0.54	34.72***

Expectancy theory	Cluster1	Cluster2	Cluster3	*F* (ANOVA)
ROA	1.61	6.23	6.43	13.48***
ROE	1.81	12.01	10.67	0.99
TSR	1.18	1.36	1.38	9.63***
Revenue Growth	1.14	0.18	0.35	20.67***

Efficiency wage theory	Cluster1	Cluster2	Cluster3	*F* (ANOVA)
ROA	3.09	8.73	11.94	14.97***
ROE	7.09	-127.98	19.17	10.85***
TSR	1.22	1.34	1.56	6.6**
Revenue Growth	0.16	0.31	0.48	20.14***

Equity theory 1	Cluster1	Cluster2	Cluster3	*F* (ANOVA)
ROA	1.14	7.93	4.61	20.35***
ROE	2.85	19.05	-1.04	2.77+
TSR	1.11	1.47	1.27	16.12***
Revenue Growth	0.10	0.22	0.31	17.35***

Equity theory 2	Cluster1	Cluster2	Cluster3	*F* (ANOVA)
ROA	4.16	-0.30	7.90	20.98***
ROE	7.13	-5.66	18.13	3.11*
TSR	1.27	1.12	1.37	5.62**
Revenue Growth	0.12	0.16	0.35	20.78***

Prospect theory 1	Cluster1	Cluster2	Cluster3	*F* (ANOVA)
ROA	3.21	16.77	12.43	15.79***
ROE	5.31	30.78	19.30	0.76
TSR	1.23	1.44	1.62	6.00**
Revenue Growth	0.16	0.40	0.59	24.64***

Prospect theory 2	Cluster1	Cluster2	Cluster3	*F* (ANOVA)
ROA	2.91	9.61	11.28	16.69***
ROE	6.79	-43.93	18.72	3.87*
TSR	1.22	1.31	1.56	6.99**
Revenue Growth	0.15	0.27	0.49	23.32***

Person-organization fit mod	Cluster1	Cluster2	Cluster3	*F* (ANOVA)
ROA	2.43	7.58	13.19	17.12***
ROE	5.57	7.50	19.94	0.25
TSR	1.17	1.44	1.75	14.48***
Revenue Growth	0.13	0.31	0.68	30.37***

1. + p<0.1, * p<0.05, ** p<0.01, and *** p<0.001.

DISCUSSION

Pay mix composes a critical dimension of organization compensation policy (Gerhart & Milkovich, 1990) as well as pay level and pay structures. Past research has noticed its importance and begun to investigate organization pay mix policy, but its theoretical relevance and measurement remains underdeveloped. We offered extensive discussion on pay mix based on relevant theories for the first time in the history of pay mix research. Our study also raises a question about the measurement of pay mix in the past research. The cluster analyses using the nine sets of pay mix measures derived from six theoretic models resulted in somewhat dissimilar classification of organization pay mix policy. Even two sets of pay mix measures, both of which were derived from the same theoretical perspective, could indicate relatively low agreement in their cluster solutions. The results suggest different conceptualization of organization pay mix is possible, which may provide different interpretations for the past pay mix research.

Directions for Future Research

We hope this study explores a new direction for organization pay mix research. Cluster analyses using different sets of pay mix measures offer distinct categorizations of organization pay mix policy. Next step may be finding the determinants of organization pay mix policies. For instance, the cluster analysis using Agency1 pay mix measures show three distinct clusters. What influences the management decisions in choosing one from these pay mix policy? Is any cluster of pay mix policy associated with certain organization business policies?

Similarly, researchers may want to study the consequences of organization pay mix. Six theoretic models we discuss are more or less concerned with how pay mix is associated with organization performance. Although it is beyond the scope of this study to discuss which set of pay mix measures is most accurately describe subsequent organization performance, future researcher may want to examine this issue. Our preliminary analysis shows companies emphasizing LTI indicate the best performance based on Agency1 and Agency2 pay mix

measures; however, it doesn't show any causal relationship, and it may be because company with better performance are likely to choose this pattern of pay mix.

While we used accounting and financial measures to investigate performance difference across clusters, other outcome measures (e.g., productivity, market share, turnover ratio) may be more meaningful for certain pay mix measures. For example, efficiency wage theory suggests above market pay level leads to an increase in compensation cost, even though it is associated with improved productivity. Therefore, accounting and financial performance measures may not be appropriate to capture the performance discussed in efficiency wage theory. Instead, this theory discusses above market pay leads to low turnover rate, and therefore turnover rate may be more appropriate outcome measures for efficiency wage based pay mix measures.

In sum, we believe that more must be learned about organization pay mix policy both from theoretically and methodologically. Agency theory is not the only available theory, and the other theoretic models are potentially useful in explaining organization pay mix policy. Simply looking at the relative importance of incentives does not fully capture the organization pay mix. Since employee compensation comes with different forms, researchers must take into account of its multidimensional aspects. This study explores the potential alternative theoretic models and corresponding measures, which contributes to further development of organization pay mix study.

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