SALESFORCE COMPENSATION: THEORY AND MANAGERIAL IMPLICATIONS

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This paper discusses recent advances in the study of sales force motivation and compensation. Special emphasis is given to quantitative approaches from the economics, finance, and marketing literatures. The paper summarizes the findings in this analytical work in the context of some examples of compensation practice in order to illustrate the usefulness of the paradigm for the evaluation and setting of compensation systems.

We consider some major issues in setting compensation, such as the firm’s own objective; the salesperson’s objective; and the nature of the sales response function. Variations in these factors imply significant variation in optimal compensation policy, where “optimal” takes into account the components in the plan, the parameter levels of the components, and whether or not a menu of such plans should be made available to the sales force. By highlighting the results in the literature in light of some relevant compensation examples, we show the applicability of theory to the practical concerns of sales force management.

We close with a summary of these insights and directions for future research in the area.
(Salesforce Compensation; Response Function Uncertainty; Salesforce Incentives; Salary and Commission Plans)

1. Issues in Salesforce Compensation

Designing the sales force compensation plan is an important task for most companies. It helps determine the motivation of the sales force and the long-term profitability of the company. Consider the following sales force compensation situation:

A company which underwrites bonds for religious institutions (Steinbrink/Friedeman 1982) states four objectives for its sales force compensation plan: (a) to stabilize the salesperson’s basic monthly compensation; (b) to minimize variability in the salesperson’s monthly compensation; (c) to protect the salesperson’s financial position by establishing a minimum monthly compensation rate; and (d) to achieve full commission pay status for each salesperson by the time s/he has been with the company for six years. Any salesperson who has been employed with the firm for 60 months or more (henceforward called an Account Executive) is to be paid fully in commission at the company’s regular commission rate. A full commission salesperson can be compensated either with a monthly check for the balance in his or her “account” (which amasses money as the salesperson amasses sales), or with a monthly draw, plus expenses. The monthly draw option has a lower limit of $1,500 and an upper limit of $2,000; any excess in the account above draw and expenses is remitted monthly to the salesperson as well. If there is a shortfall rather than an overage in the account, the amount is carried forward to apply against earnings in later months.

Salespeople who have been with the company less than 60 months may elect to be paid fully in commission or through a plan including multiple elements. The combination plan provides for base pay (salary) of $1,500 per month plus expenses, plus monthly bonus payments at one-half the regular
commission rate, for salespeople with zero to 18 months' experience (henceforward called rookie salespeople). For those with between 18 and 36 months' experience (henceforward called intermediate-level salespeople), compensation includes salary of $1,800 plus expenses, plus biannual bonus payments at one-half the regular commission rate, paid on sales above the salary plus expenses level. For salespeople with between 36 and 60 months' experience (henceforward called senior salespeople), the combination plan offers a salary of $2,000 plus expenses, plus biannual bonus payments at one-half the regular commission rate, paid on sales above the salary plus expenses level. All salespeople (regardless of plan chosen) receive car allowances of $200 per month.

Clearly, the problem of setting optimal compensation plans is complicated. First, the firm must ask what it means for a compensation plan to be "optimal." Second, there are some design parameters to be set: (a) what components should be contained in the plan (salary, commission, bonus, and/or expenses); (b) what the level of each component should be (e.g., the relative emphasis on salary versus incentive pay, as well as the size of the total pay package); and (c) whether a menu of plans should be offered, either concurrently or at different times in a salesperson's career.

There is a good deal of research from the economics, finance, and quantitative marketing literatures which provides insight into these questions. This paper reviews and synthesizes that literature. While this problem has also been examined from a behavioral point of view, we concentrate on quantitative insights because: (a) these literatures have not been surveyed; (b) many of their results are framed in a different context (such as executive compensation), but can be applied to the salesforce problem; and (c) they provide a considerable set of research findings which can also act as normative guides for action for practitioners.

This paper is not the first to integrate results in the salesforce management and compensation literature. Zoltners and Gardner (1980) review the management science literature on sales resource allocation, as well as those on optimal salesforce size and sales territory alignment. Ryan and Weinberg (1981) overview the salesforce management literature, with a strategic and behavioral science orientation. Zoltners and Sinha (1980) present a summary of various management science articles dealing with the sales resource allocation problem from an integer programming point of view. Significant research advances in the area have occurred since these articles were written, and we highlight a different part of this literature, viz. we concentrate on the salesforce compensation issue. Our emphasis is justified by Ford, Walker, and Churchill's (1981) finding that compensation is by far the strongest motivator in the salesforces they surveyed, beyond any nonmonetary motivators considered.

Below, §2 discusses findings from a "core" modeling structure in the economics-based marketing literature. §3 extends the model "core" in three directions by generalizing (i) the firm's objective, (ii) the salesforce's objective, and (iii) the sales response function. We draw results from the modeling literature covering these extended situations to gain further insights into actual compensation practice. Our goals in this are first, to understand why firms use certain compensation plans, and second, to suggest improvements to current compensation practice. Beyond this, the review suggests an agenda for future research efforts. Thus, §5 presents a summary of unresolved issues in the salesforce compensation area.

2. A "Core" Model of Salesforce Compensation

In one of the earliest and most influential salesforce compensation models, Farley (1964) describes a compensation plan that would help the firm maximize profits by aligning the salesperson's incentives with those of the firm itself. This is an appropriate goal because it eliminates the need for costly surveillance or monitoring of the salesforce. Since this theme of compatible incentives arises throughout much of the literature, it deserves some discussion here.
In Farley's model, the firm's objective is to maximize profits across a line of products in a static framework where a single salesperson's sales effort is the crucial influencer of sales performance. The salesperson's objective is simply to maximize income, and the sales response function is known with certainty by both the firm and its salesperson. Other marketing mix variables do not have a significant influence on sales, nor are competitive effects considered by Farley. Further, there is no team selling or sales prospecting, and sales effort results in sales with little or no time lag.

Farley assumes that commission is the only component of pay, and no menu of plans is considered. His central result concerns the level of commissions: the firm maximizes profits by setting commission rates which are an equal percentage of gross margin across all products in the line. Intuitively, this creates salesforce incentives compatible with those of the firm because pay is simply a constant fraction of the firm's own profits. Thus, the income-maximizing salesperson exerts the appropriate effort to maximize the firm’s profits as well.

There are other ways in which the firm in this situation can create salesforce incentives compatible with its own. Not only can the salesperson correctly allocate his time to maximize his objective function in a world of certainty, but the firm can also construct a very simple compensation contract guaranteeing that the salesperson maximizes the firm's objectives in the process. Basu, Lal, Srinivasan, and Staelin (1985) describe such a "forcing contract." The contract provides a sales quota for the salesperson to reach, short of which he receives no pay. Reaching the quota exactly results in pay just equal to the salesperson's minimum acceptable compensation; any sales beyond that level result in no extra pay at all. Under this contract, the salesperson will choose to sell exactly the quota level of the product and no more, since he knows exactly what sales will result from any level of effort. The firm merely has to set the quota at the profit-maximizing level, and its problem is solved.

Note that such a quota system may be easier to understand and administer than a system involving commissions on gross margin. However, the success of either plan in correctly motivating the salesforce relies on the presence of full certainty about the sales response function, a situation unlikely to occur in the real world. This may well be the reason why forcing contracts are not commonly seen, despite their administrative superiority vis-a-vis commission plans. It also suggests the importance of considering uncertainty as a possible reason for using different compensation plans.

3. Extending the "Core" Model

There are many ways to extend the core model described above. Figure 1 shows schematically the major ways in which we can expand our understanding of the firm's objective: (A) the firm might have an objective other than simple profit maximization—for example, financial value (as in the Capital Asset Pricing Model) or market share; (B) the time horizon may be several decision periods, implying a dynamic view of compensation policy rather than a static one; and (C) the profitability of one product in the firm's line may depend on costs or demand for other products in the line, or on multiple marketing mix decisions (e.g., pricing, advertising, or promotional policy).

Similarly, the salesperson's objective may be more complex than simple income maximization. As Figure 2 suggests, the salesperson facing a time constraint may value leisure as well as income, thus facing a utility-maximizing, rather than income-maximizing, problem.

We can also generalize Farley's concept of the sales response function. Figure 3 suggests major extensions of interest: (A) the possibility of team selling effects, where the selling

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1 In the case where many products are sold, a separate quota is set for each product.
efforts of multiple salespeople are instrumental in closing a sale; (B) the interaction of selling effort and other marketing mix decisions, such as pricing; (C) variable productivity of selling effort across products, salespeople, or time, affecting salespeople’s allocations of selling effort; (D) a long sales cycle (time from initial sales contact to final sale), giving the sales response function a longer horizon; (E) interactions in the productivity of sales effort across products; and finally, (F) uncertainty in the sales response function relating effort to sales.

While researchers are aware of these complexities in salesforce compensation-setting and model certain subsets, no model exists that incorporates all of the above factors. Nor do the models generally consider all possible compensation policies in suggesting an “optimal” one. Below, we discuss the models’ prescriptions in light of some real compensation problems faced by firms. In so doing, we can both guide compensation policy and suggest research areas deserving further attention.

A. The Firm’s Objective

Here we investigate the robustness of Farley’s incentive compatibility result to changes in the firm’s objective function. Basically, we find the result is quite robust.

Different objective functions. Firms do maximize something other than profits at times. The general insight from Farley’s model, that solving the compensation problem means giving the salesforce incentives compatible with those of the firm, is robust to such changes in the firm’s objectives. For instance, it can easily be shown that if the firm maximizes market share rather than profits, it can compensate the salesperson with equal commission rates, but based on the market share (rather than the gross margin, a profit measure) of each product in the line.\(^2\)

Multiperiod horizon. Similarly, if the firm has a long (but not uncertain) horizon and hence maximizes multiperiod profits, Farley’s generic principle of incentive compatible

\(^2\) Note that here, as in Farley (1964), a forcing contract also solves the problem of setting compensation to align the incentives of the firm and the salesperson. Here, the forcing contract would simply provide for zero income for market shares less than the optimal one, and no incremental income for higher market shares.
compensation still holds. Tapiero and Farley (1975) show that a firm maximizing the discounted stream of profits over a dynamic horizon can solve the compensation problem with a pure commission plan (where commission rates are set as in the Farley solution, appropriately discounted).³

A somewhat different insight into the effect of considering dynamics in the firm’s objective function concerns the effect of early training on optimal compensation. Smith and Watts (1984), in a paper focused on executive compensation, argue that deferred compensation provisions⁴ are appropriate to use when the firm invests in general training, such as teaching a trainee salesperson how to make a sales call. This deferred compensation simply makes the new salesperson’s horizon longer, which is appropriate since the firm does not expect to benefit from the salesperson’s training for several months or even years. It also makes it unlikely that the salesperson will leave the firm just when he has gained the valuable general knowledge that the training has given him—but before the firm has had a chance to reap the benefits of its investment. In short, the deferred compensation provisions help to align the salesperson’s objectives with those of the firm in terms of the horizon to pay-off from the training investment—yet another example of Farley’s principle of compatible incentives in compensation.

Dearden and Lilien (1988) consider the problem of a salesforce which is more myopic in its time horizon than is the firm. In an agency-theoretic model with uncertainty in the sales response function, they show that greater dynamic learning economies on the production side are optimally associated with a combination pay plan with a lower salary and higher commission rate parameter for newer products. This incentive-loaded compensation plan induces the salesperson to sell more in early periods, thus decreasing the firm’s per-unit production cost (and increasing profits) in later periods. Effectively, the salesperson is made to act as if he had the same long horizon that the firm does.

Multiple products or mix instruments. Finally, we consider compensation implications for a firm seeking to maximize profit across multiple products and/or multiple marketing mix decisions. The existing literature does not address these issues in a substantial way. In particular, many models focus on multiproduct firms, but do not consider crucial interactions on either the cost side or the demand side, such as economies of scope (for a discussion of economies of scope, see Baumol, Panzar, and Willig 1982). On the demand side, a firm with an umbrella branding policy may find that consumers attach a higher value to an unfamiliar product with the same brand name as a familiar one (e.g., Liquid Tide). This makes the salesforce’s selling job much easier for the new, unknown product. In the context of multiple marketing mix decisions, no models consider the full marketing mix problem of the firm with an employee salesforce, although some consider the interaction of salesforce effort and pricing policies. We discuss these approaches later in the context of the sales response function.

In sum, the fundamental insight of Farley’s model, that optimal salesforce compensation involves creating incentives for the salesforce which are compatible with those of the employing firm, is robust to changes in the firm’s objective. Below, we discuss extensions to Farley’s conception of the salesperson’s objective.

³ However, it is important to note that this solution holds for constant marginal costs with output. If marginal costs are not constant over relevant ranges of output, the authors note that any commission rate solution must simultaneously take into account all the salespeople’s efforts, and may be much more efficiently solved by setting optimal quotas directly than by trying to provide indirect incentives to the salesforce through compensation. Finally, and interestingly, the authors themselves note that the commission solution is, in general, interchangeable with a set of optimal quotas. This foreshadows by some years the “forcing contract” insight of Basu et al (1985).

⁴ Such as provisions that pensions will not provide retirement income before the employee has been with the firm for a specified number of years.
B. The Salesperson’s Objective

Farley’s core model of salesforce compensation assumes that salespeople maximize their commission income, where this is the sum of commissions on all (unrelated) products in the product line. The major extension of this view is to consider a utility maximization objective (see Figure 2).

Utility maximization. Utility maximization is a more complicated objective than pure income maximization. For instance, the salesperson is likely to associate disutility with spending time exerting sales effort, since implicitly he is giving up leisure time to do so. Further, the salesperson may attach less and less value to successive increments to his pay, exhibiting diminishing marginal utility for income. In these situations, it is particularly important for the firm to know the salesperson’s opportunity cost of time, that is, the value he places on time spent selling for the firm. If the firm does not adequately compensate the salesperson for his time and sales effort, the salesperson will eventually find employment elsewhere.

Weinberg (1978) shows that the mere introduction of an objective for the salesperson other than pure income maximization is not enough to overturn Farley’s basic result that equal commission rates on gross margin are optimal. Weinberg describes two types of salespeople for whom the equal commission rate policy maximizes the firm’s profits: (a) salespeople who maximize income subject to a time constraint on selling, and (b) those who minimize time spent selling subject to a minimum income constraint. Weinberg notes that this is because “both the company and the salesperson are sharing the same quantity” (p. 1257), i.e., the profits from the selling venture.

Srinivasan (1981) echoes these findings, but shows that a utility-maximizing salesperson—one who maximizes the difference between income and the disutility of time spent selling—will not be appropriately motivated by an equal commission rate compensation plan. Instead, pure commission can be the optimal compensation policy but it will, in general, involve unequal rates (on gross margin) across different products. In particular, larger commission rates are optimal on products with a greater elasticity of sales with respect to selling effort. Thus, while maintaining the assumption of certainty in the sales response function, allowing for utility maximization by the salesperson makes the optimal compensation plan more complicated (both to implement and to understand).

As the later literature points out (e.g., Basu et al. 1985), these approaches ignore the simpler possibility of offering a forcing contract to the salesperson. We suspect the reason we do not observe more forcing-contract plans is the inherent uncertainty in the effort-

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Core model structure in Farley (1964):

Maximize commission income (the sum of commissions on all products in the line, where the products’ sales are not interrelated).

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**Figure 2.** The Salesperson’s Objective.
sales relationship. We deal with this and other complexities in the sales response function in the next section.

C. The Sales Response Function

Farley's core model assumptions about the sales response function are summarized in Figure 3, along with several ways of relaxing those assumptions. In this section, we deal with the first five extensions: team selling, marketing mix variable interactions, variable productivity of effort, variable sales horizon, and cross-product effects. We focus on sales response function uncertainty separately in the next section, because of the volume of recent work and results in that area.

Team selling effects. The importance of the first extension, team selling effects, can be seen by comparing the success of two alternative compensation plans for national account managers, or NAM's:

Two companies setting up National Account Manager (NAM) positions and compensation systems met with very different degrees of success (Tubridy 1986). The first, a computer systems manufacturer, established the NAM position at one pay grade above that for the rest of the field sales force. It continued to include the NAM's in its volume-based bonus program currently in place for the field salespeople. The NAM's received extra support through special national account sales strategy development programs. And NAM's were given access to corporate-level marketing resources and high-level executives. Despite these changes, the program floundered.

A health and beauty aids (HBA) manufacturer met with greater success. It formed NAM positions to service the headquarters of large retail chain accounts. Six positions were created, covering 40% of the firm's existing sales volume. The NAM job grade was that of a second-line sales manager, with pay of 40 to 50 percent more than for senior sales positions. The NAM bonus program was different from that for the field salesforce: it provided a higher bonus opportunity (30%) than that for the field salespeople. Further, field salespeople continued to receive credit for sales at the national accounts; duplicate credit of 50 to 100 percent was given to them, depending on their role in closing and servicing the sale. This program has been declared a success by management.

One immediately recognizes from this example that a NAM may be much more likely than a lower-level field salesperson to rely on team efforts to identify target customers and close a sale. One finding in the context of the executive compensation literature

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Core model structure in Farley (1984):
No uncertainty; no cross-product effects; no cross-salesperson (team selling) effects; fixed, short time horizon from first sales contact to sale; no other relevant determinants of sales (i.e., no other important marketing mix variables); constant productivity of sales effort.

![Figure 3. The Sales Response Function.](image-url)
suggests that group selling situations imply the use of group incentives (e.g., a team bonus) in the optimal pay plan (Smith and Watts 1984). Part of the success of the HBA manufacturer’s plan could thus be attributed to the duplicate sales credits given to field salespeople who help in these selling activities, while the computer systems manufacturer does not include group incentives in its plan.

Other marketing mix variables. Marketing mix variables other than salesforce effort, such as price, obviously affect sales through the sales response function, and may affect the salesperson’s allocation of selling effort as well. A general result in the literature is that if the salesperson has pricing latitude (e.g., via the ability to discount prices off list), his compensation should reflect this responsibility. The appropriate basis on which to set commission rates is not unit sales, but realized gross margin, since these would reward the salesperson for selling at a small (or zero) discount, and penalize him for selling at a large discount (see Weinberg 1975 for a demonstration of this point).  

Further, firm-wide factors such as name-brand reputation can profoundly affect sales, independent of any exertion (or lack thereof) of selling effort. Since the salesperson does not have control of such firm-wide performance factors, any incentive components included in the pay plan should not be based on these factors. This means that incentives based on the salesperson’s own sales or profit margin performance are more appropriate than stock options, which are largely a function of actions beyond the salesperson’s own control (Smith and Watts 1984). This prescription, similar to suggesting team incentives in team selling situations, aims to connect as closely as possible the salesperson’s pay to the effort he expends. This may explain why compensation elements like stock options tend to be restricted to upper-level management.

Variable productivity of effort. A third extension to Farley’s conception of the sales response function allows for sales effort productivity to vary across products, across salespeople in a given salesforce, or across time for a given salesperson. In the context of certainty in the sales response function and a utility-maximizing salesperson, Srinivasan (1981) points out that the higher the optimal commission rate on a product, the greater is its elasticity of sales with respect to sales effort. A related result is found in the literature assuming uncertainty in the sales response function: incentive pay should be weighted more heavily in the optimal compensation plan when sales effort is more productive in generating sales. This is sensible, since the more productive sales effort is, the more it should be used in generating sales; and the way to stimulate greater sales effort is through increased incentive pay. Because this literature assumes that the salesperson is risk-averse, the increase in (risky) incentive pay also requires the payment of a risk premium in the form of a higher expected value for the total pay package (Lal 1982, Basu et al. 1985, Lal and Srinivasan 1988).

Applying this to the bond underwriting example described at the outset of the paper, it is likely that the marginal productivity of sales effort increases with seniority in the salesforce. Then the above results would suggest that less experienced salespeople should receive a higher proportion of their pay in nonincentive (e.g., salary) forms, and should receive a smaller total pay package than more experienced salespeople. Analyzing the

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1 However, this model assumes certainty in the sales response function, so the much simpler alternative of the forcing contract also solves the firm’s problem of setting incentive-compatible compensation.

2 An individual is said to be risk neutral if he is just indifferent between some amount (e.g., $50 for certain) and a bet whose expected value equals that amount (e.g., a 50-50 chance of winning $25 or $75)—a fair bet. The individual is risk averse if he is unwilling to take a fair bet, but instead requires a risk premium to induce him to take the risky alternative over the sure one (that is, the risky alternative must have a higher expected value than the sure one). A risk-prefering individual is not only willing to take a fair bet; he is also willing to take an unfair bet, one whose risky alternative has a lower expected value than the sure alternative. The typical assumption in economics-based models is that individuals are risk averse or risk neutral, but not risk preferring.
firm’s pay structure, we can see that rookie salespeople receive a lower proportion of their total pay in incentive than do intermediate-level salespeople as long as the latter are at least 7.33 percent more productive than are rookie salespeople.\(^7\) Similarly, the intermediate-level salespeople receive a lower proportion of their pay in incentive than do senior salespeople as long as the latter are at least 11.8 percent more productive than the former. The firm could use these calculations to verify that more senior salespeople are, in fact, receiving more incentive pay as a fraction of total pay. Obviously, Account Executives have the greatest reliance on incentive pay, since they are all paid in commission-only plans.

In addition, even within a given experience level, it is only above some threshold level of expected sales productivity per month that a salesperson would opt for the all-com mission plan over the combination plan, given less than 60 months’ selling experience. Thus, this plan shows the characteristic that the proportion of total pay given in incentive is greater (100 percent) for more productive salespeople, and less (via the combination plan) for less productive ones, even within seniority levels.

Finally, it is also clear from the pay formulae in the combination plan\(^8\) that total pay is increasing in experience levels. This pay plan is thus consistent with the total pay result mentioned above.

The firm may sometimes not be able to discern whether two salespeople in two different territories sell different amounts because they differ in native selling ability or because the territories have fundamentally different sales potentials (even if the salespeople themselves know their productivity differences). Lal and Staelin (1986) suggest dealing with this information asymmetry by offering a menu of compensation contracts. This helps the firm to maximize its profits by recognizing the natural tradeoff between guaranteeing that all territories will be covered (but at possibly lower levels of average sales productivity) and guaranteeing that only high-productivity sales efforts will be mounted (but at the risk of zero sales in some territories). In a model similar to Lal and Staelin’s, Rao (1988) shows that an optimal combination plan pays a salary for achieving a sales quota, plus a flat commission rate, awarded on sales above quota or subtracted for sales below quota.

Rao’s result, like Lal and Staelin’s, lets the salesperson choose from a menu of plans, differentiated by the sales quota level to be achieved. This offer of a menu of plans causes the salesperson to truthfully reveal the firm his ability level, so that there is no incentive for him to work less effectively than he is able to.

Relating this result to the bond underwriting case, one of the most obvious features of that firm’s pay plan is the fact that it offers a menu of (two) options to salespeople with less than 60 months’ experience. This is consistent with the scenario posited above.

\(^7\) The combination plan for the rookie salesperson pays \((1500 + 0.05S_1)\), while that for an intermediate-level salesperson pays the greater of the two values \((1800, (1610 + 0.05S_2))\), where \(S_1\) and \(S_2\) are the sales achieved by the rookie and intermediate-level salespeople, respectively. Note that \$1800 is greater than \$(1610 + 0.05S_2)\) for monthly sales less than \$3800. Thus, for these low sales levels, the intermediate salesperson receives no incentive pay; but poorly-performing salespeople are unlikely to be retained in the long run, so we ignore this possibility here. Then, the ratio of incentive to total pay for the rookie is \(0.05S_1/(1500 + 0.05S_1)\), and that for the intermediate-level salesperson is \(0.05S_2/(1610 + 0.05S_2)\). The ratio for the intermediate salesperson exceeds that for the rookie if \(S_2/S_1\) is greater than \(1.073333\ldots\) that is, if the intermediate salesperson is at least 7.333 \(\cdots\) percent more productive than the rookie. A similar calculation holds for the comparison between intermediate and senior salespeople. Full calculations are available from the authors.

\(^8\) Expected earnings of the rookie salesperson on the combination plan are \((1500 + 0.05S)\); for the intermediate salesperson they are \((1610 + 0.05S)\); and for the senior salesperson they are \((1800 + 0.05S)\). Clearly, greater pay accompanies seniority if the sales productivity of the salesperson is at least constant as seniority increases. The necessary condition for intermediate-level pay to exceed rookie pay is that the rookie not be more than \$2200 more productive than the intermediate salesperson. The necessary condition for senior-level pay to exceed intermediate-level pay is that the intermediate salesperson not be more than \$3800 more productive than the senior salesperson.
Note that this plan will tend to weed out poor performers, since it requires switching to an all-commission option at 60 months’ experience. Salespeople with lower productivity levels will find it useful to change employment at or before that time.

The next two extensions to Farley’s core view of the sales response function—a variable horizon from initial sales contact to final sale and cross-product sales effects—may be best illustrated with the following example from the Xerox Corporation:

Xerox Corporation moved in mid-1985 from a salesforce organized along lines of product responsibility to one where each salesperson was responsible for selling the full Xerox line (Taylor 1985). David R. Myerscough, senior vice-president of marketing and planning for the Business Systems Group, acknowledged that customers “‘want us to take a coordinated, long-term approach’” to selling (p. 49). The salesforce would now include three ranks of salespeople: National Account Managers (NAM’s) responsible for between one and five accounts each; Major Account Managers (MAM’s) responsible for between ten and fifteen accounts each; and Account Representatives (AR’s) responsible for between 25 and 30 accounts each. Differences in compensation were designed into the system due to differences in the selling cycles facing the salesforce: NAM’s and MAM’s would be selling complex systems whose selling cycles could span months between initial customer contact and final sale, while AR’s would primarily sell products with a sales cycle of just one sales call. The NAM’s and MAM’s were slated to get 80% of their pay in salary and 20% in incentives, while the AR’s would get 60% of their pay in salary and 40% in incentives. Myerscough justified this difference with the statement that “‘If reps with longer selling cycles get 80% up front, they’re less likely to develop a hit-and-run mentality’” (p. 50).

Variable horizon to final sale. In one model dealing with the time from the first customer contact to the actual closing of the sale, the authors find that incentive pay is optimally rewarded over the same horizon as that for the actual achievement of outcomes (sales or profits, for instance) (Fudenberg, Holmstrom, and Milgrom 1988). The firm is assumed to be uncertain about future effects of past salesperson actions. This prevents it from constructing a series of short-term contracts—perhaps for monthly commission payments—that would give the salesperson the “correct” incentives to maximize the firm’s expected profits. If the sale takes more than one month to consummate, then paying monthly commissions would create an incentive for the salesperson to lie about the future impact of his selling efforts this month. The (possibly negative) sales results would not be realized until after he had collected his commission payments. Thus, matching pay and performance horizons can reduce the hazard associated with imperfect monitoring of salesforce effort.

In a different model, Lal and Srinivasan (1988) examine the effect on compensation of carryover effects of sales effort on future sales. If the salesperson leaves the firm before all the positive sales effects of his effort are felt, they show that salary should be lower, and commission rates higher, than if all sales effects are internalized in the salesperson’s employment period with the firm. This substitutes for a plan that would award incentive compensation over the same horizon as the achievement of the sales outcome, as Fudenberg et al. discuss.

In the Xerox situation, the time from initial customer contact to final sale is central to the setting of different pay plans. Some customers (especially national accounts) want Xerox to take a “‘coordinated, long-term approach’” to selling; and Mr. Myerscough’s last quote suggests that salespeople will want to use a shorter-run horizon for action unless given some incentive to do otherwise. This implies that (a) the time from initial contact to sale differs for different customers, and (b) the salesforce has some private information that it could conceal from the firm (if even for a short while) that would imperil the success of selling to these accounts.

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9 The model assumes that the salesperson possesses some private information, unknown to the firm, about the likelihood of achieving sales or profits in the future. This does not seem to be too restrictive.
Xerox has set compensation consistent with the Fudenberg et al. model’s predictions in providing NAM’s and MAM’s with a significantly higher proportion of pay in salary than AR’s who service “one-shot” accounts. The relevant pay adjustment period is thus longer for NAM’s and MAM’s than for AR’s, since salaries are typically adjusted only once a year rather than awarded monthly, as with commissions. Note in this context that salary payments, while frequently classified as “nonincentive” pay, in fact have an incentive aspect in that their adjustment can depend on sales performance. Clearly, however, another alternative for Xerox to follow would be to award bonuses only on completion of a sale, thus automatically tying the bonus award to the selling horizon.

**Cross-product effects.** Given cross-product effects, if the salesperson sells a full line of products, some of which are complementary,\textsuperscript{10} then his efforts on one product will generate positive externalities on the sale of other products. The effort required to sell one product in the line thus overstates the true cost of doing so, because it also makes it easy to sell other products in the line. Despite a lack of modeling results in this area, intuition suggests that incentive pay for such a complementary product should be greater than in the absence of these positive externalities in selling. Xerox seems to be implicitly aware of this possibility in moving from a salesforce organized along product lines to one responsible for selling the full Xerox line: such a change internalizes any (positive or negative) externalities a salesperson may generate in selling an individual product.

Below, we consider the last generalization of the sales response function separately: uncertainty in the effort-sales relationship.

### D. Sales Response Function Uncertainty

In this section, we summarize compensation insights that depend on uncertainty in the sales effort-to-sales relationship. We examine two different dimensions of uncertainty. First, we consider the salesperson’s risk attitude, for a given level of sales response function uncertainty. Second, we consider the effect of varying the degree of uncertainty, holding salesforce risk aversion constant.\textsuperscript{11}

**Salesperson risk attitudes.** A utility-maximizing salesperson facing uncertainty in the sales response function is unsure of the sales outcome of exerting a given amount of sales effort. Therefore, his attitude toward undertaking this risk must be taken into account. It seems clear that the bond underwriting firm discussed above is concerned about this, since its goals for salesforce compensation include stabilizing the salesperson’s income, minimizing the variability in his income, and protecting his overall financial stability. We can infer from this that the firm believes its salespeople to be risk-averse. This type of salesperson cannot be expected to perform risky sales activities (such as prospecting for new customers) when he can concentrate on accounts that are already established. In terms of Farley’s core model, there are now two sources of incompatibility in incentives for the firm to deal with in its compensation policy: (1) the salesperson wants to maximize

\textsuperscript{10} That is, the sale of one product enhances the demand for other products in the line. Examples would be selling instant cameras and the corresponding film, or selling one high-quality name-brand product and thereby enhancing the reputation of other products in the line.

\textsuperscript{11} The literature we summarize assumes that the firm maximizes expected profits, and is therefore risk-neutral. A somewhat different approach, developed by Jagpal (1983), assumes the firm maximizes its value, drawing on the Capital Asset Pricing Model in the finance field for its analysis. This basically means taking account of two dimensions of risk facing the firm: diversifiable risk, which could be diversified away by holding a balanced portfolio of stocks; and systematic risk, which cannot be diversified away. Jagpal’s results parallel those summarized here, suggesting that an objective of value maximization produces insights analogous to those obtained with the more simple assumption of expected profit maximization.
utility rather than what the firm wants to maximize (the basic problem in Farley's model),
and (2) the salesperson is more risk-averse than his employing firm.\textsuperscript{12}

What can be done to manage both of these sources of goal incompatibility between
the firm and its salesforce? A set of results by Berger (1975) shows that Farley's solution—
equal commission rates based on gross margins—is still optimal as long as the salesperson
is risk-neutral.\textsuperscript{13} Note that in this case the salesperson and the firm, in effect, have the
same risk attitude since the firm maximizes expected profits. Thus, the second source of
goal incompatibility is not really present. But if one solves the incentive problem with a
risk-averse salesperson compensated only with commission, Berger finds that one has to pay a higher commission rate on products with a larger proportional variance in the sales
response function. This higher commission rate compensates the salesperson for taking the
risk of selling the higher-variance product, thus simultaneously solving both sources of
goal incompatibility.

Two problems suggest themselves upon examination of this insight: (1) how to determine
the risk attitude of the salesforce, and (2) whether these results vary if we consider
more general types of compensation plans (e.g., salary as well as commission pay). One
method of inferring risk attitudes of the salesforce can be illustrated with our bond underwriting firm example. Suppose that any salesperson on commission faces a commission
rate of 10 percent, and that expenses (borne by the commission salesperson) are $2,000
per month. The bonus rate for those salespeople on the combination plan is 5 percent,
paid monthly in the case of a salesperson with less than 18 months' experience and paid
biannually to salespeople with between 18 and 60 months' experience. Suppose further
that any rookie salesperson who chooses the all-commission option is permitted a draw of $1,500 per month; any all-commission intermediate-level salesperson is permitted a
draw of $1,750 per month; and any all-commission senior salesperson is permitted a
draw of $2,000 per month. Then, by calculating a salesperson's expected income under
the combination plan and the all-commission plan, one can determine the threshold
level of sales performance above which the salesperson prefers the all-commission plan.\textsuperscript{15}

Rookie salesperson:

\[
S < \$70,000 \Rightarrow \text{combination plan,}
\]
\[
\$70,000 < S \Rightarrow \text{all-commission plan.}
\]

Intermediate-level salesperson:

\[
S < \$72,200 \Rightarrow \text{combination plan,}
\]
\[
\$72,200 < S \Rightarrow \text{all-commission plan.}
\]

\textsuperscript{12} A firm which maximizes expected profits is risk-neutral, and thus is less risk-averse than a risk-averse
salesperson.

\textsuperscript{13} A similar result is found in the agency theory literature in economics; see Harris and Raviv (1978).

\textsuperscript{14} An optional draw means that the salesperson can borrow against future commission earnings in order to
smooth his income. This is particularly valuable when sales exhibit seasonality over the course of the year.
Usually, there is a limit on how much draw a salesperson can borrow, to guard against the completely nonproduc
tive salesperson getting pay for low (or no) sales productivity. Thus, draw is fundamentally different from
salary, because salary does not have to be "repaid," and future commission earnings in a salary-plus-commission
plan are not lowered by the amount of salary granted.

\textsuperscript{15} For instance, a rookie salesperson has an expected income of $0.15 \times 2000$ under the all-commission plan,
where $S$ stands for sales. Under the combination plan, he has an expected income of $(1500 + 0.055S)$. Thus,
the rookie salesperson makes more income on the all-commission plan if he expects to make more than $70,000
in sales; his income is higher under the combination plan with expected sales of less than $70,000. Full calculations
are available from the authors.
Senior salesperson:

$0 < S < 4000 \iff$

indifferent between all-commission plan (draw) and combination plan,

$4000 < S < 76000 \iff$ combination plan,

$76000 < S \iff$ all-commission plan,

where $S$ is the expected dollar sales volume per month. Note that any senior salesperson with less than $4000$ in expected monthly sales is quite likely to be fired. Hence, the upper two expected sales intervals are the ones of interest.

Therefore, the firm can infer that a salesperson is risk-averse as his sales productivity of effort rises to (a) $70,000$ in monthly sales (for a rookie salesperson), (b) $72,200$ in monthly sales (for an intermediate-level salesperson) or (c) $76,000$ in monthly sales (for a senior salesperson), but he nevertheless chooses the combination plan over the all-commission plan. This is because a risk-neutral salesperson seeks only to maximize expected income, without regard to the variability of the income stream. The risk-averse salesperson, however, requires a risk premium in order to be willing to take on the more variable all-commission pay plan. Risk-aversion thus implies preference for the lower-variance option with the same expected value of pay. This ability to infer the salesperson’s degree of risk-aversion may be useful to a firm that wishes to have a salesforce comprised of less risk-averse employees.

But we also need to question the use of all-commission plans versus any other type of plan. The work of Farley (1964) and Berger (1975) assumes that commission will be the only component in the pay package. Some work by Lazear and Rosen (1981) shows that for risk-neutral salespeople, three kinds of compensation contracts can all solve the optimal compensation problem of the firm: a “piece rate” plan (like a per-unit sales commission), a “rank order tournament” (where salespeople compete for a prize, as in a contest format), or a forcing contract. If the bond underwriting firm’s salesforce is risk-neutral, therefore, the all-commission plan for Account Executives can indeed solve the firm’s compensation problem (as can several other types of plans as well).

However, recent work has shown that when salespeople are more risk-averse than their employing firms, the optimal compensation plan typically involves both nonincentive (salary) and incentive (commission, bonus) components (this result is found, for instance, in Arrow 1971, Basu et al. 1985, Hallagan 1978, Harris and Raviv 1978, Holmstrom 1979, Lal and Srinivasan 1988, and Reagan and Stulz 1986). The salary portion of the plan is a risk-sharing device, promising a fixed salary payment regardless of the sales outcome of sales effort. In other words, the value of sharing this risk outweighs the value of creating selling incentives when salespeople are risk-averse. Further, the more risk-averse the salespeople, the more risk-sharing should occur, via a higher salary and lower commission rate (Basu et al. 1985, Lal and Srinivasan 1988). These adjustments are optimally accompanied by lower total pay, since the salesperson exerts less total effort.

Since we have reason to infer that the bond underwriting firm’s salespeople are risk-averse, we would suspect that the all-commission plan for senior salespeople is not the best to choose. However, the plan is modified to include both a draw provision and a minimum monthly income provision. Given a certain level of salesforce productivity, these provisions may reduce the variability in income significantly, so as to approximate an appropriate risk-sharing contract.

Concerning the form of commissions, our bond underwriting example does not specify whether commission rates are constant, progressive (increasing rates with increasing sales volume), or regressive (decreasing rates with increasing sales volume). However, if the
firm can determine how a salesperson’s risk aversion changes as his income rises, it can tailor the compensation plan even more appropriately to align the salesforce’s incentives with its own. In particular, the more willing the salesperson is to take risk as his income rises, the more steeply the commission rate should rise with sales. Basically, commission rates should be progressive if risk aversion decreases more than proportionately with increases in income (Basu et al. 1985).

We now have some understanding of the form of the optimal salesforce compensation plan when the salesperson maximizes utility in an uncertain environment: in particular, some risk-sharing by the employing firm is best, for instance through a combination plan. But how much risk should the firm share—that is, how heavily should salary be weighted in the optimal compensation plan? The literature shows that salary pay should play a greater part in the total package, (a) the greater is the salesperson’s opportunity cost of time (Basu et al. 1985); (b) the younger is the salesperson (Smith and Watts 1984); and (c) the more highly correlated are the salesperson’s nontradeable wealth (defined below) and his total pay (Reagan and Stulz 1986). The first result holds simply because the risk-adjusted value of pay is higher, the greater the proportion of salary in the package. Hence, salespeople with higher-paying alternatives must be paid more, and one way to do this in an uncertain environment is to promise a higher certainty value to pay. The age effect is suggested because an older salesperson’s effort is influenced less by the prospect of future salary adjustments (because of his relatively short horizon to retirement) than is a younger salesperson’s effort. Hence, the more direct incentive pay components are necessary to motivate the older worker to perform. In the third effect, nontradeable wealth refers to salesperson assets such as firm-specific skills and knowledge, i.e. assets which are valuable to the salesperson while he works for his current employer, but which have no outside market value. Then, the more highly correlated his nontradeable wealth with his pay package, the higher is the variance of his overall income and the less willing he is to bear risk.

Note that the opportunity cost and age effects may imply conflicting compensation policies for the bond underwriting salesforce. More senior salespeople are likely to have a higher opportunity cost of time (since they are more experienced and presumably have a higher market value), and are also likely to be older than more junior colleagues. The opportunity cost effect would suggest weighting pay more heavily toward salary, while the age effect would suggest weighting pay more heavily toward incentive components like commissions. We would expect the opportunity cost effect to be dominant in all cases except for salespeople just short of retirement age, since both a young and a middle-aged salesperson has a considerable employment horizon ahead of him.

Finally, the maintained hypothesis of expected utility maximization and risk aversion in the analytical literature can be questioned. As some authors have noted (e.g., Kahneman and Tversky 1979), observed behavior does not typically reflect risk aversion over all ranges of outcomes. Instead, individuals tend to be risk averse when faced with prospects that provide unambiguous (but risky) gains, while they are more willing to take risks when faced with a lottery between losses. Further, they underweight outcomes that are merely probable versus those that occur with certainty. Puto’s (1987) work suggests that the individual’s reference point from which he evaluates losses and gains is a key to predicting whether behavior will be risk averse or risk seeking, and also that the location of the reference point can be influenced in some buying decisions. While prospect theory

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16 An example of the accrual of nontradeable wealth is the portion of any firm’s salesforce training program devoted to familiarizing the salesforce with the characteristics of the firm’s product line and its servicing. Any training program devoted to developing general selling skills, however, does not create nontradeable wealth, because the skills learned there can be equally well applied to selling situations at many other firms.
has not been applied to an analysis of salesforce behavior, the widespread deviations in human behavior from the predictions of expected utility theory suggest that it may provide a useful alternative assumption for salesperson behavior.

*Degree of uncertainty in the sales response function.* Uncertainty in the sales response function changes the optimal compensation plan for the salesforce when salespeople are not risk-neutral. The greater is sales response uncertainty, given risk-averse salespeople, the more heavily compensation should be weighted toward salary, because salary acts as a cushion against unfavorable sales outcomes for the risk-averse salesperson (Basu *et al.* 1985, Lal and Srinivasan 1988). Notice that the plan described in the Xerox example above is consistent with this result: NAM's and MAM's, selling complex systems with long selling cycles, face more uncertainty in the relationship between selling effort and sales than do AR's, and are therefore paid a greater proportion of pay in salary.

A related finding is that the optimal size of the total pay package is smaller, the greater the variance in the sales response function (Basu *et al.* 1985, Lazear and Rosen 1981). This result is based on the notion that it is impossible to observe a salesperson's effort perfectly. Rather, it is observed imperfectly through the sales he generates. The more random fluctuation there is in the sales response function, the less perfectly can the salesperson's effort be observed, and the less effort he is expected to exert (since he can shirk effort to a certain extent and not be detected). This lower effort level implies a lower level of total pay. Our Xerox example and the NAM example above would seem to contradict this, since NAM's are typically paid significantly more than field salespeople.

However, a confounding effect here is the greater marginal productivity of selling effort for these NAM's as compared to regular field salespeople. We saw above that greater marginal sales productivity of effort implies optimal compensation that (a) weights incentive pay *more* heavily in the total pay package, and (b) is *higher* than for lower productivity salespeople. Yet here, we see the more senior NAM's and MAM's (who are presumably higher-productivity salespeople) being paid *less* proportionately in incentive pay (although probably receiving higher total pay than the AR's). Clearly, the conflicting effects must be weighed in any given compensation situation to decide which is the more important one. Xerox's decision seems to have been to share risk in the relative compensation structure, but to reward greater overall productivity with higher total pay.

A great many results have come from considering additional complexities in the sales response function in this section and §3.C above. Some general insights emerge. One is that the *components* in the optimal sales compensation plan should tie the salesperson's compensation to his responsibilities—whether they be team selling, pricing, or selling over a dynamic sales horizon. Second, the appropriate *parameter levels* to set in the optimal sales compensation plan are ones that give the salesperson incentives to sell, while not burdening him with too much risk in the process. Finally, a *menu* of compensation plans can be a useful discriminator between high- and low-productivity salespeople or between more or less risk-averse salespeople.

4. Summary and Future Research Directions

The goal of setting a salesforce compensation plan is to give the salesperson an incentive to accomplish the firm's objectives. If successful, the plan makes the salesperson want to undertake the selling and nonselling activities that the firm wants him to perform. The

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17 Note that a higher market value or opportunity cost of time for NAM's and MAM's as compared to field salespeople would also predict higher total pay for the NAM's and MAM's. The example does not let us distinguish between this effect and the marginal productivity effect (or, indeed, whether both effects are at work).
obvious benefit of this is a decreased need for (and cost of) explicit monitoring of the salesforce.

The quantitative literature in the area has always kept this fundamental goal in mind. Farley’s (1964) initial contribution was to formalize the incentive problem by defining a commission rate policy that would create incentives for the salesperson that were compatible with those of the firm. Equal commission rates based on gross margins solve the firm’s incentive problem because they make salesforce compensation a percentage of the firm’s own profits. Since the salesperson is assumed to be an income-maximizer, this is tantamount to making him a profit-maximizer—exactly what the firm wants.

While Farley’s contribution is significant, our examples illustrate how much more complex the environment is than his model would imply. Extensions in the firm’s objectives, the salesperson’s objectives, and the nature of the sales response function all have been found to have important implications for three basic aspects of salesforce compensation: the components in the plan, the level of each component, and whether or not a menu of plans is offered.

Some general precepts recur in the literature, however. When deciding what components to include in the optimal compensation plan, it is important to use those that link the salesperson’s rewards to outcomes under his control. This generic principle holds whether or not there is uncertainty in the system. A corollary of this point is to make the salesperson’s compensation a function of all his responsibilities. If, for instance, compensation is not a function of selling effort (as in a salary-only plan), but selling effort is key in generating sales, the firm will have significant incentive problems. In general, the components in the optimal compensation plan align the salesperson’s objectives as closely as possible with those of his employer. In the presence of uncertainty, this problem involves solving two kinds of incompatibility: differences in basic goals and objectives (e.g., profit maximization versus utility maximization), and differences in risk attitudes (e.g., a risk-neutral firm and a risk-averse salesforce). The general solution to the double problem involves using at least two components in the pay plan: salary and some sort of incentive component such as commissions. Commissions help solve the differences in objectives, while the salary component serves as a risk-sharing device to minimize the negative effects of differences in risk attitude.

Once the components in the plan have been set, the question of the optimal levels of each component (and by extension, of total pay) remains. With no uncertainty, the simplest plan that aligns the salesperson’s incentives with those of the firm is the forcing contract, paying the salesperson a total amount just equal to his opportunity cost of time if he sells the profit-maximizing amount of products in the firm’s line, and nothing otherwise. However, other plans (such as Farley’s equal commission-rate plan) accomplish the same end. The problem becomes somewhat more complicated in the presence of uncertainty in the sales response function. Now, the trick is to create enough of a selling incentive (via components like commissions or bonuses) while appropriately sharing the risk associated with selling. As in the certainty case, total pay (risk-adjusted, in this case) must be high enough to keep salespeople from leaving the firm. Some important compensation guidelines here involve higher commissions (relative to salaries), and higher total pay, when (a) a salesperson’s productivity of selling effort is higher, or (b) the sales response function is characterized by less uncertainty.

Finally, the structure of the pay plan may optimally involve offering the salesperson a menu of choices. Like the literature on segmentation in consumer markets, a menu of plans is appropriate when productivity differences exist across salespeople. A menu of plans can then increase motivation across the whole salesforce by allowing self-selection into the most appropriate plan, as well as revealing productivity levels and salesforce risk attitudes to management.
We have tied our discussion of results closely to an exposition of three compensation examples, the better to bring the theoretical results to life. The nature of the results is both to explain the reasons for using particular compensation plans, and to provide guidelines for those who set compensation. However, linking examples to results in the literature also suggests that the researchers' work is not done. Some particularly important areas for future research include:

Empirical testing of theoretical results. Perhaps the most compelling area for future research is comprehensive empirical testing of the results summarized here. While confronting the results with examples (as we have done here) is useful to verify that the predictions of the theory can be observed in specific instances and to highlight the normative implications of the theory, it is also important to test the implications of the theory in a systematic way across a wide variety of industries and types of firms. Coughlan and Sen (1985) have looked at preliminary data in the area, and John and Weitz (1988), (1989) and Coughlan and Narasimhan (1989) have done further work. However, more empirical research in the area would certainly be desirable.

Modeling salesperson risk attitudes. The analytical literature typically assumes either that the salesperson is risk neutral (and hence maximizes expected income) or risk averse, independent of whether he faces gains or losses in the exertion of selling effort. But recent literature in prospect theory (Kahneman and Tversky 1979, Puto 1987) suggests that individual behavior frequently violates the precepts of expected utility theory on which these assumptions are based. In particular, it may be useful to explore models of salesforce behavior that reflect risk aversion when faced with gains, but risk seeking when faced with losses. Possibly, a salesperson's reference point can also be manipulated by the setting of sales quotas or simply by the performance expectations of management.

Multi-product modeling. In addition, more modeling work is warranted. Little has been done concerning the problems of salesforce compensation when many different products are sold. This situation involves the issue of how to induce the salesperson to optimally allocate his/her time among products, and also opens up interesting questions of optimal compensation when production and marketing costs for the multiple products are interdependent. Some of these issues have been attacked in the analytical literature assuming certainty in the sales response function. Unfortunately, these pieces assume a particular form for the compensation plan, rather than deriving the optimal form.

Team selling. The efforts of more than one salesperson are frequently required to close a sale. The modeling literature has not begun to deal with this issue in any depth. Single-salesperson models are tantamount to models with multiple salespeople, all of whose efforts are independent in sales generation. Research may need to focus both on the appropriate design of team incentives and on understanding goal-setting and coalitions in teams.

Modelling increased richness in the compensation plan. Further, the range of compensation plans actually offered to salesforces is much wider and has much more variety than has been modeled in the literature. Modelers have yet to attack questions of the differential uses of contests, bonuses, annual sales meetings, and other incentives. Most of the modeling literature speaks of incentive pay in a rather generic way. The persistent use of multiple forms of incentives implies some differential benefits and costs associated with them, and this merits further study.

Modelling increased richness in the sales response function. The modeling of the sales response function could also be enriched in the analytical literature. Current formulations relate sales effort to sales, but ignore the full array of marketing mix variables open to
the firm which have either independent or interactive effects (e.g., telemarketing, direct mailings, point-of-purchase displays, and the like). These tools suggest both complementary and substitutable uses with salesforce effort, and are likely to strongly affect the productivity of effort.

Modelling greater product complexity. The nature of the products considered in the literature is also quite simplistic; products are mature and well-understood by the buyer, so that the demand function can be represented in a straightforward way. However, technically complex or newly-introduced products may require either greater selling efforts or more nonselling efforts by the salesforce to ensure their acceptance in the market. Hence, enriching the modeling of product form will also have implications for the optimal form of salesforce compensation.

The analytical literature on salesforce compensation has progressed considerably since the early articles on the topic. While we have compiled and adapted a set of results and guidelines which can be helpful to the practitioner concerned with salesforce compensation, there is room for much more work in the future. By progressing concurrently in empirical and analytical research, we expect future results to be increasingly helpful to sales managers.18

Acknowledgements. The authors would like to thank the Marketing Science Institute for financial support. Richard Staelin, Barton Weitz and the reviewers provided many helpful comments. Anne Coughlan would like to thank the Brunswick Corporation for research support.

18 This paper was received in September 1987 and has been with the authors 8 months for 3 revisions. Accepted by Richard Staelin, Acting Editor.

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