Optimal Financial Disclosure With and Without SEC Regulation

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There is a substantial and growing interest in the impact of government regulations on the economy. Among the various regulations, an important group consists of those regulatory activities that attempt to protect consumers by increasing the amount of information available to them in financial transactions. Examples of such regulations include truth-in-lending legislation and all of the disclosure regulations issued and monitored by the Securities and Exchange Commission (SEC).

This paper develops a simple model of the firm that permits one to analyze its financial disclosure behavior both with and without government regulation. It is shown that firms should have an economic incentive to disclose information in the absence of any government regulation. Moreover, it is shown that the imposition of regulation may lead to less disclosure, not more. Though for concreteness the model considers the impact of SEC regulation, the results are also applicable to other government regulations of financial markets.

Optimal Financial Disclosure Without SEC Regulation

Consider first the case in which the firm is not regulated by the SEC. In these circumstances, the firm would theoretically be able to raise funds in capital markets in an unconstrained manner. However, it can be shown that cost minimization by the firm would not, in general, be consistent with zero disclosure in capital market transactions.

Disclosure and the Cost of Funds to the Firm

In order to raise external funds to finance its operations, the firm would be required to sell securities yielding a positive rate of interest. If potential purchasers of such securities value information, the interest rate that must be paid for external funds should decline as the firm increases the amount of information disclosed about its operations.
Presumably, as consumers obtain more information about the financial characteristics of a firm, the better will be their ability to assess the securities of that firm. Therefore, it is reasonable to assume that consumers would be willing to pay a higher price for “higher-quality” securities of firms that disclose more information. This implies that the rate of interest is inversely related to the level of disclosure.

The relationship between disclosure and the rate of interest is shown in Chart 1 by the curve \( r(D) \). At the zero disclosure level, the firm must pay a maximum interest rate, \( r_m \). As disclosure, \( D \), increases, the interest rate that must be paid on new securities decreases until it reaches a minimum of \( r_p \) at disclosure level, \( D_p \), when “all relevant” information has been disclosed. That is, full disclosure does not enable the firm to sell securities at a zero rate of interest. However, full disclosure would permit the firm to raise external funds at the lowest possible interest rate consistent with its inherent risk characteristics.

In Chart 1, \( r(D) \) decreases as \( D \) increases, but at a decreasing rate. This assumes that purchasers of securities are willing to pay more (in terms of foregone interest payments) for initial amounts of disclosure than for subsequent increments.

In the event that disclosure has no impact on the rate of interest, \( r(D) \) would simply be depicted by a horizontal line in Chart 1. The firm would pay the same rate of interest on its securities whether it discloses no information about its financial operations or fully discloses such information. This case is of some interest because, as shown later, it implies that the optimal level of disclosure for a firm may be zero in certain circumstances.

**Disclosure and Cost-Cuts**

It is always possible that the value of new securities will subsequently decline in value, perhaps even to zero. In certain instances, current liability rules permit consumers to sue for recovery of such losses. Insufficient disclosure

![Chart 1](image-url)
of financial information at the time of sale is a potential basis for successful recovery of capital losses by dissatisfied investors (see [3]). It is thus reasonable to assume that the less information disclosed at the time of sale, the greater will be the likelihood of successful court actions by disappointed investors. This implies that disclosure of information may reduce expected court costs. The more information disclosed, the greater would be a firm's chances of successfully defending itself against suits brought by unsatisfied investors.

The relationship between expected court costs and disclosure is shown in Chart 1 by the curve $f(D)$. Expected court costs are assumed to be at a maximum when zero information is disclosed, and at a minimum when all relevant information is disclosed. It is also assumed that, like $r(D)$, $f(D)$ decreases at a decreasing rate as $D$ increases. This assumes that reductions in expected court costs due to additional disclosure are larger at lower than at higher levels of disclosure.

Transactions Costs of Disclosure

Thus far, we have considered only those costs of external finance that decline as more information is disclosed. However, a number of costs, namely, labor, administrative, and materials costs, are likely to increase with the level of disclosure.

The relation between these transactions costs and the amount of disclosure is depicted by the curve $C(D)$ in Chart 1. Transactions costs of disclosure equal zero when $D$ is zero, and rise to a maximum at $D_p$. It is further assumed that these costs increase at an increasing rate. That is, the cost of disclosing additional amounts of information is assumed to increase with the disclosure level.

The Optimal Disclosure Level

Summation of the various cost curves yields the total (expected) cost of disclosure curve, $TC$, in Chart 1. Under the curvature assumptions made about $r(D)$, $f(D)$, and $C(D)$, $TC$ first declines as $D$ increases, but then increases. Cost minimization by the firm would, therefore, require that disclosure level $D^*$ (see Chart 1) be chosen. This is the optimal level of disclosure for the firm. Disclosure levels that either fall short of or exceed $D^*$ will increase the firm's total costs.

Chart 1 implies that the firm would choose an optimal disclosure level between zero disclosure ($D = 0$) and full disclosure ($D = D_p$). This outcome depends on the assumptions made about the curvature of the relations, $r(D)$, $f(D)$, and $C(D)$. It is, therefore, of interest to consider the impact on the optimal disclosure behavior of modifying these assumptions.

Chart 2 analyzes the case where neither interest costs nor expected court costs are affected by the amount of disclosure. It is readily seen from Chart 2 that the cost-minimizing level of disclosure would be zero in these circumstances.
Chart 2 depicts the case where the transactions cost per unit of disclosure is constant. In this instance, the optimal disclosure level would be full disclosure. This implies that it is not transactions cost per se that would prevent firms from disclosing all relevant information, but rather the fact that marginal transactions costs increase with increasing disclosure.

As seen in Chart 4, the costs in which either interest plus court costs decrease as an increasing rate with disclosure or transactions costs increase at a decreasing rate with disclosures are more complex. In the former case, the marginal benefits (cost savings) due to increased disclosure would rise with increased disclosure, as shown by MB and MC. Conversely, when transactions costs increase at a decreasing rate, the marginal costs of disclosure would fall with disclosure, as shown by MB and MC. Chart 4 illustrates cases in which D*, where the marginal benefits (cost savings) of disclosure equal the marginal costs of disclosure, would not be the cost-minimizing disclosure level for the firm. Rather, the optimal level would either be at zero or at D*. If, however, MB (MBP) were to cut MC (MC") from above, the point of intersection between MB (MBP) and MC (MC") would represent the optimal disclosure level.
Disclosing and the Variance of Costs

Thus far, the analysis has focused on the relationship between the level of disclosure and the level of expected costs of external finance. In addition, it is also possible that the amount of financial information that is disclosed will affect the variance of costs. For example, it seems reasonable to expect an increase in disclosure to reduce the variance in expected court costs. Similarly, it is likely that increased information may reduce the potential dispersion of prices offered by prospective purchasers for new securities.

In Chart 5 the curve $V(D)$ reflects the assumption that the variance of external financing costs decreases with increasing disclosure. Given this assumption as well as the curvature assumptions implicit in Chart 1, the relationship between expected costs and the variance of costs may be derived as shown by curve $RR$ in quadrant 1 of Chart 5. The locus $RR$ indicates that expected costs initially decline with the variance, reaching a minimum level, $E_0$, when the variance is $V_0$. This is also the point $D^*$, where expected costs are minimized. Beyond $V_0$, expected costs rise as the variance increases.

In analyzing the disclosure behavior of firms, it is important to distinguish between risk-neutral and risk-averse firms. The former type of firm would consider only expected costs in deciding on the level of disclosure, and could therefore be represented by the horizontal indifference curves $U_0$, $U_1$, $U_2$, and $U_3$ in Chart 6, where $U_0 < U_1 < U_2 < U_3$. For such firms, the optimal disclosure level would be $D^*$, where expected costs ($E_0$) are at a minimum, and the variance of external costs is $V_0$.

Firms which are risk-averse may be represented by the utility curves $U'$, $U'_1$, and $U'_2$ shown in Chart 6. These curves are negatively sloped, implying that the firm considers both expected costs and the variance of costs. To induce the firm to incur a higher variance of costs, the expected costs must decrease. This is the only trade-off possible which maintains a constant level of utility. Utility increases, of course, as one moves toward the origin in Chart 6, since both expected costs and the variance of costs generate disutility.
As seen in Chart 6, the risk-averse firm would maximize utility by choosing a disclosure level that would yield expected costs of $E_1$ and a variance of costs of $V_1$. For the risk-averse firm, the utility-maximizing disclosure level, $D_u$, would exceed the cost-minimizing disclosure level $D^*$. Thus, risk-averse firms would voluntarily disclose more information than risk-neutral firms.
Optimal Disclosure Without SEC Regulation: Summary

In sum, under reasonable assumptions about the relationship between certain costs of external finance and the level of financial disclosure, firms would not have an incentive to disclose either zero or full information. Rather, as shown in Charts 1 and 6, the optimal disclosure level would lie between these extremes. The exact amount disclosed would depend on $R(D)$, $f(D)$, $C(D)$, the variance of costs, and the risk preference of firms. We have also considered special cases in which the optimal strategy of firms would be to disclose either no information or all information. However, for simplicity, we ignore these special cases in the discussion of SEC regulation presented in subsequent sections of this paper.

Optimal Disclosure in the Presence of SEC Regulation

We now examine the impact of SEC disclosure regulations on the behavior of the firm under two different interpretations of the nature of such regulations. Under one view, SEC regulations are seen as setting certain (discontinuous) required levels of disclosure. Under the other, SEC regulations are viewed as a set of procedural standards that prescribe the manner in which information is to be disclosed, rather than the level of disclosure. We also briefly consider the impact of "regulatory uncertainty" on the behavior of the firm.

SEC Regulations as Quantity Standards

Under SEC regulation the firm may no longer be free to choose from a continuous set of disclosure levels, but instead may be forced to choose between issuing securities either as a private placement or as a public offering. In the former case, certain minimum disclosure requirements must be met, while in the latter case the issuer must comply in full with disclosure rules set forth in the 1933 Securities Act.

If one assumes that such restrictions on disclosure behavior do not affect the total cost of disclosure curve, $TC$, it is easy to show that a firm's response to regulation will depend on the levels of disclosure required by the SEC in relation to the preregulation disclosure optimum. Chart 1, for example, may be used to illustrate a case in which SEC regulation would lead a firm to increase the amount of information disclosed. In this chart, $D_s$ represents the level of disclosure corresponding to that required for a public offering, while $D_w$ represents the level of disclosure corresponding to a private offering. Although a firm would wish to disclose an amount of information equal to $D^*$, the disclosure level would not be permissible under SEC regulation. Instead, a firm would be constrained to choose between $D_w$ and $D_p$. Given the TC curve, it would choose the disclosure level that minimized total costs. In Chart 1, this disclosure level would be $D_p$. As a result of SEC regulation, the firm would increase the amount of information disclosed.
Once again, using Chart 1, let $D^*$ and $D_k$ have the same interpretations as just discussed, except that $D^*$ lies to the right of $D_k$. The important difference between this case and the previous case is that if the firm was not allowed to disclose at level $D^*$, and instead was forced to choose between $D^*$ and $D_k$, costs of disclosure would be minimized if disclosure level $E_k$ were chosen. SEC regulation would, in this case, lead the firm to disclose less information by changing its form of financing than if no regulation were present.

In both of the cases just considered, one may wonder why the firm would be prevented from attaining the preregulation optimum by (1) complying with the minimum disclosure requirements of a private placement, and then (2) voluntarily disclosing additional information equal to $(D^* - D_k)$. While the issuer would clearly have an incentive to engage in such behavior, the ability to adjust in this way would be constrained by the rules defining a private placement. For example, a security sold in a private placement could not be sold through any form of general advertising or general solicitation. Moreover, any private offering would have to be made to no more than 35 purchasers, each of whom had "sufficient knowledge" to evaluate the merits and risks of the investment. These restrictions would not, in contrast, apply to a public offering. Hence, the rules defining a private placement would be expected to constrain the issuer sufficiently as to prevent movement from $D_k$ to $D^*$.

SEC Regulations as Procedural Standards

It might be argued that firms do not really treat private and public placements of securities as substitutes. Rather, firms may tend to specialize in one particular type of placement. In this case, it may be more appropriate to view SEC regulations as setting procedural requirements as to the way in which information is disclosed, rather than as establishing standards regarding the amount of information to be disclosed.

By requiring that certain forms be used, certain deadlines be met, and certain contacts with the SEC be made, it is likely that procedural regulation by the SEC would cause the transaction costs of disclosure to increase. That is, the $C(D)$ curve in Chart 1 would shift up, and with it, the total cost of external financing. So long as regulation shifted the costs of disclosure up by a constant amount, the cost-minimizing firm would still choose the preregulation level of disclosure. That is, total costs along $TC$ would be minimized at the same point if regulation increased the cost of disclosure by a constant amount at each and every level of disclosure. In this instance, SEC regulation would increase the costs of disclosure without increasing the amount of information disclosed. If such procedural regulations imposed additional unit disclosure costs that rose with the disclosure level, the cost-minimizing level of disclosure would be lower under regulation than in its absence. This is a likely case, since the variety and number of forms required by the SEC increase with the amount
of information provided. In such circumstances, SEC regulations would result in less total disclosure, provided at greater cost.

Finally, a set of circumstances may be considered under which SEC regulation would increase the level of financial disclosure by firms. Such an outcome could result if the cost savings per unit of disclosure (due to reduced court and interest costs) were increased by the introduction of SEC procedural regulations. This might, for example, occur if purchasers placed 'more faith' in information disclosed under procedures regulated by the SEC. In such an event, the optimal disclosure level would increase in response to regulation if the increase in cost savings per unit of disclosure exceeded the increase in per-unit transactions cost imposed by SEC procedures. In this case, SEC regulation would increase the total level of financial disclosure, while actually lowering the total costs of obtaining external financing to the firm.

**Disclosure and Regulatory Uncertainty**

Government regulation has recently been criticized as contributing to the uncertainty faced by firms. The version of the disclosure model presented in Chart 6 can be used to assess the impact of regulatory uncertainty due to SEC disclosure regulations.

In Chart 6, $V'(D)$ represents the relationship between disclosure and the variance of expected costs in the absence of uncertainty about what constitutes compliance with SEC disclosure rules. The curve $V'(D)'$ represents the same relationship in the presence of uncertainty about compliance and enforcement. Regulatory uncertainty is thus treated as increasing the variance of expected costs at each disclosure level.

From Chart 6, it is readily apparent that regulatory uncertainty would shift the relation between expected costs and variance to the right, from $RR$ to $RR'$. Hence the behavior and welfare of risk-neutral firms would not be altered in the presence of regulatory uncertainty. That is, such firms would still minimize expected costs at $E_m$, attaining welfare level $W_m$ at disclosure level $D_m$.

The behavior and welfare of risk-averse firms would be affected by the presence of regulatory uncertainty. Specifically, regulatory uncertainty would lower the welfare of such firms as shown in Chart 7 by the movement from $U_1'$ to $U_2'$. In addition, the disclosure behavior of such firms would change. In Chart 7, the risk-averse firm is shown as disclosing less information in response to regulatory uncertainty than it would if such uncertainty were absent. However, it is also possible that the risk-averse firm would disclose more information in response to regulatory uncertainty. Thus, the impact of regulatory uncertainty on the disclosure behavior of the risk-averse firm is indeterminate.

**SUMMARY AND CONCLUSIONS**

In this paper we have developed a simple model of financial disclosure. In the absence of regulation, the optimal level of financial disclosure minimizes
the sum of transactions costs, disclosure plus interest costs plus expected court costs. In general, a firm will neither choose zero disclosure nor choose to disclose everything. Rather, the optimal level of disclosure will fall between these two extremes. However, some plausible instances were identified in which cost minimization would require the choice of either zero disclosure or full disclosure. Moreover, it was shown that risk-averse firms will generally choose higher disclosure levels than those chosen by risk-neutral firms.

The model was then used to analyze the impact of SEC regulation on the disclosure behavior of firms. It was shown that SEC regulations could actually reduce the level of financial disclosure under two different assumptions about the nature of SEC regulations. It was also shown that uncertainty regarding compliance with SEC regulations would affect the welfare and disclosure behavior of risk-averse firms, but not risk-neutral firms.
The insights from the simple disclosure model suggest a number of policy implications. First, since firms would have an incentive to disclose information in the absence of SEC regulation, caution should be used that only those additional compliance costs attributable to SEC regulation are counted as social costs of regulation. To illustrate this point, let \( D \) represent the total value of resources, public and private, devoted to enforcing and complying with SEC disclosure requirements. Similarly, let \( F \) represent the value of resources that would be devoted to voluntary disclosure of information in the absence of any SEC regulation. The correct estimate of the compliance costs resulting from SEC regulation would be given by \( (D - F) \), and not \( D \), as is sometimes implied in criticisms of SEC disclosure rules. To argue that \( D \) represents the social cost associated with enforcement and compliance is to assume that no resources would be devoted to disclosure activities without SEC regulation. However, this would be generally inconsistent with cost minimization by firms.

Second, the disclosure model implies that individual firms would choose to spend different amounts on disclosure in response to differences in transactions costs, expected court costs, interest costs, and risk preferences. However, SEC regulations impose either uniform quantity standards or uniform procedural standards. As a result, it is unlikely that the extra burden of compliance with SEC regulations would be evenly distributed among individual firms. Hence, SEC regulation may unintentionally discriminate in favor of some investments, and against others.

Finally, the model suggests that uncertainty about the impact of regulations may itself alter the disclosure behavior of firms. However, the response of firms to uncertainty about financial disclosure rules need not be to increase disclosure for "defensive" reasons. It is equally plausible that such uncertainty may actually reduce the amount of information disclosed.

**NOTE**

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1. Included under the term "interest rate" is any dilution in the equity of existing shareholders due to sale of new stock, as well as interest paid on bonds.

2. This assumes (1) disclosure of financial information reduces the dispersion of security returns about the mean return; and (2) that investors are risk-averse. This assumption is consistent with other treatments of the economics of information. For example, Karl Brunner and Allan H. Metzler [3, p. 787] argue that "if risk aversion is prevalent, uncertainty about the properties or quality of an asset further lowers the average demand price of the asset."

3. This result would obtain if investors were risk-neutral.

4. See [4]. In the analysis, we assume that the covariance between expected court costs and expected interest costs is zero.

5. This theoretical result is consistent with empirical evidence presented by G. J. Benslov [5].
REFERENCES