



# The utility of pay raises/cuts: A simulation experimental study



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## ARTICLE INFO

### Article history:

Received 15 October 2010

Received in revised form 19 April 2015

Accepted 6 May 2015

Available online 14 May 2015

### JEL classification:

J3

J31

### PsycINFO classification:

3600

3630

3650

3660

2200

2221

2300

2360

### Keywords:

Pay raises

Pay cuts

Utility and disutility

## ABSTRACT

Theories from the fields of psychophysics, economics, and organizational behavior are integrated to develop insights about people's attitudinal reactions to (i.e., the utility and disutility of) pay raises and pay cuts of different sizes. Linear, logarithmic, power, and quadratic functions are developed from this integration. Techniques for evaluating the empirical applicability of these utility/disutility relationships are illustrated among a sample of 192 student "employees" in an experimental simulation. The results provide a partial test of the integrated framework. The results indicate a quadratic relationship for pay raises and a linear relationship for pay cuts. Implications of these findings are discussed.

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## 1. Introduction

Merit pay is arguably the most popular incentive system used in business today, although its effectiveness continues to be debated in the academic and practitioner-oriented literature (Heneman, 1992; Pfeffer & Sutton, 2006; Shaw & Gupta, in press). On the one hand, Gerhart and Rynes (2003) concluded that the sparse existing evidence on merit pay is mostly positive including links to job satisfaction, motivation, and performance. On the other hand, few organizations describe their merit pay programs as "very effective" (e.g., see Wells, 2005), a large majority of employees believe they are underpaid

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(by an average of 19 percent) (Heneman & Judge, 2000), and average pay raise levels fall short of, or barely exceed, inflation. Against this backdrop, it is particularly problematic that although we “talk, think, argue, and dream about it . . .” “. . . money as a central research topic has not been given much attention by management research” (Mitchell & Mickel, 1999: 568).

One of the problematic issues is that merit pay research tends to be conducted in several parallel paradigms, each with its own set of assumptions. Management and applied psychology researchers tend to adopt a linear approach and assume that higher raises are incrementally more valuable (e.g., Schaubroeck, Shaw, Duffy, & Mitra, 2008; Shaw, Duffy, Mitra, Lockhart, & Bowler, 2003). Some researchers adopt a non-linear, psychophysics approach and assume that pay raises below a certain threshold may go completely unnoticed (e.g., Mitra, Gupta, & Jenkins, 1997; Mitra, Tenhiälä, & Shaw, in press). Other researchers, based on economic theory, suggest that money has diminishing marginal utility, but debate persists about the form of the function (Giles & Barrett, 1971; Heneman, Porter, Greenberger, & Strasser, 1997; Jevons, 1871). Indeed, although management, economics, psychophysics, and other approaches offer interesting insights into merit pay dynamics, these fields usually proceed independently and sometimes conflictingly (Rabin, 1998). Our understanding could be improved substantially if research from these perspectives were integrated to answer questions such as: Does a pay raise of, say \$5000, evoke twice as strong a positive reaction as a pay raise of \$2500?

The existing literature provides little insight and/or empirical evidence related to individual reactions to pay cuts. Unanswered in the literature are questions such as: Does a pay cut of \$5000 evoke equally as negative a reaction as the positive reaction evoked by a pay increase of \$5000? This is a timely question for several reasons. First, with the recent deep recession, many companies have implemented pay cuts instead of opting for lay-offs. Second, with the increasing volatility in stock option value (often implying pay cuts), many managers are experiencing significant reduction in their overall pay. Third, the growing popularity of pay-at-risk programs (e.g., Begley & Lee, 2005) provides impetus to investigate employees' reaction to both positive and negative changes in pay.

We address these issues here. Based on the premises that the value or utility of pay is a non-linear function of the absolute amount, and that the function for losses is steeper than the function for gains (e.g., Galanter, 1962, 1986, 1990; Holmes et al., 2011; Kahneman & Tversky, 1979, 1984), we attempt to move the information base forward by (a) offering an interdisciplinary theoretical exposition of the utility and disutility of pay raises and pay cuts; (b) testing a subset of the resulting predictions empirically; and (c) offering a refined functional form for utility/disutility based on the theoretical and empirical work. We seek to make several unique contributions. First, we integrate theoretical concepts from psychophysics, economics, and psychology to suggest a modified utility function. Second, we empirically test both the utility and the disutility of pay raises and pay cuts. That is, we specifically test the functional form of utility for pay raises (i.e., positive limb) and the functional form of disutility for pay cuts (i.e., negative limb). Third, we discuss and test disutility of small pay raises. Fourth, we use Box–Cox tests for statistical comparisons and assessment of the relative efficacy of linear, quadratic, and log-linear utility functions.

## 2. Theoretical review

### 2.1. The inherent utility or value of money

The issue of the utility of money has a rich history (Stigler, 1950), and an understanding of the utility of money in general and pay raises in particular is critical in explaining employee motivation, attitudes, and behaviors. According to Adam Smith, the term “value” can have two different meanings: the inherent utility of an object (value in use), and the power of purchasing other goods that the possession of the object conveys (value in exchange). Things with the greatest value in use (e.g., water) often have little value in exchange and vice versa (e.g., diamonds) (Smith, 1937). An object acquires utility either due to some intrinsic property that directly satisfies human needs or due to its ability to acquire other objects that can satisfy human needs. This analysis imputes an objective as well as a subjective connotation to the term *utility*. That is, the underlying mechanisms for evaluating the utility of any object, including money, have both a cognitive and an affective component. Unlike many objects, money has little inherent value, instead deriving its utility from its instrumentality in acquiring other useful objects (e.g., Black, 1990; Lawler, 1971).

### 2.2. Concept of utility within the context of employment

Kahneman, Wakker, and Sarin (1997) provide a detailed and convincing exposition of different conceptualizations of the notion of utility. Specifically, they assert that the modern notion of utility, labeled as “*decision utility*,” is different from “*experienced utility*.” Whereas observed “choices” offer indirect assessment of “*decision utility*,” instant or temporal hedonic experiences form the foundation of “*experienced utility*” (Kahneman et al., 1997). Instant hedonic experience is referred to as “*instant utility*” and temporal hedonic experiences are captured by “*remembered utility*” as well as “*total utility*” (Kahneman et al., 1997). Kahneman et al. (1997) suggest a relationship between decision utility and experienced utility such that decision utility is jointly influenced by *predicted utility* (i.e., forecast of instant utility of outcomes) and *remembered utility*.

Within the context of work environment, decision utility is more applicable to individual employees' choices about effort to achieve performance goals. Organizational psychologists propose that employees' choices about the amount, intensity, and direction of effort are based on *predicted utility* of outcomes resulting from successful achievement of desired

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