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INVESTMENT OPPORTUNITIES, MANAGERIAL DISCRETION, AND THE SECURITY ISSUE DECISION

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ABSTRACT

With agency costs of managerial discretion, equity financing is advantageous for the shareholders of firms with valuable investment opportunities but not for the shareholders of other firms. Accordingly, we find that firms with good investment opportunities are more likely to issue equity than debt, have a smaller abnormal return in absolute value when the issue is announced, and experience substantial asset growth following the issue. Firms that issue equity even though they do not have good investment opportunities experience a larger abnormal return in absolute value when the issue is announced and invest more after the issue than comparable firms that issue debt.

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Section 1. Introduction.

Why is it that some firms issue equity and others debt when they raise new funds? The most popular story, the pecking-order story, is based on the view that information asymmetries between managers and new investors make equity issues more costly than debt issues and therefore imply a financing hierarchy.[1] Investors in low risk debt are affected only to a small extent if management attempts to sell them overvalued securities and therefore do not discount the securities sold much to protect themselves against this adverse selection risk. In contrast, this risk is large for investors who buy equity because the value of equity is much more sensitive to new information about the firm's true value. Firms therefore prefer issuing debt to issuing equity and firms that cannot avoid issuing equity experience a negative stock-price reaction when they do so. This popular story assumes that management maximizes the wealth of existing shareholders. It leaves no role for the agency costs of managerial discretion that arise because management's objectives differ from those of shareholders and for the agency costs of debt that result from the divergence between the investment policy that maximizes firm value and the one that maximizes shareholder wealth for a given level of leverage. In this paper, we take agency costs seriously and provide evidence that the popular story should be amended to take into account the existence of these costs.

In much of the recent agency literature, it is assumed that the agency costs of managerial discretion arise because management values growth even when growth does not benefit shareholders. With this view, management is reluctant to pay out the firm's cash flow, preferring to use it to finance new projects even when they have a negative net present value (NPV). Management dislikes debt financing because it restricts its ability to pursue growth. If management issues debt, it has to pay a coupon regularly, satisfy covenants, and take the risk of losing control of the corporation if it fails to follow the bond indenture. One way to state this is that debtholders monitor management.[2] In contrast, for some firms, an equity issue can

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[1] See Myers (1984). Information asymmetries between management and outside investors do not necessarily imply a financing hierarchy. Examples of models which emphasize informational asymmetries but do not obtain a pecking-order result are Brennan and Kraus (1987) and Noe (1988).

[2] See Harris and Raviv (1990), Hart and Moore (1990), Jensen (1986) and Stulz (1990).

be very much like an infusion of free cash flow, i.e., of funds that management can spend without being monitored. Therefore, if management wants to invest in a project of marginal value and does not have inside funds available, it is more likely to be able to do so if the firm has low leverage and it will prefer to finance it with an equity issue.

Though debt financing restricts management's discretion to pursue growth objectives, it fails to discriminate perfectly between management exploiting positive NPV growth opportunities and management growing firm size at the expense of firm value. This means that debt financing is advantageous for shareholders when a firm has poor investment opportunities, because it constrains management to pay out cash flow, but not when a firm has good investment opportunities, because it may prevent that firm from fully taking advantage of its opportunities. Since equity increases managerial discretion, management would rather finance with equity if internal funds are insufficient. However, the value of the firm when management finances with equity inappropriately is lower and therefore outside investors are more likely to intervene and remove or restrict management.[3] The greater threat of outside intervention resulting from equity financing limits the extent to which management finances projects with equity issues and explains why management which issues equity when it does not have good projects conveys bad news to shareholders, since it effectively says that it is not concerned about intervention from outside investors.

In this paper, we find evidence that firms issuing equity belong to two types based on firm characteristics that are observable at the time of the issue. There are firms with valuable investment opportunities that obtain financing through an equity issue because this makes them better able to grow profitably. There are also equity-issuing firms that have poor investment opportunities and have not exhausted their debt capacity. Without agency costs of managerial discretion, one would not expect the latter firms to issue equity. Equity issues by such firms are bad news for shareholders and we show that, controlling for other firm and issue characteristics, firms with poor investment opportunities have a more negative stock-price reaction to equity issues than firms with better investment opportunities. We provide

[3] Further, as argued in Stulz (1988), equity financing reduces the extent to which management and its allies control votes within the corporation and hence makes outside intervention easier.

other evidence supporting the view that some firms issue equity when they should not if their management was maximizing shareholder wealth. In particular, we show that firms with poor investment opportunities issuing equity invest more than similar firms issuing debt, that firms with low managerial ownership have worse stock-price reactions, and that the worst stock-price reactions occur for firms with poor investment opportunities issuing equity to finance capital expenditures.

We proceed as follows. In section 2, we provide a more detailed analysis of the agency argument and of its implications for the interpretation of the stock-price reaction to equity issues. In section 3, we introduce our sample and discuss the characteristics of firms issuing debt and equity. In section 4, we provide our evidence that investment opportunities play an important role in firms' issuing decisions. In section 5, we investigate how the stock-price reaction relates to firm characteristics. In section 6, we show that debt and equity issuing firms have distinct investment patterns following the new issue. Concluding remarks are presented in section 7.

Section 2. Agency costs and the security issue decision.

To understand the role of agency costs in the security issue decision, it is best to investigate a special case of Myers and Majluf (1984). In their model, management has better information than investors about assets in place and about the firm's investment opportunities. If management can issue securities at a higher price than they are truly worth given its information, it chooses to do so to maximize the wealth of the existing shareholders. Riskless debt cannot be sold for more than it is worth, but risky debt and equity can. When the firm announces issues of risky securities, therefore, outsiders adjust their valuation of the firm to reflect the new information. This adjustment is trivial if the securities issued are not very sensitive to firm value, but is significant in the case of equity. The valuation impact of equity issues increases their cost and induces firms to issue equity only as a way of raising funds when debt financing would be extremely costly because the firm has exhausted its ability to sell low risk debt. For these results to hold, though, it is crucial for outsiders to be less well-informed than management about both components of firm value.

Suppose now that outsiders know the value of assets in place in the Myers and Majluf model. Then, as recognized by Myers and Majluf, the model collapses: The firm always invests if it has a positive NPV project and, in their set-up, always issues equity to finance it. With agency costs, this special case remains interesting because management may choose to issue to invest in a negative NPV project to maintain firm growth. Consider an all-equity firm such that outsiders expect the firm to have no profitable investment opportunities. If the firm issues to invest, it is good news if management maximizes shareholder wealth because it means that a good project arrived to the firm unexpectedly. However, suppose that the probability of arrival of a good project is trivial and outsiders are uncertain about the extent to which management is willing to invest in negative NPV projects to grow the firm. If management finances investment through a debt issue, it has to be prepared to face monitoring by creditors who want to make sure coupons and principal will be paid and the bond indenture respected. Therefore, it will be difficult for management to finance a negative NPV project with debt unless the firm has so little leverage that monitoring by creditors is irrelevant. If the firm has enough leverage that creditors would monitor, management will choose to issue equity if it decides to undertake the bad project and management's decision is bad news for shareholders.

If the firm has good projects, high leverage will make it less likely that it can take full advantage of these projects. For instance, any adverse liquidity shock is more likely to force a highly levered firm to cut back on investment than an all-equity firm.[4] Consequently, firms with good projects want to limit their leverage and, if levered, are more likely to choose equity financing.[5] The agency costs that arise because a levered firm may be unable to pursue the investment policy that would maximize the value of an all-equity firm are called here the agency costs of debt.

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[4] See Bernanke, Gertler and Gilchrist (1993) for a review of the literature on the relation between liquidity shocks and investment. Lang, Ofek and Stulz (1994) show that investment is negatively related to leverage for low q firms.

[5] There is cross-sectional evidence which shows that firms with better investment opportunities have lower leverage. See, for instance, Titman and Wessels (1988) and Smith and Watts (1992). Note, however, that there is a mechanical negative relation between market leverage and Tobin's q if firms adjust leverage infrequently, since market leverage falls as the numerator of q increases.

In figure 1, we show the optimal amount of leverage for given investment opportunities if the agency costs of debt increase with leverage and if the agency costs of managerial discretion fall with leverage. We show how a shift in investment opportunities leads to a decrease in leverage: for each level of leverage, an increase in investment opportunities (1) increases the agency costs of debt because the firm has more to lose from financial distress and (2) decreases the agency costs of managerial discretion because the objectives of management and shareholders become more congruent when investment opportunities become better.

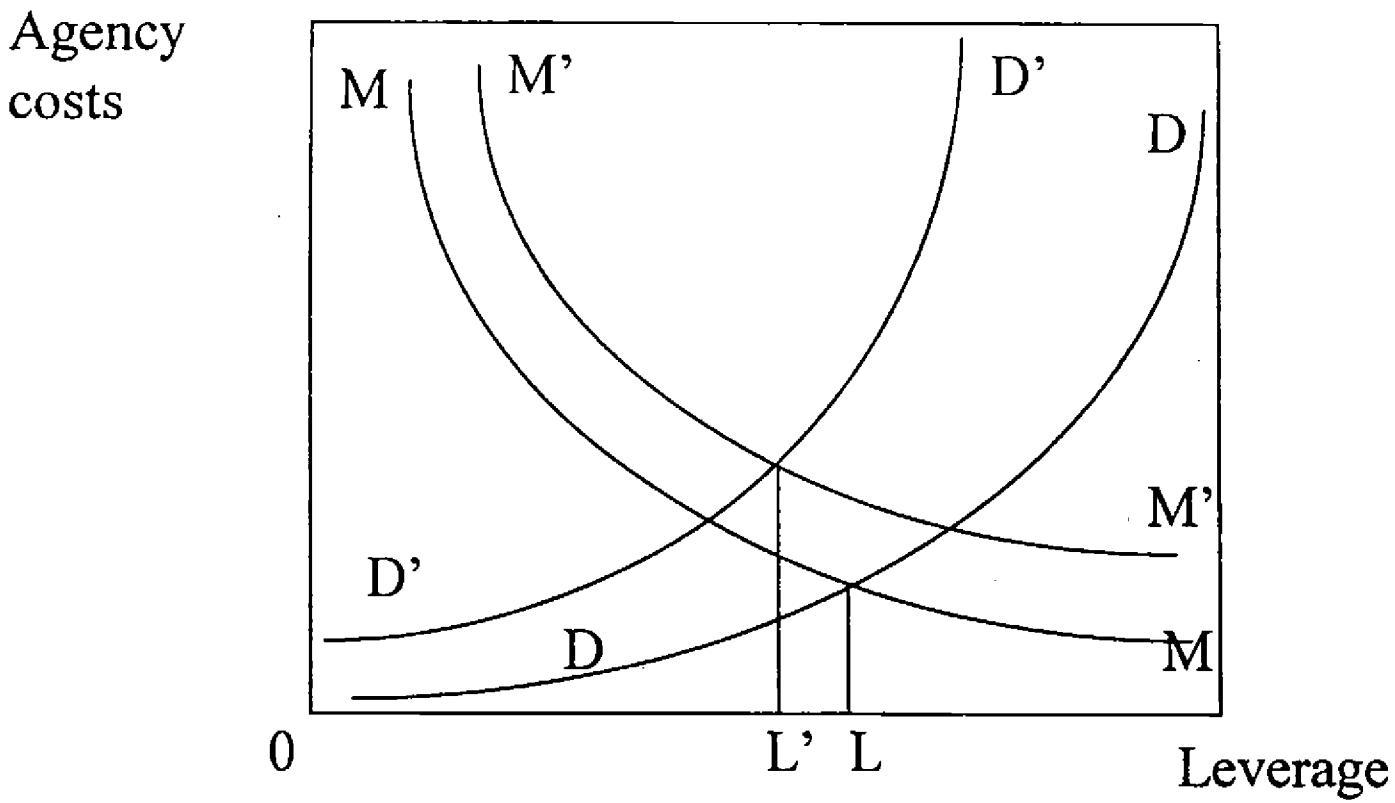
Since equity provides unrestricted funds, why is it that management ever chooses to issue debt? Issuing equity has both direct and indirect consequences for management. The direct effect is an increase in managerial discretion that management values. However, the indirect effect can be quite adverse for management depending on the firm's situation. If the firm does not have valuable investment opportunities, an equity issue means that the agency costs of managerial discretion increase, which provides greater incentives for outsiders to try to affect management's actions.[6] In particular, control activities, such as takeovers, more active monitoring by large shareholders, more monitoring by board members, and proxy fights, all become more advantageous for shareholders and outside investors. Issuing equity inappropriately can therefore increase the probability that management will lose control through corporate control actions unless management is well protected from such actions. Further, for a given amount invested in the firm by management and its allies, equity financing reduces the fraction of votes controlled by management and its allies (see Stulz (1988)). Consequently, equity financing both increases the benefits from outside intervention and makes outside intervention easier.

Taking into account the agency costs of managerial discretion makes the information content of new security issues more complicated. To understand this information content, it is best to focus on the relation

[6] See Zwiebel (1994) for a model where management issues debt because of a threat from the market for corporate control. Hoshi, Kashyap and Scharfstein (1993) also have a related model where the better firms choose financing with low monitoring, intermediate quality firms choose financing with high monitoring, and the worst firms chose financing with low monitoring. In their paper, financing with low monitoring is public debt and financing with high monitoring is bank financing. Here, financing with low monitoring is equity and financing with high monitoring is public debt.

Figure 1

Optimal leverage and agency costs of debt and managerial discretion



This figure shows optimal leverage as a function of the agency costs of debt (DD) and the agency costs of managerial discretion (MM) for a given investment opportunity set. An improvement in investment opportunities shifts the agency costs of debt curve to D'D' and the agency costs of managerial discretion curve to M'M', so that optimal leverage falls from L to L'.

between stock-price reactions and a firm's investment opportunities since the agency costs of managerial discretion are inversely related to the quality of the firm's investment opportunities. If there is no uncertainty about the value of a firm's investment opportunities, the issuing decision is straightforward in the pecking-order model. If a firm has sufficiently good investment opportunities, it issues equity if it cannot issue debt and the issue is not very informative about the value of assets in place if the investment opportunities are good enough. In contrast, if the firm has poor investment opportunities, it never issues equity. For firms with sufficiently good investment opportunities, one would expect the interests of management and shareholders to coincide so that there is no reason to depart from the pecking-order model. Firms that can finance with low risk debt do so; those that cannot either issue equity or do not invest if equity is too underpriced. For firms that have poor investment opportunities, however, there are good reasons to expect departures from the pecking-order model if management pursues objectives of its own. In particular, management may issue equity to keep the firm growing even though the firm has no good investment opportunities. For such firms, an equity issue reveals to outsiders that management has to raise funds to finance its plans, that it has decided to proceed with poor investments and, finally, that it views the risks to its position from doing all this to be worth taking. If the equity issues are equally unanticipated for both firms, the news for outsiders is worse for the firm with poor investment opportunities.

At this point, it is useful to summarize the view that agency costs matter for security issues by showing how these costs affect the firm's decision of which security to issue (the issue decision), how stock-price reactions are consistent with the existence of such costs (the information content), and how the firm's behavior after the issue is affected by these costs (the ex post actions):

1. **The issue decision.** Agency considerations imply that, keeping the threat of successful outside intervention constant, managers favor equity over debt, so that for firms where the agency costs of managerial discretion are important, one would expect management to issue equity even though shareholders would be better off with a debt issue or no issue at all.

2. **The information content.** An equity issue that is not in the interests of shareholders has a negative impact on shareholder wealth to the extent that it is not anticipated. This is because the funds are

likely to be invested poorly and because management is not as constrained by monitoring from outside investors as was expected.

3. The ex post actions. One would expect equity-issuing firms to grow more than comparable debt-issuing firms, whether their investment opportunities are valuable or not.

It is important to note that the implications of agency costs do not make the considerations emphasized in the pecking-order story irrelevant. Irrespective of the importance of the agency costs of managerial discretion, there will always be a degree of undervaluation of the existing shares such that management chooses not to issue. For firms where the agency costs of managerial discretion ere small enough, it may be that the pecking-order story applies exactly. The pecking-order story based on information asymmetries assumes that management maximizes shareholder wealth wherees the egency costs view assumes that management pursues objectives of its own. As emphasized by Dybvig and Zender (1991) and others, the pecking-order story makes an ad hoc assumption about management's objectives that would not be appropriate if shareholders could choose a compensation policy for management such that the ex ante value of the firm is maximized. This means that the pecking-order story does not have the intellectual high ground over the agency costs view: both approaches start from assumptions about management's objectives that are not derived from first principles. It therefore is an empirical question as to whether the pecking-order story is enough to explain the new issue decisions of firms or whether agency costs are determinants of this decision that cannot be ignored.

Section 3. The sample.

To obtain our sample of new bond issues and primary stock offerings, we used the Registered Offerings Statistics File from 1977 to 1984. For the stock offerings, we used the Corporate Financing Directory published by the Investment Dealer's Digest to exclude all offerings that involve secondary stock offerings and all shelf-offerings. We restrict the sample to firms whose stock returns are available on the CRSP tape for the whole calendar year before the announcement date. To obtain the announcement date, we consulted the Wall Street Journal Index. We use as our event date the first mention of a security issue

before the offering date and exclude security issues for which such announcements are not available. We exclude utilities and banking firms to conform to the earlier literature. We also eliminate firms that have confounding announcements, such as dividend or earnings announcements.

We compute abnormal returns using a method similar to the one used by Asquith and Mullins (1986). For each calendar year in the sample we rank securities in the CRSP daily file according to their beta estimated using the market model. We then divide the securities into ten portfolios based on estimated betas. For each firm issuing a security, we compute the abnormal return over a two-day period that includes the day of the Wall Street Journal announcement and the day preceding the announcement. The abnormal return is defined to be the return of the issuing firm minus the return of the portfolio to which the firm belongs.[7]

Table 1 provides a summary of the abnormal return data for the stock and bond issues. The results are similar to those reported in earlier papers, namely equity announcements have a significant negative stock-price reaction and debt announcements have an insignificant stock-price reaction.[8] Table 1 also reports various characteristics of firms issuing debt and equity. The median debt-issuing firm has a stock market capitalization about four times larger than the median equity-issuing firm and raises about four times more funds through the issue. The equity-issuing firms are riskier than the debt-issuing firms, in that they have both a higher beta and greater stock return volatility. The leverage measure that uses the market value of common stock in the denominator does not differ between firms issuing debt and those issuing stock, whereas the leverage measure that uses the book value of total assets in the denominator is higher for firms that issue equity. Therefore, book leverage is more supportive of the pecking-order story than a

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[7] All our results hold if we compute abnormal returns as market model residuals. We choose to focus on the abnormal returns using the Asquith and Mullins (1986) method because one of our explanatory variables in abnormal return regressions, the cumulative excess return for the 11 months before the issue, has a high correlation coefficient (0.48) with the market model alpha.

[8] For instance, Mikkelson and Partch (1986) find an average abnormal return for stock issues of -3.56% and straight debt of -0.23%. Eckbo (1986) finds a similar result for debt issues. Asquith and Mullins (1986) find an abnormal return for primary stock issues for industrial firms of -3.0% whereas Masulis and Korwar (1986) find a stock-price reaction of -3.25%. Barclay and Litzenberger (1988) find an abnormal return of -2.44% for the three hours surrounding the announcement on the Broad Tape.

Table 1

Abnormal returns and firm characteristics for 192 primary equity issues and 276 bond issues from 1977 to 1984.

The abnormal returns are computed for the day of the WSJ announcement and the previous day. Amount equals the gross proceeds of the issue in million dollars. QRAW is the ratio of the market value of the firm's equity plus the book value of its debt to total assets; LTD is the book value of the firm's long-term debt; cash flow is operating income before depreciation minus total taxes adjusted for changes in deferred taxes, minus gross interest expense and minus dividends paid on common and preferred stock, divided by total assets. All accounting data are for the end of the fiscal year before the issue. The leading indicators are the six-month leading indicators. The volatility of the firm's stock return and the firm's beta are obtained using the CRSP daily data file for the period of (-240,-40) days before the issue. Difference is the mean of a variable for stock issues minus the mean of the same variable for bond issues; the p-value is for the null hypothesis that the difference is zero assuming unequal variances for the two subsamples. The sample includes 192 primary equity issues and 276 bond issues from 1977 to 1984. * denotes significance at the 0.01 level.

	Stock issues		Bond Issues		Difference
	Mean	Median	Mean	Median	
Abnormal return	-2.70%	-2.63%	-0.09%	-0.15%	-2.62*
Amount	47.98	28.25	140.00	100.00	-92.01*
Market value of equity (MVCS)	682.74	186.02	2941.70	883.62	-2258.97*
Proceeds/MVCS	0.15	0.13	0.24	0.13	-0.09*
Proceeds/LTD	0.99	0.37	0.76	0.32	0.24
Dividend yield	2.06	1.43	3.96	3.69	-1.90*
LTD/MVCS	0.65	0.42	0.72	0.41	-0.07
LTD/TA	0.29	0.28	0.23	0.21	0.06*
Cash flow	0.09	0.09	0.10	0.09	-0.01
Cash+Liquid assets/TA	0.06	0.04	0.06	0.04	0.00
QRAW	1.48	1.25	1.13	1.02	0.35*
Leading indicators	0.03	0.03	0.00	0.00	0.03*
11-months prior cumulative excess return	13.95 %	15.07 %	-1.63%	-3.26%	15.58*
Beta	1.39	1.35	1.15	1.06	0.24*
Volatility	7.27%	6.28%	4.67%	3.20%	2.60*

market measure of leverage.

The adverse selection model predicts that firms are more likely to issue equity when the stock price experiences positive abnormal returns before the issue. Such a result is also consistent with the managerial discretion view. Firms that experienced positive abnormal returns are more likely to have good investment opportunities (since they may just have obtained them) and are more likely to have good managerial performance (since it may just have improved). Measuring the cumulative excess return of the issuing firm's common stock like Asquith and Mullins (1986), we find that firms that issue common stock have experienced significant positive abnormal returns for the 11 months before the stock issue, whereas firms that issue bonds experience insignificant negative cumulative abnormal returns on average.[9] The result for debt is inconsistent with some versions of the adverse selection model. For instance, Lucas and McDonald (1990) conjecture that firms issuing risky debt should have positive cumulative abnormal returns on average if debt is viewed as equity with less risk. It is supportive, however, of the managerial discretion view that suggests that if the stock-price performance is poor, showing that management's performance has become weaker, equity will be expensive compared with funds that impose restrictions on management's actions. The firms issuing equity and those issuing debt have similar cash flows before the issue. We investigated also, but do not report here, earnings to total assets, EBIT to total assets and net operating income to total assets. In all cases, the mean for equity issuing firms is larger, but the difference in means is significant only for net operating income. The only case where the difference is significant is for net operating income. Finally, the firms issuing debt have a substantially higher dividend yield than the firms issuing equity.

Using the ratio of the market value of equity plus debt to the book value of assets as a proxy for Tobin's q, firms issuing equity have better investment opportunities than firms issuing debt at the time of the announcement. For a subset of the firms in the sample, replacement costs were available using FASB files; the results on this subset are similar to the ones reproduced here. However, the results reported in this paper use simply the book value of the firm's assets as a proxy for replacement costs in an effort to

[9] Mikkelson and Partch (1986) obtain a similar result on a smaller sample of bond offerings.

use as large a sample as possible in our regressions and to avoid a selection bias against small firms resulting from the lesser availability of data for these firms. In addition, firms issuing equity (but not those issuing debt) are more likely to do so when the leading indicators suggest good economic conditions and therefore good investment opportunities.[10] Finally, the cumulative abnormal returns before the issue discussed in the previous paragraph are consistent with an improvement in the investment opportunities of firms issuing equity before the issue.

Section 4. An empirical analysis of the security issue choice.

In this section, we investigate an empirical model of security issue choice for our sample firms. This model uses variables typically used in the literature to predict the security issue choice plus a proxy for investment opportunities. For given firm characteristics, the agency costs of debt are higher for firms with better investment opportunities, so that one expects the probability that a firm will issue equity absent agency costs of managerial discretion to increase with investment opportunities. Firms with high agency costs of managerial discretion will issue equity with poor investment opportunities, but such firms are expected to be a subset of the sample so that in a logistic regression model they will be firms that are not expected to issue equity and hence issue against type. We then show how the firms that issue equity as predicted differ from those which issue equity when they are predicted to issue debt.

The literature on the determinants of firms' capital structures is extensive, but some key ideas are pervasive in the existing empirical work. In this paper, we focus on a small number of determinants of leverage that are generally considered by empiricists and reflect these key ideas:[11]

1. Taxation. Because of the deductibility of interest payments, a number of papers argue that the gain from debt financing relatively to equity financing increases with the firm's tax rate. The literature has shown that the firm's tax status affects the issue decision (see MacKie-Mason (1990)). As a proxy for these

[10] Choe, Masulis and Nanda (1989) observe the same result.

[11] See Masulis (1988) and Harris and Raviv (1991) for references to empirical studies that use these variables as well as for references to theoretical papers that motivate their use.

benefits, we use tax payments divided by total assets for the year preceding the issue.

2. Costs of financial distress. As debt and firm risk increase, financial distress and bankruptcy become more likely. As a risk proxy, we use stock return volatility measured over 200 days preceding the issue; profitability is measured as cash flow divided by total assets; and leverage is measured as long-term debt divided by total assets. We used alternate proxies for risk (beta instead of volatility), for profitability (earnings measures) and for leverage (market value of equity instead of total assets). Our results are insensitive to the choice of proxies for bankruptcy risks and costs.

3. Asymmetric information. Following Myers and Majluf (1984), it is well-established that issuing equity is more expensive when there is asymmetric information between firm insiders and outsiders. Therefore, one would expect firms where this information asymmetry is large to issue debt if they can or abstain from raising funds altogether. As emphasized by Korajczyk, Lucas and McDonald (1991), one would also expect firms to time equity issues for periods where the information asymmetry is smaller. Further, Lucas and McDonald (1990) show that equity issues are more likely after increases in the firm's stock price since then the firm is less likely to be undervalued. We use the cumulative excess returns measured over 200 days before the issue, a measure of leading indicators of economic activity, and a measure of slack, namely cash and liquid assets normalized by total assets.

In some of our regressions, we also control for the amount raised through the security issue since net proceeds have been found to affect the stock-price reaction in some studies. Presumably, the amount raised by the firm and the type of security issued are jointly endogenous variables. This suggests that logistic regressions that do not include the amount raised as an explanatory variable have the interpretation of reduced form equations, whereas equations that include the amount raised suffer from a simultaneous equation bias. A more important reason to consider regressions without the amount raised as an explanatory variable is that such regressions can be used by investors to forecast whether a firm will issue equity or debt, whereas regressions that incorporate the size of the issue cannot (since they incorporate information not available before announcement of the type of security issued).

Regression 1 shown in table 2, shows that investment opportunities play a substantial role in the

Table 2

Determinants of firm type.

Logistic regression models where the dependent variable takes value one if the firm issues equity and zero otherwise. The sample includes 276 debt issues and 192 equity issues from 1977 to 1984. QRAW is the ratio of the market value of the firm's equity plus the book value of its debt divided by the book value of total assets. Cash flow is operating income before depreciation minus total taxes adjusted for changes in deferred taxes, minus gross interest expense and minus dividends paid on common and preferred stock, divided by the book value of assets (TA). All book values are obtained from Compustat for the year prior to the issue announcement. The leading indicators are the six-month leading indicators. The volatility of the stock return is computed for the period (-240,-40) before the issue. The past cumulative excess return is for the 11 months before the issue. The pseudo R^2 equals 1 - (log-likelihood at convergence/log-likelihood at zero). (p-values for the chi-square statistic are in parentheses).

Regression	(1)	(2)	(3)
Intercept	-3.27 (0.00)	-2.50 (0.00)	3.16 (0.00)
Tax payments/TA	-11.99 (0.00)	-9.09 (0.03)	-20.37 (0.00)
Long-term debt/TA	0.81 (0.36)	1.83 (0.06)	-1.02 (0.32)
QRAW	2.13 (0.00)	1.68 (0.00)	2.20 (0.00)
Cash flow	0.11 (0.96)	-2.07 (0.47)	0.96 (0.75)
Stock return volatility	5.40 (0.08)	13.24 (0.00)	-5.86 (0.12)
Leading indicators	12.42 (0.00)	13.64 (0.00)	13.72 (0.00)
Past cumulative excess return	2.33 (0.00)	2.74 (0.00)	1.53 (0.01)
Cash and liquid assets/TA	-2.65 (0.18)	-1.26 (0.60)	-1.30 (0.57)
Gross proceeds/Market value of common stock		-5.04 (0.00)	
Log of (Amount/Market value of common stock)			-1.32 (0.00)
Pseudo-R^2	0.26	0.33	0.41
% of correct classifications	75.4%	78.8%	82.1%

new issue decision. With our logistic model, an equity issue takes value one and a debt issue takes value zero. Therefore, a positive coefficient indicates that a firm is more likely to issue equity. The Tobin's q proxy we use has a positive coefficient that is highly significant. Further, Tobin's q has substantial explanatory power in that, if it is omitted, the pseudo R-square falls by almost 1/3. Other variables indicative of good investment opportunities are highly significant also. Both past cumulative excess returns and leading indicators have positive coefficients with p-values of less than 0.01. Cash flow, however, is not significant. Some variables emphasized by other capital structure theories also play an important role. Tax-payments divided by total assets has the expected negative coefficient and is highly significant. Leverage, however, is insignificant. This result holds when we use alternate leverage measures and is not surprising considering the earlier literature. For instance, Baxter and Cragg (1970) do not find a significant leverage coefficient either.[12] Since leverage and volatility are correlated, we omit volatility in a regression not reproduced here; doing so does not make the coefficient on leverage significant. Finally, we would expect slack to have a positive coefficient; instead, it has a negative insignificant coefficient.

In regressions two and three, we add measures of the size of the security issue normalized by the market value of the firm's equity as an explanatory variable. These measures of the relative size of the security issue have no impact on the effect of investment opportunities on the new issue decision. Not surprisingly, given the statistics of table 1, the relative size of the issue is negatively related to the probability of issuing equity. Two firm characteristics seem to have effects that depend on the relative size variable: leverage that becomes significant for one relative size measure and volatility which ceases to be significant. The size measures have a substantial impact on the explanatory power of the regressions. In regressions not reproduced here, we added total assets and the market value of equity as separate explanatory variables. The addition of these variables does not affect the conclusions drawn from table 2, but their coefficients are significantly negative.

Although our regressions are parsimonious compared to those of earlier papers, they classify

[12] Marsh (1982) does not use leverage but deviations from target leverage in his regressions. He finds that firms that have high leverage relative to a target are more likely to issue equity.

correctly a fraction of the decisions that is equal to or greater than the fraction correctly classified in these papers. For instance, Marsh (1981) classifies correctly 75% of the decisions, whereas our regressions in table 2 classify correctly from 75% to 82% of the decisions.

With this model, we have firms that issue equity even though they resemble firms that issue debt. Table 3 compares these firms to the firms that issue debt and the firms that issue equity and are predicted to do so. To classify firms, we use equation one of table 2. For that equation, the threshold that minimizes the sum of the probability of a type I and of the probability of a type II error is 0.42. In all their characteristics except the ratio of proceeds to market value of equity, the firms that issue equity when predicted to issue debt look indistinguishable from debt-issuing firms. In contrast, these equity-issuing firms are significantly different from firms issuing equity predicted to do so for many characteristics. The firms issuing equity against type pay more taxes relative to assets than other equity-issuing firms, showing that the tax deductibility of interest would be quite valuable for them. These firms have less leverage than firms predicted to issue equity, although not significantly so. They issue at times when leading indicators are neutral. Their past abnormal returns are insignificantly different from zero. Their volatility is closer to the volatility of firms issuing debt. Finally, these firms have much poorer investment opportunities than firms predicted to issue equity. Their mean and median q proxy is only trivially different from the mean and median q proxy of firms issuing debt. There are no significant cash flow differences among the three sets of firms. Given the characteristics of these firms, it is difficult to argue that they would benefit from the flexibility resulting from issuing equity instead of debt.

Since managerial ownership is often viewed as an indicator of agency costs, we collected ownership data from Value Line and found it available for 100 equity-issuing firms. In the last row of table 3, we compare managerial ownership of the two groups of equity-issuing firms. We find that firms that issue equity against type have lower ownership, but not significantly so.

Why do firms issue equity against type? Within the context of the pecking-order story, several explanations seem plausible. First, one might argue that firms will issue equity at times when the cost of

Table 3

Average firm characteristics for debt-issuing firms and subsamples of equity-issuing firms. The abnormal returns are computed for the day of the WSJ announcement and the previous day. Proceeds equals the gross proceeds of the issue in millions of dollars. QRAW is the ratio of the market value of the firm's equity plus the book value of its debt to total assets; LTD is the book value of the firm's long-term debt; cash flow is operating income before depreciation minus total taxes adjusted for changes in deferred taxes, minus gross interest expense and minus dividends paid on common and preferred stock, divided by total assets. All accounting data are for the end of the fiscal year before the issue. The leading indicators are the six-month leading indicators. The volatility of the firm's stock return and the firm's beta are obtained using the CRSP daily data file for the period (-240,-40) days before the issue. The sample includes 192 primary equity issues and 276 bond issues from 1977 to 1984.

	143 firms issuing equity when predicted to do so (A)	276 firms issuing debt (B)	49 firms issuing equity when not predicted to do so (C)	(A) - (C) (t-stat)	(B) - (C) (t-stat)
Proceeds/Market value of equity	0.16	0.25	0.15	0.01 (0.76)	0.10 (4.25)
LTD/TA	0.30	0.23	0.27	0.03 (1.36)	-0.04 (-1.61)
Cash flow	0.09	0.10	0.09	0.00 (-0.32)	0.00 (0.45)
Taxes/Total assets	0.03	0.04	0.04	-0.02 (-3.26)	0.00 (-0.17)
Cash+Liquid assets/Total assets	0.06	0.06	0.06	0.00 (-0.07)	0.01 (0.61)
QRAW	1.61	1.13	1.13	0.47 (7.08)	0.00 (-0.05)
Leading indicators	0.04	0.00	0.00	0.04 (6.49)	0.00 (0.40)
11-months prior cumulative excess return	17.93%	-1.63%	2.34%	15.59% (4.66)	-3.97% (-1.32)
Volatility	8.05%	4.67%	4.98%	3.08% (5.68)	-0.30% (-0.64%)
Managerial ownership	13.05%		11.87%	1.18% (0.40)	

issuing equity is low because information asymmetry is low.[13] In this case, one would expect the information content of equity issues to be low also. This is because it must be public knowledge that information asymmetry is low since otherwise firms will face high costs of issuing equity anyway. This would suggest that firms that issue equity against type would have a small stock-price reaction. Second, firms which issue without a runup convey information that they do not expect good news to be revealed. For firms that do not have the option to issue debt, it may make sense to issue to have funds available to invest. However, for firms that can issue debt, it is harder to make the case that there is much to be gained from issuing equity when information asymmetry is high and when investment opportunities are poor. It is perfectly plausible, though, that firms where the agency costs of managerial discretion are high will sometimes issue in such circumstances since management's objectives differ from those of shareholders.

Section 5. The stock-price reactions to security issues and investment opportunities.

Among firms issuing equity, there are firms with good investment opportunities and limited debt capacity. One would expect these firms to issue equity if they raise funds and one would expect this action to be in the interest of shareholders. Other firms have poor investment opportunities and look like they could issue debt. The shareholders of these firms would be better off to have the firm either issue debt or not raise funds. Since firms form a continuum across types, one would expect the firms where issuing equity is the least likely to benefit shareholders to have the largest fall in the stock price at the announcement of an equity issue if all issues are equally unanticipated.[14] Table 4 provides estimates of the correlation between a firm's type, defined by the probability that a firm will issue equity based on the logistic model of the previous sections, and the firm's abnormal return for each type of issues. The correlation estimates for the equity issues are positive and significant; the estimates for debt issues are negative but insignificant.

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[13] Viswanathan (1993) models such deviations from the pecking-order model.

[14] Bayless and Chaplinsky (1991) show that abnormal returns are lower for firms that have a greater probability of issuing equity.

Table 4

Correlations between firms' types and abnormal returns.

Firm type is obtained from regression (1) of table 2. Abnormal returns are cumulative abnormal returns for days (-1,0), where day zero is the day of the **Wall Street Journal** announcement.

Correlation measures	Correlation between firm type and ARs for bond issues (p-values)	Correlation between firm type and ARs for equity issues (p-values)
Correlation coefficient between firm type and abnormal returns	-0.03 (0.65)	0.17 (0.02)
Spearman rank-sum correlation between firm type and abnormal returns	-0.07 (0.25)	0.17 (0.02)

We now turn to the relation between abnormal returns and a firm's investment opportunities. With the managerial discretion view, equity issues are not in the interest of shareholders for firms with poor investment opportunities. The Pearson correlation between the stock-price reaction to equity issues and our q measure is 0.22 (p-value of less than 0.01) and the Spearman rank-sum correlation is 0.18 (p-value of 0.01). When we divide the sample into q deciles, we find that the highest q decile has a mean abnormal return of -0.22% whereas the lowest q decile has a mean abnormal return of -4.60%. For debt issues, the correlation measures are respectively 0.11 (p-value of 0.07) and 0.10 (p-value of 0.10). Therefore, there is a robust relation between stock-price reactions to equity issues and q, but not for debt issues. In a regression of abnormal returns on a constant and q, the coefficient on q is 0.97 with a t-statistic of 2.63 for equity issues and it is 0.51 with a t-statistic of 1.39 for the debt issues. These results are stronger than the results from the earlier literature. Barclay and Litzenberger (1988) and Pilotte (1992) find insignificant results using conventional levels of significance, but they have fewer issues than we do. Denis (1994) has a large sample yet finds a weaker relation than here; this may be due to the fact that our sample stops in 1984, so that it is not affected by the subsequent change in reporting practices of the **Wall Street Journal**.[15] It may be, though, that the relation between q and abnormal returns will be hard to estimate precisely as long as we do not have good models of the extent to which an equity issue is anticipated. To see this, suppose that the market knows that some low q firms will issue equity to enable management to pursue its goals and that some high q firms will issue equity to finance obviously worthwhile projects. For these two sets of firms, the average abnormal return will be close to zero. The high q firms expected to issue have no impact on the measured relation between q and investment opportunities since an unexpected equity issue for these firms would have a small abnormal return anyway, but the low q firms expected to issue lower the regression coefficient between q and the abnormal returns since an unexpected issue from these firms would have a large abnormal return. The number of low q firms issuing equity will depend on the sample

[15] Before 1985, the WSJ reports on equity issues as a regular news item. After 1985, most the information on new issues is reported in the "new securities issues column" which contains mostly offering information.

Table 5

Cross-sectional regressions of equity issue abnormal returns on firm characteristics. The regression models are estimated using weighted least squares with the weight for each issue being the inverse of the variance of the market model residual for the firm issuing the security. The sample includes 189 equity issues from 1977 to 1984. The proceeds of an issue correspond to the gross proceeds in millions of dollars. Regression (6) uses the log of relative proceeds. QRAW is the ratio of the market value of the firm's equity plus the book value of its debt divided by the book value of total assets. Cash flow is operating income before depreciation minus total taxes adjusted for changes in deferred taxes, minus gross interest expense and minus dividends paid on common and preferred stock. All book values are obtained from Compustat for the year before the announcement. The leading indicators are the six-months leading indicators. The volatility of the stock return is computad for the period (-240,-40) before the issue. T-statistics are given in parentheses.

Regression	4	5	6
Intercept	-3.72 (-3.64)	-4.061 (-3.77)	-3.94 (-2.83)
QRAW	0.97 (2.11)	0.95 (2.08)	0.997 (2.11)
Cash/TA	-6.78 (-1.63)	-7.82 (-1.82)	-6.73 (-1.61)
Tax Payments/TA	-6.09 (-0.73)	-5.41 (-0.65)	-5.68 (-0.67)
Long-term debt/TA	-1.14 (-0.61)	-1.09 (-0.59)	-1.13 (-0.60)
Cash flow	5.09 (0.89)	6.17 (1.06)	4.87 (0.84)
Stock return volatility	-3.49 (-0.49)	-4.76 (-0.66)	-2.74 (-0.35)
Leading indicators	1.64 (0.32)	2.20 (0.42)	1.48 (0.28)
Past cumulative excess return	1.68 (1.53)	1.59 (1.44)	1.71 (1.54)
Proceeds/Market value of common stock		2.47 (1.00)	
Log of proceeds			0.05 (0.24)
Adjusted R-square	0.04	0.04	0.03

considered and therefore the anticipation effect may be stronger in some samples than others. This means, however, that the relation between q and the issuing decision is easier to estimate convincingly in empirical models of the firm's decision to issue equity as opposed to debt rather than in empirical models which attempt to explain abnormal returns. Another issue that may make it difficult to estimate the relation between abnormal returns and q that affects some earlier papers is the use of the market model. A high q firm is more likely to have done well recently and hence to have a positive alpha in market model regressions: this increases its predicted return and lowers the regression coefficient of q in cross-sectional regressions.

q is positively correlated with a variable emphasized in models that focus on adverse selection, namely the runup in the firm's stock-price before the issue. q is also likely to be correlated with other variables emphasized in the literature. Therefore, it is important to investigate whether the relation between abnormal returns and q can be attributed to its role as a proxy for other variables that may have nothing to do with managerial discretion. We investigate this in table 5 for stock issues. It is immediately apparent that the coefficient on q is not affected by the inclusion of the additional variables emphasized by the earlier literature. In these regressions, though, the stock runup is not significant and the leading indicators are not significant either. Therefore, in such regressions, it seems that q dominates the variables emphasized in papers which focus on adverse selection. When we regress the abnormal return on q and past cumulative abnormal returns alone, past cumulative abnormal returns has a coefficient of 1.62 with a t-statistic of 1.52, in contrast to q that has a coefficient of 0.93 with a t-statistic of 2.52. The inclusion of a q proxy results in a substantial weakening of the variables emphasized in papers which focus on adverse selection. Some might argue that q is a better estimate of overvaluation than the stock runup and that it is related to the abnormal return for that reason. If that were the case, though, one would expect equity-issuing firms to invest less than debt-issuing firms with comparable q's, since presumably the equity-issuing firms are the overvalued firms where q overstates investment opportunities. We investigate this in the next section.

We estimated similar regressions for debt issues, but do not report them here. The only variable that is ever significant in these regressions is the amount of the issue divided by the value of common

Table 6

Abnormal returns of equity issues by purpose of issue.

The purpose of the issue is obtained from the **Wall Street Journal** announcement. We do not reproduce results for cells smaller than 10 or for cases where the purpose could not be determined unambiguously.

Purpose	Number of issues	Abnormal return	t-statistic
To repay bank debt	26	-2.93	-4.54
Capital expenditures	40	-3.04	-5.16
To repay long-term debt	20	-4.15	-6.16
To repay short-term debt	15	-1.16	-1.15
Working capital	51	-2.34	-4.43

stock, which has a coefficient of -1.57 and a t-statistic of -1.97. The adjusted R-square for these regressions is never greater than zero.

The results provided are consistent with the role of agency costs in the new issue decision. An equity issue allows firms with poor investment opportunities to invest in poor projects and/or to reduce the disciplinary role of debt. Table 6 shows the abnormal returns for equity issues divided according to the purpose of the issue. The stock-price reactions that are above the average for the sample are for firms that plan to use the proceeds for capital expenditures, firms that plan to replace long-term debt, and firms that plan to replace bank debt. We investigated whether there is a relation between firm type and the abnormal return for a given issuing purpose. The problem with this investigation is that the cell sizes become small. Nevertheless, it is interesting that the nine firms that are not of the equity-issuing type which plan to use the proceeds for capital expenditures have an average abnormal return of -4.43% with a t-statistic of -5.52, whereas the 29 firms of the equity-issuing type planning to use the proceeds for capital expenditures have an average abnormal return of -2.52% with a t-statistic of -3.41. This evidence should be treated with caution given the cell sizes, but it nevertheless provides support to the argument that outsiders view the information that a firm invests the proceeds when it is not of the equity issuing-type negatively.

It is often argued that agency costs of managerial discretion are less for firms with high managerial ownership because management bears more of the monetary consequences from pursuing its own objectives. We have ownership data available from Value Line for 100 equity issuing firms. For this smaller sample, we find that when we split the sample into high and low ownership, the low ownership sample has a mean abnormal return of -3.71% and the high ownership sample has a mean abnormal return of -2.56%. The difference between the two groups is 1.16% with a t-statistic of 1.72. One might worry that this difference is size-related since ownership is inversely related to size; when we split the sample according to firm size, however, there is no difference in abnormal returns.

Section 6. Ex post characteristics of firms issuing debt and equity.

So far, we have shown that the typical equity-issuing firm has good investment opportunities compared with the typical debt-issuing firm and that the market reaction to an equity issue is negatively related to the issuing firm's investment opportunities. It could be, though, that firms issuing equity with poor investment opportunities do so because they believe that they are worth less than the market's valuation since they are low q firms. If this were the case, one would expect these firms to invest less than the other equity-issuing firms. In contrast, agency considerations suggest that these firms issue equity to invest even though they have poor investment opportunities.

In this section, we investigate whether the post-issue characteristics of firms issuing equity against type resemble those of debt-issuing firms of similar type or those of equity-issuing firms of different type. We provide this information for all firms issuing a type of security as well for subsamples of firms that are expected to issue the security they issue and those that are not. To distinguish between firms that are expected to issue a security and those that are not, we use equation (1) from table 2 in the same way we did to construct table 3. For each variable, we compute the change in the variable from the year before the issue to the year after the issue, expressed as a percentage of the variable for the year before the issue. We reproduce the change in cash flow and leverage even though the type of security issued affects these variables directly, reducing cash flow and increasing leverage for debt-issuing firms compared with equity issuing firms as one would expect.

The results of table 7 are striking: firms comparable to debt-issuing firms that issue equity invest more than the comparable debt-issuing firms: their plant, property and equipment (PP&E), total assets and capital expenditures all grow at a significantly higher rate. The differences in growth are economically large: a firm issuing equity against type that has the same PP&E than a firm expected to issue debt has 20% more PP&E at the end of the year following the security issue. Since both categories of firms have similar q proxies, these results are fully consistent with the view that firms which issue equity against the pecking-order do so to pursue a more aggressive investment policy that is not in the interest of their shareholders. Compared to the firms expected to issue equity, the firms that issue equity when expected to issue debt

Table 7

Percentage changes in firm characteristics according to firm type and security type. The sample includes 283 debt issues and 189 equity issues from 1977 to 1984. QRAW is the ratio of the market value of the firm's equity plus the book value of its debt divided by the book value of total assets. Cash flow is operating income before depreciation minus total taxes adjusted for changes in deferred taxes, minus gross interest expense and minus dividends paid on common and preferred stock. For each characteristic, we use Compustat to compute the percentage increase from the year before the issue to the year after the issue.

	Bond issues (Number of firms)	Equity issues (Number of firms)	Difference (t-statistic)
PP&E	41.83% (267)	68.19% (178)	-26.36% (-4.42)
PP&E, low type	38.48% (210)	58.98% (46)	-20.50% (-1.77)
PP&E, high type	54.16% (57)	71.39% (132)	-17.24 (-1.73)
Total assets	37.83% (269)	65.60% (180)	-27.77% (-5.79)
Total assets, low type	32.70% (211)	45.82% (46)	-13.13% (-2.11)
Total assets, high type	56.50% (58)	72.39 (134)	-15.88% (-1.70)
Net capital expenditures	51.57% (210)	107.50% (177)	-55.93% (-3.57)
Net capital expenditures, low type	43.12% (206)	93.92% (46)	-50.80% (-1.70)
Net capital expenditures, high type	82.67% (56)	112.27% (131)	-29.60% (-1.20)
Long-term debt/TA	36.55% (268)	-8.18% (181)	44.73% (-4.52)
Long-term debt/TA, low type firms	40.67% (210)	-5.45% (46)	46.13% (3.20)
Long-term debt/TA, high type firms	21.65% (58)	-9.11% (135)	30.76% (2.33)
Cash flow	-17.50% (265)	2.08% (178)	-19.58% (-1.90)
Cash flow, low type firms	-21.85% (209)	0.96% (45)	-22.81% (-2.71)
Cash flow, high type firms	-1.25% (45)	2.46% (133)	-3.71% (-0.19)

EBIT	15.45% (266)	53.15% (181)	-37.70% (-2.28)
EBIT, low type	6.84% (210)	10.60% (46)	-3.76% (-0.11)
EBIT, high type	47.72% (56)	67.65% (135)	-19.92% (-1.01%)
Change in dividend yield	0.18 (269)	-0.10 (183)	0.28 (1.78)
Change in dividend yield, low type	-0.02 (209)	-0.21 (48)	0.19 (0.77)
Change in dividend yield, high type	0.84 (60)	-0.07 (135)	0.91 (3.98)

have total assets which grow at a significantly lower rate, but their PP&E and capital expenditures have insignificantly different growth rates. EBIT increases substantially for the firms expected to issue equity but not for the firms that issue equity when expected to issue debt. Finally, we report some evidence on dividend policy. Firms issuing equity have a drop in dividend yield in contrast to firms issuing debt. Though firms issuing equity against type form the subsample with the largest drop in dividend yield, the difference between the change in dividend yield for that subsample and for the subsample of firms issuing debt according to type is not significant.

Section 7. Conclusions.

In this paper, we show that the typical firm issuing equity has valuable investment opportunities and experiences considerable asset growth from the year before the equity issue to the end of the year following the issue. For firms with the most valuable investment opportunities, equity issues have no significant effect on the value of their shares. Not all firms fit this model. We find firms that have poor growth opportunities that issue equity even though the pecking-order story suggests that they should issue debt to raise funds. These firms, otherwise similar to debt-issuing firms, experience substantially higher asset growth than debt-issuing firms. However, they register an extremely significant drop in their share

price when they issue. Though it is true that these firms reveal that they are valued too highly when they issue, a consistent explanation of this excessive valuation is that the market did not expect these firms to issue equity to undertake major investments given their investment opportunities and does not expect these investments to increase shareholder wealth. The behavior of the firms issuing equity against type in this paper seems inconsistent with the pecking-order model or asymmetric information models which assume that managers maximize shareholder wealth. If the firms that issue against type have valuable investment opportunities that are not recognized by the financial markets, they should not be issuing equity since their equity would be underpriced and since they could issue debt because similar firms issue debt.

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