

# The Reality and Promise of Market-Based Pay

*David Barcellos*

The king may not be dead, but he's been decisively overthrown and now takes refuge among a dwindling band of loyalists. After reigning supreme over the compensation landscape in larger companies for decades, structured job-evaluation systems that focus on achieving internal equity have given way to the concept of market-based pay.

In 2003, a broad survey of HR professionals (mostly in larger firms—62 percent employed more than 2,500 people, and half of these had more than 10,000 employees) found that 59 percent of companies reported that they either use market pricing exclusively to establish salaries for all their jobs or rely primarily on market pricing while giving some consideration to internal equity. A mere 2 percent of respondents said they use internal job evaluation exclusively, whereas 17 percent were said to “lead with internal job evaluation, with consideration given for market pricing.”<sup>1</sup>

Like many management innovations such as broad-based stock options, casual dress, and Friday beer busts, this revolutionary change was first most visible among upstart technology companies in the 1980s and 1990s. Full of youthful vigor, these firms tended to reject traditional practices. To be sure, survival in their hypercompetitive business environment demanded extraordinary flexibility. Job-evaluation systems, encumbered as they are by complex analytical pro-

cesses and the need to muster a consensus among review committee members, just couldn't keep pace. Besides, even the concept of a “job” seemed outmoded in workplaces where employees frequently redirected their energies to new tasks, using different skills.

Today, of course, hypercompetitive business environments and ever-shifting workforce needs characterize many segments of U.S. industry, not just emerging high-technology companies. It is no coincidence that, in tandem with the changing pace of U.S. business, market-based pay has become the dominant method for valuing jobs.

The idea of market-based pay is inherently seductive. Internally focused job-evaluation systems rest on subjectively squishy notions of fairness and equity. The very complexity of evaluation processes is born of attempts to objectify the meaning and dimensions of such concepts. On the other hand, market-based pay systems are, in principle, strictly empirical and morally neutral. Under market-based pay, job worth is determined by finding out what similar jobs are paid in the organizations that are included in the company's labor market. To that end, huge quantities of market data are available from consulting firms, government agencies, and industry associations, which produce salary surveys encompassing seemingly every imaginable industry, job type, company size, and geo-

graphic location. The ready availability of this information creates the impression that obtaining the market value of any job is simply a matter of locating the correct data point.

## COMPETITIVE PAY VS. PAY EQUITY

Adherents of traditional job evaluation will object to the implication that their systems ignore market value, and they would be right. Any such program would collapse quickly if it completely disregarded the labor market—and as we know, job evaluation has been a fixture in U.S. business for a very long time. If companies underpriced jobs, they would have a difficult time recruiting qualified employees. If they grossly overpriced jobs, the companies' cost structures would make them noncompetitive or unprofitable. All job-evaluation systems have incorporated some way of compromising between the ethic of

*Adherents of traditional job evaluation will object to the implication that their systems ignore market value, and they would be right.*

internal equity and the demand for market competitiveness.

Advocates of market-based pay ask, "Why compromise?" Why burden the organization with complex and time-consuming evaluation processes? Why perpetuate the expectation of pay equity among your employees when the reality of the market necessitates paying more to people in some disciplines than to people in others? It is simply unnecessary for a company to pay a technical writer as much as they need to pay a software engineer, even if both have bachelor's degrees from good schools, both have been working continuously and effectively for three years after college, and both are critical and integral members of

the same product team. If your organization's values dictate that you pay the technical writer as much as the software engineer, and this thinking is extended throughout your organization, your company's profitability may be diminished so much that you earn the ire of a whole other group of stakeholders.

Market-based pay ideology declares the concept of pay equity irrelevant. The commitment to employees is that they will be paid a competitive wage compared with rates offered to people in similar positions in other organizations. The free market, ruled by the laws of supply and demand, becomes the compensation governor. This is good for the business and good for its people. As we have seen, the simplicity and, yes, fairness of this concept have made it the prevailing compensation philosophy in U.S. business today.

So is it working? Are organizations satisfied with their market-based pay plans? In truth, just about any compensation director or consultant, if pressed, will acknowledge that establishing the market value of most jobs is a frustratingly messy business, and the tantalizing ideal of a completely objective, empirically based, comprehensive pricing system remains an elusive dream. By presenting some work done by my firm, I will demonstrate that significant technical improvements are possible and do exist. But because this sort of work is the exception rather than the rule, I will argue that the absence of widespread research, development, and marketing of new market-pricing technologies represents a failure on the part of compensation service providers.

## PROBLEMS WITH MARKET DATA

HR people are frequently at their wits' end when they use salary surveys because the

data often just seem *wrong*. For example, it is not uncommon to see the reported market values for Job X jump wildly up and down between yearly editions of a particular survey. Another unsettling phenomenon occurs when two levels of a job family (Junior X and Senior X) are present in a survey, and the survey output shows *higher* pay rates for the *junior* job.

Reasons for data irregularities abound, including ambiguous job descriptions in the surveys, careless job matching and data reporting by survey participants, and changes year to year in the set of participating companies. Some survey providers are better than others at checking and verifying their source data and correcting for these issues, but even the best cannot escape reliability problems.

Those HR analysts who are sensitized to these problems and determined to ferret out the "truth" in market data find they must scrutinize carefully all the raw numbers in all of their surveys to identify anomalous data points. They rely on multiple salary-survey sources to mitigate the impact of unreliability in any single survey. Typically, for each "benchmark job," they will take a set of data points from multiple surveys and average these values to arrive at an estimate of market value. Often, the careful analyst will judge some surveys' numbers to be more reliable than others (e.g., more trust may be placed in an observation that comes from a relatively large number of survey participants and less trust may be given an observation that is out of whack compared with the other observations). The analyst may even translate these judgments into multiplicative factors and create a weighted average.

Unreliability is not the only problem. Perhaps even more frustrating is that many, if not most, of an organization's jobs are sim-

ply not to be found in any salary survey. This seems increasingly to be the case as organization structures and job designs become more idiosyncratic. The most commonly taught solution for dealing with no pricing information is, first, to establish the market value of those jobs that are well represented in the surveys (the so-called benchmark jobs) and list them in order by their market value. Then, one examines the orga-

*There is no reasonable (or legal) way for large and complex organizations to conduct market pricing without relying on data from third-party salary surveys.*

nization's remaining unpriced jobs and makes a judgment about where each should fit in the list—often by taking into consideration (explicitly or implicitly) the same sorts of factors used in formal job evaluation. This technique is known as "whole job ranking," which of course is a euphemism for guessing.

Thus, because of data unreliability and unrepresented jobs, the promise of a strictly data-driven market-pricing exercise is rarely realized.

## OUR APPROACH: SKILLS INSTEAD OF JOBS

There is no reasonable (or legal) way for large and complex organizations to conduct market pricing without relying on data from third-party salary surveys. But both of the principal difficulties with salary surveys—data unreliability and unrepresented jobs—can be significantly diminished by a fundamental shift in focus: instead of pricing *jobs*, use survey data to price *skill sets*.

After all, a job has no inherent value. A job is a concept—a set of duties, processes, and desired outcomes. As an employer, you

are making a real-dollar purchase when you venture out to the labor market to hire an employee. But you aren't purchasing a job; you're purchasing a set of attributes possessed by a person that (you hope) makes them able to perform the job's duties and deliver the desired outcomes. By the same token, your existing employees have value to other employers—not because of the title they hold, but because of what the employees as individual people can do, what they know.

Speaking in terms of jobs is a convenient and universally understood shorthand that has been adopted by virtually all salary surveys. Unfortunately, this focus on jobs obscures the real locus of market value and leads us to pursue the calculation of value where it truly lies—in skill sets—in a somewhat roundabout way.

## DECONSTRUCTING SURVEY DATA

A little bit of statistics talk (oversimplified and with no math) is needed at this point. Social scientists rely on statistical analysis tools to examine the underlying "correlates" or "factors" that are said to "predict" an observable outcome. Because the subjects of social science research tend to be complex and messy, these statistical tools are purposely designed to separate out "systematic variance" (the effect of the factor(s) you're interested in) from "error variance" (the effect of all the other stuff that you're unable to explain, which always exists when you're talking about human behavior). The social scientist's goal, in a general sense, is to explain as much total variance in the outcome variable as possible with as few meaningful "predictor" variables as is practical.

The outcome measure we are concerned about is a person's market value—or more

precisely, the value of the constellation of relevant skills that person possesses. The question is whether we can measure and classify skills in a reliable way, so that we can reasonably "predict" people's market value based on salary-survey data. Because most salary sur-

*Speaking in terms of jobs is a convenient and universally understood shorthand that has been adopted by virtually all salary surveys.*

veys are designed around jobs, we must deconstruct the survey job descriptions to get at underlying skills. As it happens, many salary surveys have been helping with this for some time.

It is fairly simple and intuitive to characterize a job as the intersection between a *skill area* (e.g., carpentry, accountancy, electrical engineering) and a level of *proficiency* within that skill area (e.g., beginner, intermediate, advanced). Several of the major salary-survey publishers have for many years classified the jobs in their surveys in just this way. When collecting data from participants, they explicitly use a skill area/proficiency matrix. When they issue the survey results, they show salary rates according to job title, but they are essentially filling in the reported values for each cell in the matrix—or at least as many of the cells for which they have sufficient data to report.

These surveys' deconstruction of their jobs is intended to help with the job-matching process in a conventional analysis, and indeed it does, but we're still faced with the irritating problems inherent in raw survey output—the values in many of the cells are notoriously unreliable, and many of the cells are empty.

Here is where statistical analysis comes in. By turning the two factors of *skill area* and

*proficiency level* into independent variables in a multiple regression analysis (a term that will be meaningful to some readers, but knowing about it isn't crucial to understanding the essence of what we are doing), with market value as the dependent variable, we can profoundly enhance the utility of raw survey data. We've found that these two variables alone account for nearly all the variance in salary survey data and that no other factors are needed to reliably establish market value.

My firm has developed a skill/proficiency classification system and a regression algorithm specifically designed for running this sort of analysis. The regression algorithm is optimized to deal effectively with certain mathematical challenges inherent in this analysis (for statisticians, these include very large and sparse correlation matrices using categorical variables). We have validated it on salary-survey data sets from a wide variety of industries as well as a number of countries.

The result of the regression analysis is that each skill area has an independent numeric value and each proficiency level has an independent numeric value. By putting the two together, we arrive at a market value for every possible combination of skill area and proficiency level. In short, we are able to fill in all the cells in the matrix, giving you the market values for many, and perhaps all, of the jobs that the surveys couldn't give you.

## AN EXAMPLE

To illustrate this more concretely, here is an outline of the analytical process:

1. We start with a collection of salary surveys whose jobs and participants represent the client's labor market.
2. We examine the jobs in the surveys and classify each one into a skill area and proficiency level. We do this for each and every job in the surveys, even those for which the client does not have an internal "match," as long as the incumbents in the survey job are potentially in the client's labor market. This gives us much more statistical power than limiting the analysis to benchmark jobs.
3. We now have a data set with all the raw measures: skill area, proficiency level, and market value (e.g., 50th percentile). Each observation, or record, in the data set is one job from one survey. We run this information through our regression algorithm and obtain component values like those illustrated in **Exhibits 1 and 2**. These tables represent a selected sample

*We examine the jobs in the surveys and classify each one into a skill area and proficiency level.*

of proficiency levels and skill areas. Actual results would have more proficiency levels (for example, management levels are not included here) and far more skill areas. The values here are derived from a randomly selected set of actual salary surveys that are a couple of years old.

The values shown in Exhibit 1 for each proficiency level are completely independent of any particular skill area. In a sense (though not quite statistically correct), they may be regarded as "average" values for the proficiency levels across all skill areas. The notion that, all else being equal, people with higher skill levels are worth more in the labor market than people with lower skills is obvious to any observer.

Likewise, the values in Exhibit 2 are the relative values associated with each skill area as calculated from the underlying data. For example, all else being equal, the regression model finds that software engineers are paid about 35 percent more than accountants (1.119/0.831) in this data set. Again, the concept that some professions are higher paying than others is accepted by most people, though those steeped in extreme notions of fairness may find it objectionable.

Now, let's say you have a job opening for which you'd like to hire someone with an accounting skill set who is functioning at what we are calling a "developing" proficiency level. You want to know how much you should expect to pay such a person. By putting together the factors from the tables, a "developing" accountant would have an estimated 50th percentile market value of \$54,872 X 0.831, which is \$45,599. This does not necessarily mean that this number is pre-

cisely the amount that will be needed to recruit a qualified candidate (most companies will build some sort of range around the calculated estimate), but it gives you a starting point in which you can have confidence.

This helps illustrate how one of the problems with survey data is solved: obtaining market values for jobs that don't exist in the surveys. In this case, let's suppose these surveys had data on only the "entry" and "journey" levels for accounting. But because the data set contains many entries for all proficiency levels across a large number of skill areas, the regression model estimates an independent value for each level, which enables you to estimate the value of the "developing" accountant. Experienced HR analysts may reply that they already know how to handle this problem by simply interpolating between the values they have for the lower and higher levels. But the reality is that the percentage leap from one level to the next is not the same for all levels; we typically find that the jump from "entry" to "developing" is smaller (in both absolute and percentage terms) than the leap between "developing" and "journey." Moreover, these differences vary by industry. Our regression analysis determines what these spreads actually are in a client's own labor market, thus enabling a more precise estimate than would be obtained by simple interpolation.

<i>Proficiency</i>	<i>Market 50th Percentile</i>
Entry Level	\$46,115
Developing	\$54,872
Journey	\$67,432
Advanced	\$81,180
Expert	\$96,164

**Exhibit 1.** Market Value of Proficiency Levels

<i>Skill Area</i>	<i>Relative Value</i>
Accounting	0.831
Auditing	0.936
Organization Development	1.018
Software Engineering	1.119

**Exhibit 2.** Relative Value of Skill Areas

## THE TRUTH ABOUT ESTIMATES

We always use the term *estimate* when talking about calculated market values because it is important not to lose sight of the fact that absolute "truth" is always elusive. Because these values are derived from a mathematical manipulation of data from a sample out of a larger population, they must be viewed as estimates and not necessarily "true" market

values. Of course, the numbers one finds in salary-survey documents are estimates, too. The only way to obtain a "true" range of market values for a particular job would be to gather data on the entire universe of people who hold that job. No salary survey is able to do this. The critical question is whether the regression-based estimate is any better than the raw survey estimate.

Statisticians will tell you (with some qualifications, such as there must be a sufficient number of raw values going into the equation) the regression-based estimate will almost always be a better estimate than any one survey data point, or even an average of multiple data points. The reason is that the regression model stabilizes the inherent volatility of the raw numbers by extracting the value of each underlying factor from a very large number of data points. By focusing on the underlying factors instead of raw data, you eliminate much of the "noise." Here we are addressing the second problem with raw survey data: although it never goes away, the volatility of survey numbers one obtains in conventional analyses is significantly diminished by using the regression model.

Readers with training in statistics will be interested in some figures that describe the strength of the statistical model. The regression of market value on skill area and proficiency level yields an  $R^2$  almost always in excess of 96 percent, with a standard error of the estimate typically in the 5 percent to 7 percent range.

## THE CLIENT'S EXPERIENCE

We have a client company that is the U.S. component of a multinational financial services organization. The company's labor markets extend across the country in a vari-

ety of related, but distinct, businesses, and they employ several thousand people in the United States. The company has embraced the market-pricing ideology to the point that it has adopted our skill/proficiency system as its internal job-classification system: Rather than using conventional job titles, each employee is simply assigned to the skill area and proficiency level that best describes him or her as an individual. (When necessary for external communication purposes, such as on business cards and in correspondence, they also create conventional job titles.)

The company subscribes to several national salary surveys. Our services to the client are to classify all the salary-survey data as described above, run the data through our regression algorithm, and output estimated

*By focusing on the underlying factors instead of raw data, you eliminate much of the "noise."*

market values for each combination of skill area and proficiency level, adjusted as appropriate for each of the client's geographic locations. These market values are available to the client through a Web-based query tool (password-protected, so only authorized employees in the client company have access). The Web-based system also enables the client to upload employees' data from their in-house HR information system. Because all of their employees are classified into skill areas and proficiency levels, the system is able to output market values individually for each employee and provide an instant assessment of each employee's pay competitiveness.

The system calculates reliable market-value estimates for more than 99 percent of

the client's employees. Less than 1 percent of the employees are in skill areas not represented in the survey data, so we use a process analogous to "whole job ranking" to estimate their market values. Results are very similar to this for other clients in industries as diverse as health care, banking, and publishing.

Our discussion of statistics aside, in the end the only thing that matters to our clients is their experience hiring and retaining employees, and they tell us that the numbers are consistently right on the money. In fact, several times clients have chosen, for various reasons, to override our regression-based pricing estimates and use lesser values, only to find that they were unable to hire qualified employees at the lower rates. They acknowledged that they needed to return to the rates generated by our pricing system.

Our clients also appreciate that the market-pricing and classification process is sim-

*All business managers who contemplate new pay systems fear the prospect of radically altering current pay levels.*

ple, intuitive, and quick. (The regression algorithm is admittedly not simple, but this part is invisible and irrelevant to the client, just as one need not fully understand the workings of internal combustion engines to drive a car.) Because it is so simple, one need not be a trained compensation analyst to use it.

For the client cited above, where all employees are classified into skill areas and proficiency levels, the classification itself is done by managers and first-line supervisors, subject to review and approval in HR. When the system was first implemented with this client, all managers and supervisors participated in a one-hour training session in which

they learned how to use the skill area and proficiency-level classification scheme. At the conclusion of this hour, they were given a list of their own direct reports and asked to classify each employee. For a list of 10–15 employees, it typically took 15–20 minutes for the managers to complete the classification. As this was an initial implementation, the company's HR generalists subsequently undertook a comprehensive review of all the managers' classifications. At the conclusion of this review, they told us that only a small minority of the decisions made by the line managers needed to be changed—decisions made (by people who were not compensation professionals) following a single 60-minute training session. This stands in marked contrast to traditional job evaluation, which can be performed reliably only by analysts who have gone through many hours of training.

All of this client's line managers now have access to all the market pricing information available on the Web site we created for them (not all clients choose this degree of openness). This has resulted in a highly transparent—and trusted—compensation program. As an added benefit, they have found that this widely dispersed information and expertise has greatly facilitated organizational restructurings involving the incorporation of other divisions that had not previously been using this compensation program.

All business managers who contemplate new pay systems fear the prospect of radically altering current pay levels. Will they find that many employees are grossly under- or overpaid? If employees are underpaid, can the company afford to make them more competitive? If they're overpaid, would the company consider reducing salaries? Even if the company won't reduce salaries, won't the employees still be demoralized if the com-

pany decides to freeze their salaries? These have been real concerns for every client that has repriced jobs or reconstructed compensation programs using our modeling technology.

The reality, however, almost always turns out to be more benign than the managers' fears. In the case of the client detailed above, for example, we found on initial implementation that the employees' existing pay levels were, on average, 2 percent over the market 50th percentile. Employers operate in a competitive labor market with day-to-day hiring and retention challenges. This tends to force their actual pay levels into a competitive position. Indeed, among the chief reasons companies seek better market-pricing information is that they find they need to pay new hires more than they are paying their existing employees or they are losing valued employees to competitors over pay issues. Employers tend not to let these situations endure.

As is usually the case, despite the overall strength of its existing pay levels, this client found pockets of employees whose salaries were unacceptably undercompetitive. Exactly what is considered an "unacceptable" level of competitiveness (high or low) is a judgment call that each employer needs to make; this is a crucial issue in determining how wide it will make salary ranges. The resolution is often a compromise between an ideal and what is deemed affordable. Regardless of the outcome, clients want to be confident that they are basing their decisions on sound information.

Those employees who receive salary increases as a result of this process are usually delighted, though some will inevitably quibble over the correct amount or the relative size of increases given to particular individuals or groups. Those employees who are told that their existing salaries are "very strong" are not so thrilled to learn that regu-

lar annual increases will not be forthcoming for a while. In front of both groups, however, the employer stands armed with a coherent rationale, based on sound data. Moreover, a well-communicated market-based pay program helps inform all employees exactly what they need to do if they are interested in wage growth: seek to increase their proficiency level or even develop an entirely new skill.

## A BETTER FUTURE FOR MARKET PRICING

As far as we can tell, we are the only firm providing this sort of statistical modeling approach to market pricing. There may be others, but they haven't come to our attention. We take some pride in this, but it is really quite surprising. The problems with

*Regardless of the outcome, clients want to be confident that they are basing their decisions on sound information.*

conventional market-pricing analysis are widespread and frequently lamented, but we are not aware of any well-developed or publicized efforts to improve the process. A number of compensation-services firms (both large consulting firms and newer technology companies) have, over the past several years, introduced improved data-management systems and tools specifically designed to help manage salary-survey data. These products make *conventional* market-pricing analysis faster and easier, but they are still just paving the proverbial cart path. We need innovation.

Here are just a few things I would like to see happen:

- ❑ As mentioned, many salary-survey companies have, for a long time, adopted the

approach of defining jobs as the intersection of skill areas (usually characterized as job families) and proficiency levels. A great many surveys do not. As an example of the "do nots," I know of health-care surveys that contain the job "registered nurse." Clearly, there are widely varying degrees of experience and skill among registered nurses, but these surveys lump them all together into a single classification. By asking participants to break down their employees' data into meaningful proficiency levels, these surveys would add immeasurably to the quality of job matching by participants and the provision of useful data to their users.

- ❑ Salary surveys should provide data in two ways. One is the conventional way (raw means and percentiles). The other would be based on regression modeling of skill area (or job family) and proficiency level. The reliability, validity, and comprehensiveness of their output would be significantly enhanced. For years, some survey companies, especially those involved in executive compensation, have employed regression techniques for higher-end jobs. Here the factors have been "scope" values such as company size (e.g., the estimated 50th percentile total cash compensation amount for a chief financial officer is \$X if his or her company's revenue is \$500 million, and \$Y if revenue is \$2 billion). I'd like to see the survey companies apply

their statistical wherewithal to improve the quality of their core survey output.

- ❑ Consulting firms and large corporations should invest in research and development on data-modeling tools to enhance the analysis of market values. Our firm has developed one approach that our clients have found to be a significant improvement on traditional market-pricing methods, but it is certainly not perfect. Other technologies and techniques may be found that work equally well or even better.

It goes without saying that employee cash compensation constitutes an enormous portion of almost every organization's cost structure. To the extent that employees and employers are operating in a free and dynamic market for labor (and most observers would agree that this is more true today than ever), it is essential for employers to have a confident grasp of prevailing rates for the types of people they employ to ensure that they are paying neither too much nor too little. Industry is not well served by the virtual absence of meaningful research and competition in market-pricing methodologies. Our small firm has shown that significant improvement is possible. We challenge others to take up the cause.

#### NOTE

1. WorldatWork. (2003). Scott, D., Hay Group, LLC. Survey of Compensation Policies and Practices.

*David Barcellos is executive director of [compensate.com](http://compensate.com), LLC, a provider of advanced market pricing and human resource management tools. He has worked in the human resources field for over 20 years, both inside large companies and as an external service provider. He may be reached via e-mail at [barcellos@compensate.com](mailto:barcellos@compensate.com).*