Being a Public Company:
Public Debt or Public Equity?

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Abstract

We examine the choice of security with which to be public. We find that many firms are public only with debt and that they are significantly different from firms that are public with equity. We also find that firms often move from being public with one security to being public with another security as their characteristics change. Public Equity firms have more volatile sales and return on assets, higher R&D intensity, lower fraction PP&E, and are more profitable than Public Debt firms. Firms with significant investments and R&D intensity are more likely to be public with equity than with debt. Firms that transition from being private to being public have abundant cash and pay significant dividends both before and after the transition. We interpret our results as indicating that agency and information collection motives dominate information asymmetry considerations in the private-public decision.

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Introduction

Being public has long been identified with issuing *equity* to public investors. Many features of becoming a public firm by issuing equity, however, are relevant for firms that choose to become public by issuing debt. These features include reporting requirements, observable security prices, improved access to financial markets, dealing with many security holders, etc. Indeed, as Table 1 below shows, about a quarter of the firms which are public with one security – either debt or equity – issue only debt to public investors, presumably having considered both alternatives. Moreover, as Table 3 shows, firm change their status as a public company – with public debt or with public equity – as their characteristics change. Hence, in this paper, we expand the private-public decision to include the choice of security with which to be public. We compare the characteristics of both types of public firms and examine the determinants of this choice. In this analysis, we utilize the fact that both types of public firms are required to file standardized financial reports, which are scrutinized by the SEC and are available on the COMPUSTAT database. In some instances, this comparison also sheds light on the decision to go public in the first place.

The theoretical literature on the private-public decision does not explicitly analyze the optimal security that firms should use to become public. Rather, the analysis is carried in two separate routes – one for equity and one for debt. Yet, these separate analyses suggest similar determinants of the being public decision: information

asymmetry, monitoring, agency costs, transaction costs, etc.[1] The similarity of the separate analyses of equity and debt issuance probably stems from the similarity of the salient features of public issuance of a security, whether equity or debt. To wit, public issuance of a security entails a larger number of security holders than a private placement, improves access to financial markets and liquidity, makes security values readily observable, and necessitates making private information available to the public. Therefore, when firms decide to become public, they face similar tradeoffs whether they decide to issue equity or debt. Yet, the tradeoffs are not identical due to the different characteristics of debt and equity and their markets. Indeed, the difference between publicly traded equity and debt is highlighted in the analysis in Fulghieri and Lukin (2001) who highlight the differential information generated by the respective security holders.

Similar to the separation of the theoretical analysis of public issuance of debt and equity, most of the empirical analysis of the decision to be public examines separately the decision with regard to equity and to debt. While the evidence relating to the decision to issue public equity is scarce due to lack of data about private firms (Pagano, Panneta, and Zingales 1998 analysis of Italian data is a notable exception), the evidence regarding issuance of public debt is much wider. Several empirical studies examine debt issuance decisions by firms with public equity (e.g., Houston and James 1996, Krishnaswami, Spindt and Subramaniam 1999, Cantillo and Wright 2000, Datta, Iskandar-Datta and Patel 2000, and Denis and Mihov 2003). Similarly, Gomes and Phillips (2004) examine

[1] Compare, for example, the analysis of going public with equity in Benveniste and Spindt (1989), Chemmanur and Fulghieri (1994, 1999), Zingales (1995), Maug (2001), and Maksimovitch and Pichler (2001) to the analysis of the choice between "arms-length" debt and "relationship" debt in Diamond (1989, 1991) and Rajan (1992), among others.

several security issues – equity, debt, and convertible bonds – by firms with public equity. The Gomes and Phillips (2004) analysis is closest in spirit to ours. Their analysis differs from ours, however, since they examine each issuance decision independent of other issuance decisions and the overall public-private status of the firm while we examine the overall decision to have public debt or public equity.

We analyze the private-public decision separately from the analysis of the optimal capital structure. This is because the optimal capital structure decision can be implemented with both public and private securities. For example, if the firm optimally should increase its leverage to minimize taxation, it will be able to do so both with private debt and with public debt. Hence, such a firm will decide its private-public status independent of its decision to increase leverage. Moreover, to the extent that the two decisions interact, we control for the leverage choices of the sample firms in our analysis of the private-public decision.

A company determines the security to be public with based on the *marginal differences* between the costs and benefits of having publicly traded debt or equity. The focus of our analysis is on these differences, which are explicated in the following section. Specifically, we compare firm characteristics that are related to information asymmetries, control, monitoring, information gathering needs, and agency considerations using the COMPUSTAT database in the period 1987-2002. We refer to firms that have public equity while their debt is private as "Public Equity firms" and to firms that have public debt while their equity is private as "Public Debt firms". Firms with both public equity and public debt are called "Completely Public firms" and firms with no public security are called "Private firms".

In addition to examining the cross-sectional differences between Public Debt firms and Public Equity firms, we also conduct a time-series analysis of firms that *transition* from being private to being public. This test is possible because COMPUSTAT back-fills data for firms that become public (and, hence, enter the COMPUSTAT database) for fiscal years preceding the year in which they become public. In this analysis, we compare changes in characteristics of firms that choose to become public with equity to changes in characteristics in firms that choose to become public with debt around the transition time.

Lastly, since some of the hypotheses we examine may be affected by the presence of financial constraints, we explicitly examine whether financial constraints impact our results. We do so by restricting our analysis to a subset of firms for which we have positive proof that they are not financially constrained. As we explain in detail later, we take firms to be financially unconstrained when they have significant cash reserves and pay dividends.

We find that Public Equity firms have higher sales volatility, higher volatility of returns on assets, higher R&D intensity, and lower fraction of assets in place than Public Debt firms. These differences suggest that Public Equity firms are exposed to *more* information asymmetry than Public Debt firms. Moreover, we find the same differences for firms that are not financially constrained, which means that our findings are not driven by these constraints. We also find that firms with significant investment opportunities are more likely to be public with equity than with debt. This suggests that these firms value the information provided by stock prices more than they value the information provided by bond prices. Lastly, we find that firms that transition from being

private to being public have abundant cash and pay significant dividends both before and after the transition. This is true for both Public Equity and Public Debt firms. We interpret our results as indicating that information asymmetry motives for issuing securities to public investors (e.g., the Pecking Order hypothesis) are inconsistent with the data. Rather, the data are consistent with firms incorporating agency and information collection motives in their private-public decisions.

The remainder of the paper is organized as follows. In Section I, we discuss the tested hypotheses, in Section II we present the data, in Section III we present the results, and in Section IV we present our conclusions.

I. Hypotheses

In this section, we develop testable hypotheses that are based on the differential effects on debt and equity of the theorized determinants of the private-public decision. Specifically, the effects we examine are information asymmetry, information acquisition, monitoring, agency relations, and transaction costs.

Firms in our sample have the choice of issuing both debt and equity (public or private). Therefore, their issuance decisions may be affected by capital structure considerations. However, since firm can obtain the same capital structure by issuing either private or public securities, we separate the choice of an optimal capital structure from the choice of being public. Our premise is that if a firm chooses to issue public debt over private debt, it does so because of the different characteristics between a private security and a public security, and not because of capital structure considerations. That is, if the optimal capital structure of a firm calls for a certain level of debt (e.g., to signal

firm value or to minimize tax payments), both *private* debt and *public* debt can be issued. To ensure that our results are not driven by leverage choice, we control for leverage in our analysis of the choice between being a Public Equity firm or a Public Debt firm.

Our analysis effectively decomposes the decision to be public into two components: given that a firm chooses to be public, which security – debt or equity – is issued and, based on this analysis, what are the determinants of the overall decision to be public. The focus of our analysis is on the first component of the decision – the comparison of firms that choose to be public with equity to firms that choose to be public with debt. As we discuss bellow, some of the results of this analysis shed light on the second component of the decision – why firms choose to be public in the first place.

Some of the benefits and costs of being public are equal for equity and for debt issuance. For example, once a firm becomes public, by issuing either debt or equity, it is obliged to publish a prospectus and its annual reports thereafter, thereby revealing important information to its competitors. On the other hand, some of the benefits and costs of issuing a security to the public depend on whether the issued security is debt or equity. These differences are outlined below and serve as our basis for forming testable hypotheses.

Consider first the effect of *asymmetric information* on the private-public decision. A firm that decides to be public bears the cost of information asymmetry. Myers and Majluf (1984) argue that, since information affects equity more than debt, information asymmetry costs are greater for equity than for debt. Therefore, holding constant the chosen capital structure and other reasons for being public, firms are more likely to be

public with debt when information asymmetry is high and to be public with equity when asymmetry is low.

Note that the Pecking Order hypothesis does not necessarily apply to financially constrained firms. Therefore, in our empirical work, we explicitly test for the potential impact of financial constraints. Furthermore, Fulghieri and Lukin (2001) show that, when information production is endogenous, the Pecking Order may be reversed if information costs are sufficiently low. Indeed, our results do not support the Pecking Order hypothesis even after we control for financial constraints.

The decision to be public also affects the ability of managers to *acquire* information. Specifically, when firm securities are publicly traded, their prices reveal to managers information that investors have. Managers can use this price information to improve corporate decisions (e.g., Benveniste and Spindt 1989, Habib and Johnsen 2000, and Maug 2001). Choosing to be public with equity or with debt affects the information that can be inferred from market prices. This is because equity is typically more sensitive to information and more actively traded than debt so that stock prices better continuously reflect investor information than debt prices. Therefore, holding constant the optimal capital structure and other reasons to be public, we expect firms that have much use for price information will be public with equity and firms with low use for price information will be public with debt.

The above analysis of the differential impact of information on the decision to go public with debt or equity suggests the following hypotheses:

H1: Public Debt firms are exposed to more information asymmetry than Public Equity firms

H2: Public Equity firms have more use for security price information than Public Debt firms

In our empirical analysis, we measure the extent of information asymmetry (in the tests of H1) by four proxies. The first two proxies – volatility of sales (VSALES) and volatility of the return on assets (VROA) – measure the extent of uncertainty about firm operations. The intuition is that firms with high uncertainty about their operations are also firms with high potential for information asymmetry. The third proxy for information asymmetry is R&D intensity (R&D). The intuition for this proxy is that results of R&D efforts are known internally but not externally. The last proxy is the fraction of tangible assets to total assets (PP&E). The intuition for this proxy is that there is less information asymmetry about tangible assets than about intangible assets, so that PP&E is negatively correlated with the extent of information asymmetry.

We test the hypothesis that Public Equity firms have more use for security price information than Public Debt firms (H2) by focusing on firm investment decisions. The intuition is that firms that need to make significant investment decisions place more value on security price information than firms that do not need to make such decisions. Accordingly, we proxy for the usefulness of security price information by the magnitude of investments a firm makes as a fraction of its total assets (CAPX) and by the intensity of its R&D activity (R&D).

Next, consider *monitoring* and *agency* costs. Given the choice of capital structure, the decision to issue securities to the public (rather than to private investors) differentially affects high quality and low quality managers. On the one hand, low quality managers who finance their firms with public equity expose themselves to hostile

takeover risk.[2] This implies that, *ceteris paribus*, managers of Public Equity firms are of better quality than managers of Public Debt firms. On the other hand, issuing debt to the public means that the debt will be rated by rating agencies, which gain access to private information. Issuing equity, however, does not provide investors or analysts with such inside information. Thus, the counter argument implies that, *ceteris paribus*, managers of Public Equity firms are of worse quality than managers of Public Debt firms (Verrecchia 1983).

Agency considerations in the form of asset substitution also affect the decision to be public with equity or with debt. Consider a firm that has substantial opportunities to shift risk. Such opportunities allow shareholders to increase firm risk *ex post* – once debt has been issued – and to transfer wealth from debt holders to themselves (c.f., Jensen and Meckling 1976). Public debt holders, who cannot closely monitor risk shifting or recall loans, price public debt assuming that the issuer will engage in risk increasing activity. Private debt holders, on the other hand, can better monitor and recall debt than public debt holders when shareholders increase risks. Moreover, risk-shifting incentives do not arise with public issuance of equity. Thus, *ex ante*, a firm with substantial risk shifting opportunities that decides to be public prefers to have its equity (rather than its debt) publicly traded to minimize agency costs.

Holding constant the optimal capital structure and other reasons to be public, the discussion of agency relations and monitoring leads to the following hypotheses:

H3: Public Debt firms are of worse/better quality (based on control vs. monitoring theories) than Public Equity firms

[2] Obviously, this implicitly assumes that insiders do not retain more than 50% of their firms' equity.

H4: Public Debt firms are exposed to fewer risk shifting opportunities than Public Equity firms

To measure the quality of the firm (in the tests of H3), we use a proxy that measures firms' *operating* profitability – the return on assets (ROA). We deliberately choose not to use measures of shareholder returns (e.g., ROE) to avoid using a proxy for firm quality that is affected by leverage and issuance decisions of firms.

In our empirical analysis, we measure shareholders' ability to shift risk (H4) by four proxies. The first three proxies – volatility of sales (VSALES), volatility of the return on assets (VROA), and R&D intensity (R&D) – measure the fundamental uncertainty of the firm. Intuitively, the higher the underlying uncertainty of the firm, the more difficult it is for debt holders to monitor stockholders and the easier it is for stockholders to hide risk-shifting activity. The fourth proxy – the fraction of fixed assets of total assets (PP&E) – is a negative measure of the ease of risk shifting since fixed assets cannot be easily substituted for riskier assets and can be used as tangible collateral for debt claims. Note that H4 leads to predicted coefficients that are of the *opposite sign* than the coefficients predicted by H1.

Another aspect of the choice of security with which to be public pertains to *transaction costs*. If issuance costs are concave (e.g., due to existence of fixed components), once a firm has gone public with a given security, additional issues of the same security are less expensive than the first issue. For example, a Public Equity firm may bear lower under-pricing costs on a secondary issue than on an IPO and it may be cheaper for a Public Debt firm to access investors, to write a prospectus, and to be rated than for a firm that issues debt for the first time. Hence, *ceteris paribus*:

H5: If transaction costs are concave, Public Debt firms will rely on a larger fraction of debt in their overall financing than Public Equity firms

In our empirical analysis, we measure reliance on debt in the firm's total financial package in two ways. First, we use a *flow* measure of reliance on debt – the percentage of new debt issued out of total funds raised (%DEBT). Second, we use a *stock* measure of reliance on debt – the percentage of debt in the capital structure (LEVERAGE), which is the aggregate of all prior financing decisions.

The above hypotheses, which are examined in the following sections, are derived from the differential impact of the theorized determinants of the private-public decision on debt and equity. The derived hypotheses implicitly assume that firms can optimally determine the private-public status of their securities. Firms' financing choices, however, are potentially limited by their debt capacity and liquidity needs. Hence, in our analysis, we examine the potential impact of debt capacity and liquidity needs on firms' private-public decisions. This is done by comparing the estimates we obtain for the general population of firms to estimates we obtain for a sub-sample of firms for which there is positive proof that they are not financially constrained. We detail these diagnostic checks in the subsequent sections.

II. Data

We select our sample from the COMPUSTAT database, which includes firms with publicly traded securities – either equity, or debt, or both. Each year, we divide these firms into four subsets: Public Equity firms, Public Debt firms, Completely Public firms, and Private firms. Recall that "Public Equity firms" have public equity while their debt is

private, "Public Debt firms" have public debt while their equity is private, and "Completely Public firms" are firms with both public equity and public debt.

We classify equity as being publicly traded in a given year if there is at least one price quote for the stock either on the CRSP or on the COMPUSTAT databases any time during the year. We classify firms as having publicly traded debt if they have at least $50 million of long-term debt outstanding and there is debt rating on the COMPUSTAT database for their debt. This classification is based on the stated policy of rating agencies to rate all public debt issues with par value of at least $50 million.[3]

We exclude from our sample all financial firms (SIC code 6000). After this exclusion, we are left with 37,942 yearly observations regarding 5,026 firms in the years 1987 through 2002. Table 1 describes the distribution of the sample across the three sub-samples in each year. As can be seen in the table, about half of the observations are of firms that are Completely Public. Of those that have one publicly traded security and one privately traded security, 23% are Public Debt firms and 77% are Public Equity firms. Table 2 describes the distribution of our sample across industries. Except for a slightly increased fraction of Public Debt firms in industries 48 and 49 ("Communications" and "Electric, Gas, and Sanity Services", respectively), there are no apparent differences in industry concentrations across the three classes of firms.

One important aspect of our data is that firms do not stay constantly in one category of private-public status. To see this we provide the transition matrix of firms across the different categories in Table 3. Note that, even though the COMPUSTAT confines its database to firms with publicly traded securities, we have some data about

[3] Note that some debt with less than $50 million face value may also be publicly issued and rated and that a small fraction of debt is rated based on public information only.

firms that are completely private (i.e., they do not have either public equity or public debt). This is because the COMPUSTAT back-fills data for firms that enter its database, so that some private firm data are in the COMPUSTAT database provided that the firms eventually became public by issuing equity or debt to public investors. Additionally, completely private firms that have more than 500 security holders are required to file their reports with the SEC and, therefore, are also included in the COMPUSTAT database and in our sample of completely private firms. Table 3 suggests that firms adjust their private-public status quite often, presumable for reasons. This is in line with the predictions of Benninga, Helmantel, and Sarig (2005). Hence, differences across firm subsets, which we examine below, can indeed teach us about the determinants of their private-public decisions.

In Table 4, we provide the descriptive statistics of the variables used in our analysis as well as the correlations among them. The table shows that Assets and Sales are skewed to the right, with some very large observations relative to median values. To prevent extreme observations from overly affecting our results, we delete the most extreme observations - the top and bottom 1% - of each variable in all our tests. Furthermore, because Assets and Sales are highly correlated, we do not include both variables jointly in our analysis.

Unreported in the table and not explicitly tested in the following section is the difference in size between the three private-public categories. While there is no specific hypothesis regarding size differences, some of our results may be interpreted as reflecting size differences between Public Equity firms and Public Debt firms since many would expect Public Equity firms to be larger than Public Debt firms. This, however, is not the

case: Public Equity firms (with average Assets of $2,981 million and average Sales of $1,765) are *smaller* than Public Debt firms (with average Assets of $4,355 million and average Sales of $2,585).[4]

III. Empirical Results

We begin our tests of the hypotheses by comparing the individual characteristics of Public Debt firms to Public Equity firms. Since the private-public decision nets multiple effects of the decision, we also present a multivariate PROBIT analysis of the determinants of the decision. The PROBIT analysis also allows us to control for leverage differences so that we can estimate the determinants of the private-public decision separately from the determinants of the capital structure decision. We carry all estimates on annual cross-sections and report and test the mean coefficients over time, similar to Fama and MacBeth (1973), Fama and French (2001), and Garmaise and Moskowitz (2003). In addition to testing the hypotheses detailed above, we further check our results in two ways. First, we examine the extent to which debt or liquidity constrains may affect private-public decisions. Second, we examine in detail the years in which firms transition from being private to being public – either Public Equity or Public Debt.[5]

III.A Public Debt Firms vs. Public Equity Firms – Univariate Comparisons

To examine the differences in each firm characteristic between Public Debt and Public Equity firms, we estimate the following equation for every year:

$$Y_i = c_t + \beta_t \cdot I_{public-equity,i} + \varepsilon_i$$

[4] Completely Public firms are the largest firms, both in terms of Assets ($8,006 million on average) as well as in terms of Sales ($4,744 million on average).

[5] We also examine years in which firms cease being public with *both* equity and debt to being public with *one* security – either equity or debt, but not both. We find similar results to those documented for the reverse transition but do not report them because this sub-sample is relatively small.

where:

Y_i is the examined characteristic (VSALES, PP&E, etc.)

$I_{Public-equity}$ is a dummy variable that take the value "1" if the firm is Public Equity and "0" if it is Public Debt

We report the mean coefficients over the sample period.

Table 5 shows the average estimated differences between the characteristics of Public Equity and Public Debt firms. For sake of completeness, we also report the average characteristics of Completely Public firms as well.[6] Recall that the variables in Table 5 are related to agency problems, asymmetric information, information acquisition, monitoring, and transaction costs. We discuss these potential determinants of the private-public decision sequentially below.

The first four variables in Table 5 - volatility of sales (VSALES), volatility of the return on assets (VROA), R&D intensity (R&D), and the fraction of fixed assets of total assets (PP&E) - relate both to H1 and H4. H1, which says that high information asymmetry firms will choose to be Public Debt, implies that VSALES, VROA, and R&D are higher in Public Debt firms than in Public Equity firms while PP&E is higher in Public Equity firms. H4, which reflects agency considerations – risk shifting ability of shareholders – suggests the opposite. The results for all four variables are inconsistent with H1 and are consistent with H4: VSALES, VROA, and R&D are significantly higher for Public Equity firms than for Public Debt firms and PP&E is significantly smaller.

The uniform inconsistency with H1 and consistency with H4 means that, among the firms that choose to become public, agency considerations dominate information

[6] We compare the characteristics of Completely Public firms to those of Public Equity firms in Table 6.

asymmetry considerations. Specifically, information asymmetries imply that Public Equity firms have lower information asymmetry than Public Debt firms. This, however, is inconsistent with the data: we find that Public Equity firms have *higher* information asymmetry than Public Debt firms. On the other hand, consistent with agency theories of the private-public decision, Public Equity firms are more exposed to agency problems than Public Debt firms. This implies that minimizing agency costs is potentially an important determinant of the security with which firms become public and, therefore, of the overall private-public decision through the impact of the security choice on total agency costs.

The second hypothesis deals with the information gathering needs of firms. H2 suggests that firms that greatly value price information are public with equity to enjoy the information contained in stock prices, which is more accurate than the information contained in bond prices. We consider firms that have extensive R&D efforts and firms that have significant capital expenditures to be firms with much use for price information. Indeed, both of our proxies for the usefulness of price information – the rate of capital expenditures (CAPX) and R&D intensity (R&D) – support this prediction: Public Equity firms have higher CAPX and R&D than Public Debt firms. The differences in CAPX and R&D between Public Equity firms and Public Debt firms are also consistent with the difference in VSALES: the higher the volatility of sales, the more important it is to obtain market information and, hence, the more likely the firm will be Public Equity rather than Public Debt. Thus, consistent with Fulghieri and Lukin (2001) when information collection costs are high, the data suggest that firms that value price information prefer to be public with equity rather than with debt. Note that the importance of information

acquisition considerations in the choice of security with which to become public implies that information-gathering considerations are important in the overall private-public decision. This is because private firms cannot obtain price information – either from their equity price or from their debt price.

The next variable in Table 5 – ROA – measures the profitability of firms. Recall that H3 is based on two competing arguments. The first argument is that monitoring by public investors and their ability to seize control imply that high quality firms are public with equity. The counter argument is that monitoring by debt rating agencies implies that high quality firms are public with debt. Consistent with the later argument, we find that Public Debt firms are more profitable, as measured by their average ROA – 13.5%, than Public Equity firms – average ROA of 10.4%. Note that the difference in profitability is not merely a reflection of returns to scale since the largest firms – Completely Public firms – have an average ROA that is between the ROA of Public Debt firms and Public Equity firms – 11.9%. Importantly, the data does not support the prediction that low quality managers avoid the risk of hostile takeover by choosing to be public with debt, though it is possible that the really poor managers avoid being public altogether so that they are not in our sample.

Lastly, H5 predicts that if transaction costs are concave firms will be public with the security that is expected to dominate their financing to minimize transaction costs. Our results are consistent with this prediction. This is true both for the cumulative issuance of securities – LEVERAGE – as well as for the annual flow of new financing – %DEBT. These differences show that Public Debt firms use more debt in their financing mix than Public Equity firms once they become public. Note that this result is also

consistent with H4 – agency motives for being public with equity, since the same reasons that cause firms to be Public Debt may cause them to heavily rely on debt financing. In other words, the high reliance on debt by Public Debt firms can reflect either agency considerations or concave transaction costs or both.

In sum, Table 5 demonstrates the validity of the premise of our analysis – that there are important differences between Public Debt firms and Public Equity firms. The differences between these firms suggest that information asymmetry is not as important as the information acquisition motives, agency costs, and monitoring in the choice of security with which to be public and in the overall private-public decision.

For sake of completeness, in Table 6, we compare the characteristics of Public Equity firms to Completely Public firms. Recall that we do not have specific hypotheses regarding these differences. Indeed, several of the characteristics are not significantly different between the groups and even those that are statistically significantly different are economically similar. For example, the difference in R&D (1.0% vs. 1.2%) – is statistically significant, yet this difference is economically small relative to the difference from Public Debt firms' R&D intensity – 0.3%.

III.B Public Debt Firms vs. Public Equity Firms – Multivariate Analysis

The above results describe the differences between the individual determinants of the private-public decision, each examined separately. Firms' decision to be public with equity or with debt, however, may be jointly determined by all of these characteristics. Hence, we present also a PROBIT estimation of the joint impact of these determinants on the probability that a firm is public with equity rather than debt. Note that the PROBIT analysis also enables us to control for the capital structure decision so that the estimated

effects are above and beyond the impact of the chosen leverage. In this analysis, we use the proxies for information asymmetry, information gathering needs, agency, and monitoring described above. We estimate the following PROBIT model of the probability that a firm becomes public by issuing equity rather than debt:

$$I_{Public-equity} = \beta_0 + \sum_j \beta_j \cdot X_{ji} + \varepsilon$$

where:

$I_{Public-equity}$ is a dummy variable that take the value "1" if the firm is Public Equity and "0" if it is Public Debt, and

X_{ji} are firm characteristics - VSALES, PP&E, R&D, ROA, VROA, CAPX, LEVERAGE, and %DEBT.

In Table 7, we present the estimated PROBIT coefficients as well as a measure of the goodness of fit – the average fraction of correct predictions over the sample period. Overall, we find that the multivariate analysis yields similar results to the single variable analysis as reported in Table 5, albeit with some firm characteristics losing their statistical significance in the multivariate analysis. Specifically, firms with high R&D expenditures and high CAPX have high probability of being public with equity, while firms with high PP&E, high LEVERAGE, and high %DEBT are more likely to be public with debt. The coefficients of VSALES, VROA, and ROA, while of the same sign as in Table 5, are insignificant when their effects are considered jointly with the other variables, even though they are individually significant. Largely, the results of the multivariate analysis are consistent with the results of the single variable comparisons. Furthermore, since the PROBIT estimation controls for capital structure differences by including LEVERAGE in the estimated equation, the PROBIT results suggest that the

determinants of the private-public decision are above and beyond the impact of the capital structure choice.

III.C Public Debt Firms vs. Public Equity Firms – Financial Constrains

Our results suggest that the actual characteristics of Public Equity firms relative to Public Debt firms are inconsistent with the predictions that are based on information asymmetry. One potential explanation for this result is that firms issue stock because they are financially constrained – they are at their debt capacity yet they need liquidity, so that equity is a "last resort" financing. Financial constraints are important for agency theories of ownership structure as well since unconstrained entrepreneurs may avoid outside financing of all types altogether (Jensen and Meckling 1976). Hence, next, we check to what extent financial constraints drive our results.

In Table 8, we examine several indicators of whether firms are financially constrained both before and after the transition from being a private firm to being a public firm (either Public Equity or Public Debt). All indicators reported in Table 8 show that, on average, both types of firms are not financially constrained. This is evident in both high pre-issuance cash reserves (5% or more of total assets) as well as pre-issuance generous dividend policies (at 1.3% annual dividend yield relative to total assets and 45% or more dividend payout ratio). Moreover, if the transitioning firms issue securities because of binding financial constrains, one would expect these firms to cut their dividend payout to partially defray their financial needs. This is not the case: in our sample, firms continue to pay dividends and keep substantial cash reserves. Thus, consistent with the findings of Fama and French (2003) and Leary and Roberts (2004), it appears that public issuance of equity is not driven by financial constraints.

To further check the potential impact of financial constrains, we re-estimate the characteristics pertaining to H1 and H4 for firms that are *not* financially constrained yet issue equity. We consider an equity issuing firm to be unconstrained financially if the firm concurrently pays dividends. Table 9 reports the number of financially unconstrained firms in each category (Panel A) and their fraction of the total number of firms in this category (Panel B). The average characteristics pertaining to H1 and H4 for each category of cash unconstrained firms are reported in Table 10.

As can be seen from Table 9, the fraction of dividend paying firms that concurrently issue equity is substantial – about a quarter of the total number of firms, making it unlikely that the results reported in Table 5 are driven by financially constrained firms. This is further confirmed by the average characteristics reported in Table 10, which are very similar to those reported in Table 5. In particular, the differences between Public Equity and Public Debt firms in their VSALES, R&D, and PP&E are significant and in the same direction as those obtained for the complete sample. The difference in VROA remains of the same sign but loses its significance, probably due to the reduced sample size. Thus, the rejection of H1 – the hypothesis based on information asymmetry – does not appear to be driven by the characteristics of cash constrained firms.

III.D Public Debt Firms vs. Public Equity Firms – Transition Years

To further examine the robustness of our results, we re-estimate Table 5 using data only from the year immediately following the time a firm transitioned from being private to being public, either Public Debt or Public Equity. Table 11 reports and compares the average characteristics of Public Debt firms and Public Equity firms and

the sample sizes on which each average is based. Besides the lower power of the tests in Table 11 relative to Table 5, which is due to smaller samples and manifests itself in lower significance levels, the results reported in Tables 5 and 11 are virtually the same. The coefficients of R&D, PP&E, and %DEBT, which are significant in Table 5, become insignificant in Table 11 but, except for the difference in PP&E that drops to zero, the differences remain as in Table 5.

In Table 12, we report the *changes* in firm characteristics around the time the sample firms go public. The question we try to answer by this table is whether the characteristics of firms that choose to become public continue to typify them post their public issuance. Towards that end, we report the changes in firm characteristics from the year preceding the transition to the year following the transition. Besides the obvious change in leverage triggered by the issuance itself, it appears that firm characteristics are little affected by the change in their private-public status. This suggests that firms contemplate the transition to a public status based on rational expectations of their future characteristics so that their pre-transition characteristics continue to typify them post the transition.

IV. Conclusions

We examine the motives underlying firm choice of which type of security to be public with. Our test is based on the observation that firms can be public with either equity, or debt, or both. Indeed, the data validate the premise of our analysis – that there are important differences between Public Debt firms and Public Equity firms. We examine

private-public decisions by comparing Public Debt firms to Public Equity firms, where both provide public investors with similar regulated information.

We find that Public Equity firms are exposed to *more* information asymmetry than Public Debt firms, contrary to the predictions of theories related to information asymmetries (e.g., the Pecking Order hypothesis) but in line with the predictions of agency theory and the predictions of Fulghieri and Lukin when information collection costs are high. This holds true even for firms that are not financially constrained, which means that our findings are not driven by financial constraints. We also find that firms with significant investment opportunities are more likely to be public with equity than with debt, highlighting the value of the information provided by prices of publicly traded equity. Lastly, we find the same results around the time firms transition from being private to being public and that transitioning firms have abundant cash and pay significant dividends both before and after the transition.

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Table 1

Distribution of Public Firms

The sample consists of firms on the COMPUSTAT database that have at least $50 million long-term debt in the period 1987 to 2002. Each year, we classify firms into one of the following three groups:

"Public Equity" firms – firms that have public equity and private debt

"Public Debt" firms – firms that have public debt and private equity; and

"Completely Public" firms – firms that have both public equity and public debt

We classify firms as having publicly traded equity if there is at least one price quoted for their shares either on the CRSP or on the COMPUSTAT databases any time during a year. We classify firms as having publicly traded debt if they have at least $50 million of long-term debt outstanding and there is debt rating on the COMPUSTAT database.

Year	Public Equity	Public Debt	Completely Public
1987	575	256	920
1988	627	283	881
1989	683	316	850
1990	712	316	798
1991	705	288	802
1992	728	273	864
1993	867	269	964
1994	1,011	282	1,012
1995	1,087	267	1,094
1996	1,186	268	1,207
1997	1,295	260	1,329
1998	1,322	275	1,451
1999	1,316	324	1,458
2000	1,263	324	1,450
2001	1,154	318	1,403
2002	1,033	287	1,289
Total	**15,564 (77% of main sample)**	**4,606 (23% of main sample)**	**17,772**

Table 2

Industry Distribution of Sample

The sample consists of firms on the COMPUSTAT database that have at least $50 million long-term debt in the period 1987 to 2002 and that have SIC reported in the database. Each year, we classify firms into one of the following three groups:

"Public Equity" firms – firms that have public equity and private debt

"Public Debt" firms – firms that have public debt and private equity; and

"Completely Public" firms – firms that have both public equity and public debt

We classify firms as having public equity if there is at least one price quoted for their shares either on the CRSP or on the COMPUSTAT databases any time during a year. We classify firms as having publicly traded debt if they have at least $50 million of long-term debt outstanding and there is debt rating on the COMPUSTAT database.

For each group, we stratified firms by their two-digit SIC. We report in the table those SIC for which there are at least 500 firms in total. All other SIC are grouped together under "others". Numbers in parentheses are the percentages of firms in each SIC relative to the total number of firms in each category.

2 digits SIC	Public Equity	Public Debt	Completely Public	Total
13	537 (4.2%)	35 (1.1%)	680 (4.2%)	1252 (3.9%)
20	431 (3.4%)	124 (3.8%)	663 (4.1%)	1218 (3.8%)
26	200 (1.6%)	71 (2.2%)	504 (3.1%)	775 (2.4%)
27	307 (2.4%)	53 (1.6%)	298 (1.8%)	658 (2.0%)
28	715 (5.6%)	137 (4.2%)	1171 (7.2%)	2023 (6.3%)
29	166 (1.3%)	118 (3.6%)	396 (2.4%)	680 (2.1%)
33	430 (3.4%)	110 (3.3%)	484 (3.0%)	1024 (3.2%)
34	269 (2.1%)	72 (2.2%)	259 (1.6%)	600 (1.9%)
35	682 (5.4%)	99 (3.0%)	868 (5.3%)	1649 (5.1%)
36	629 (5.0%)	74 (2.3%)	730 (4.5%)	1433 (4.4%)
37	337 (2.7%)	115 (3.5%)	620 (3.8%)	1072 (3.3%)
38	353 (2.8%)	31 (0.8%)	413 (2.5%)	797 (2.5%)
48	888 (7.0%)	615 (18.7%)	1181 (7.3%)	2684 (8.3%)
49	1026 (8.1%)	424 (12.9%)	1971 (12.1%)	3421 (10.6%)
50	414 (3.3%)	36 (1.1%)	304 (1.9%)	754 (2.3%)
51	212 (1.7%)	37 (1.1%)	298 (1.8%)	547 (1.7%)
53	166 (1.3%)	27 (0.8%)	309 (1.9%)	502 (1.6%)
54	208 (1.6%)	109 (3.3%)	229 (1.4%)	546 (1.7%)
59	194 (1.5%)	55 (1.7%)	299 (1.8%)	548 (1.7%)
73	690 (5.4%)	78 (2.4%)	559 (3.4%)	1327 (4.1%)
79	173 (1.4%)	59 (1.8%)	281 (1.7%)	513 (1.6%)
80	309 (2.4%)	30 (0.9%)	329 (2.0%)	668 (2.1%)
Others	3358 (26.5%)	777 (23.6%)	3402 (20.9%)	7537 (23.4%)
Total	**12694**	**3286**	**16248**	**32228**

Table 3

Transition Matrix of Sample Firms

The sample consists of all firms on the COMPUSTAT database that have at least $50 million long-term debt in the period 1987 to 2002. Each year, we classify firms into one of the following four groups:

"Public Equity" firms – firms that have public equity and private debt

"Public Debt" firms – firms that have public debt and private equity; and

"Completely Public" firms – firms that have both public equity and public debt

"Private" firms – firms that have neither public equity nor public debt

We classify firms as having publicly traded equity if there is at least one price quoted for their shares either on the CRSP or on the COMPUSTAT databases any time during a year. We classify firms as having publicly traded debt if they have at least $50 million of long-term debt outstanding and there is debt rating on the COMPUSTAT database.

For each group, we examine the status of the firm – private, public equity, public debt, or completely public – one year after their classification to examine the transition from one status group to another. For each group, we report the number of firm-year observations and the fraction of firms that belong to each group in the subsequent year.

Original Status	Number of Firm Years	To Private	To Public Debt	To Public Equity	To Completely Public
Private	3557	65.3%	6.8%	23.4%	4.6%
Public Debt	4904	1.5%	93.8%	0.4%	4.3%
Public Equity	6257	1.2%	0.3%	73.5%	25.0%
Completely Public	5176	0.2%	3.2%	7.8%	88.9%

Table 4

Descriptive Statistics of Public Firms

The sample consists of firms on the COMPUSTAT database that have at least $50 million long-term debt in the period 1987 to 2002.

Assets and Sales are measured in constant 2002 dollars using the change in the CPI to adjust prior years' data. VSALES measures the coefficient of variation of Sales over three preceding years. PP&E refers to the ratio of net PP&E to total assets. LEVERAGE is the ratio of long-term debt to total assets. R&D is the ratio of R&D expenses to sales. ROA is the ratio of operating income to total assets. VROA is the coefficient of variation of the ROA of the firm over three preceding years. %DEBT is the percentage of debt issuance to total funds raised in a given year. CAPX is the ratio of annual capital expenditure to total assets.

	Mean	Median	St. dev.	Min	Max	25%	75%
Assets ($ mil.)	5,501	1,410	11,875	107	113,950	533	4,498
Sales ($ mil.)	3,284	967	6,589	22	58,537	354	2,905
VSALES	0.128	0.088	0.121	0.001	0.703	0.044	0.168
PP&E	39.1%	35.7%	27.0%	0.5%	91.4%	16.3%	62.5%
LEVERAGE	34.5%	29.0%	85.8%	0.3%	1185%	18.2%	42.1%
R&D	1.0%	0.0%	2.8%	0.0%	23.2%	0.0%	0.4%
ROA	11.4%	11.7%	7.2%	-14.6%	34.7%	6.7%	15.8%
VROA	0.207	0.128	0.242	0.001	1.975	0.065	0.253
%DEBT	77.8%	97.4%	34.5%	0.0%	100%	70.7%	100%
CAPX	7.1%	5.6%	5.7%	0.2%	37.7%	3.2%	9.0%

Correlation Matrix

	Assets	Sales	VSALES	PP&E	Leverage	R&D	ROA	VROA	%DEBT
Sales	0.925								
VSALES	-0.289	-0.254							
PP&E	0.310	0.211	-0.123						
Leverage	-0.157	-0.296	0.001	0.380					
R&D	0.187	0.305	-0.119	-0.282	-0.402				
ROA	0.134	0.258	-0.184	0.150	-0.346	0.545			
VROA	0.025	-0.051	0.068	0.112	0.112	-0.192	-0.422		
%DEBT	0.003	-0.063	-0.055	0.206	0.117	-0.191	-0.126	0.080	
CAPX	0.257	0.331	-0.035	0.488	0.174	0.064	0.261	-0.003	0.039

Table 5

Differences between Public Equity Firms and Public Debt Firms

The sample consists of firms on the COMPUSTAT database that have at least $50 million long-term debt in the period 1987 to 2002. Each year, we classify firms into one of the following three groups:

"Public Equity" firms – firms that have public equity and private debt

"Public Debt" firms – firms that have public debt and private equity; and

"Completely Public" firms – firms that have both public equity and public debt

We classify firms as having public equity if there is at least one price quoted for their shares either on the CRSP or on the COMPUSTAT databases any time during a year. We classify firms as having publicly traded debt if they have at least $50 million of long-term debt outstanding and there is debt rating on the COMPUSTAT database.

Assets and Sales are measured in constant 2002 dollars using the change in the CPI to adjust prior years' data. VSALES measures the coefficient of variation of Sales over three preceding years. PP&E refers to the ratio of net PP&E to total assets. LEVERAGE is the ratio of long-term debt to total assets. R&D is the ratio of R&D expenses to sales. ROA is the ratio of operating income to total assets. VROA is the coefficient of variation of the ROA of the firm over three preceding years. %DEBT is the percentage of debt issuance to total funds raised in a given year. CAPX is the ratio of annual capital expenditure to total assets.

For each variable we report the mean and standard deviation (in parentheses) for every one of the three groups: Public Equity firms, Public Debt firms, and Completely Public firms. We test for significance of the differences of firm characteristics between Public Equity firms and Public Debt firms using the following cross-sectional equation:

$$Y_i = c + \beta \cdot I_{Public-equity} + \varepsilon_i$$

where Y_i denotes the compared characteristic and $I_{Public\text{-}equity}$ is a dummy variable that equals "1" for Public Equity firms and "0" for Public Debt firms.

Table 5 (cont.)

Differences between Public Equity Firms and Public Debt Firms

Variable	Public Equity firms	Public Debt firms	Expected Difference	Difference (Std. error)	Completely Public firms
VSALES	13.38	8.37	-/+	5.011** (0.414)	12.94
VROA	21.93	15.78	-/+	6.146** (0.655)	21.00
R&D	1.0%	0.3%	- /+	0.670** (0.036)	1.2%
PP&E	35.5%	56.2%	-/+	-20.682** (1.080)	39.5%
CAPX	7.4%	6.5%	+	0.835** (0.159)	7.1%
ROA	10.4%	13.5%	-/+	-3.106** (0.282)	11.9%
LEVERAGE	33.4%	47.3%	-	-13.921** (2.072)	31.7%
%DEBT	86.4%	95.3%	-	-8.928** (0.448)	85.8%

* Significant at 5%

** Significant at 1%

Table 6

Differences between Public Equity Firms and Completely Public Firms

The sample consists of firms on the COMPUSTAT database that have at least $50 million long-term debt in the period 1987 to 2002. Each year, we classify firms into one of the following two groups:

"Public Equity" firms – firms that have public equity and private debt; and

"Completely Public" firms – firms that have both public equity and public debt

We classify firms as having public equity if there is at least one price quoted for their shares either on the CRSP or on the COMPUSTAT databases any time during a year. We classify firms as having publicly traded debt if they have at least $50 million of long-term debt outstanding and there is debt rating on the COMPUSTAT database.

Assets and Sales are measured in constant 2002 dollars using the change in the CPI to adjust prior years' data. VSALES measures the coefficient of variation of Sales over three preceding years. PP&E refers to the ratio of net PP&E to total assets. LEVERAGE is the ratio of long-term debt to total assets. R&D is the ratio of R&D expenses to sales. ROA is the ratio of operating income to total assets. VROA is the coefficient of variation of the ROA of the firm over three preceding years. %DEBT is the percentage of debt issuance to total funds raised in a given year. CAPX is the ratio of annual capital expenditure to total assets.

For each variable we report the mean and standard deviation (in parentheses) for every one of the three groups: Public Equity firms, Public Debt firms, and Completely Public firms. We test for significance of the differences of firm characteristics between Public Equity firms and Public Debt firms using the following cross-sectional equation:

$$Y_i = c + \beta \cdot I_{Public-equity} + \varepsilon_i$$

where Y_i denotes the compared characteristic and $I_{Public\text{-}equity}$ is a dummy variable that equals "1" for Completely Public firms and "0" for Public Equity firms.

Table 6 (cont.)

Differences between Public Equity Firms and Completely Public Firms

Variable	Public Equity firms	Completely Public firms	Difference (Std. error)
VSALES	13.38	12.94	-0.447 (0.343)
VROA	21.93	21.00	-0.929* (0.455)
R&D	1.0%	1.2%	0.211** (0.019)
PP&E	35.5%	39.5%	4.030** (1.084)
ROA	10.4%	11.9%	1.471** (0.259)
CAPX	7.4%	7.1%	-0.236** (0.085)
LEVERAGE	33.4%	31.7%	-0.390 (0.777)
%DEBT	86.4%	85.8%	-0.565 (0.407)

* Significant at 5%

** Significant at 1%

Table 7

PROBIT Analysis of Determinants of the Private-Public Decision

The sample consists of firms on the COMPUSTAT database that have at least $50 million long-term debt in the period 1987 to 2002. Each year, we classify each firm into one of the following two groups:

"Public Equity" firms – firms that have public equity and private debt

"Public Debt" firms – firms that have public debt and private equity

We classify firms as having public equity if there is at least one price quoted for their shares either on the CRSP or on the COMPUSTAT databases any time during a year. We classify firms as having publicly traded debt if they have at least $50 million of long-term debt outstanding and there is debt rating on the COMPUSTAT data base.

Assets and Sales are measured in constant 2002 dollars using the change in the CPI to adjust prior years' data. VSALES measures the coefficient of variation of Sales over three preceding years. PP&E refers to the ratio of net PP&E to total assets. LEVERAGE is the ratio of long-term debt to total assets. R&D is the ratio of R&D expenses to sales. ROA is the ratio of operating income to total assets. VROA is the coefficient of variation of the ROA of the firm over three preceding years. %DEBT is the percentage of debt issuance to total funds raised in a given year. CAPX is the ratio of annual capital expenditure to total assets.

The estimated coefficients are from a PROBIT estimation of the equation:

$$I_{Public-equity} = a + \sum_j \beta_j X_{ji} + \varepsilon_i$$

where $I_{Public-equity}$ is a dummy variable that equals "1" for Public Equity firms and "0" for Public Debt firms, and X_{ji} denotes variable j of firm i. The independent variables are: VSALES, VROA, PP&E, R&D, ROA, CAPX, LEVERAGE, and %DEBT.

Table 7 (Cont.)

PROBIT Analysis of Determinants of the Private-Public Decision

Firm Characteristic	
VSALES	0.0215 (0.1955)
VROA	0.0011 (0.0016)
R&D	0.0597** (0.0124)
PP&E	-0.0177** (0.0013)
ROA	-0.0105 (0.0056)
CAPX	0.0487** (0.0061)
LEVERAGE	-0.0081** (0.0014)
%DEBT	-0.0161** (0.0019)
Correct classification	66.2%

* Significant at 5%

** Significant at 1%

Table 8

Liquidity Indicators of Public Equity Firms and Public Debt Firms around the Time of Transition from being Private to being Public

The sample consists of firms on the COMPUSTAT database that have at least $50 million long-term debt in the period 1987 to 2002. Each year, we classify firms into one of the following two groups:

"Public Equity" firms – firms that have public equity and private debt; and

"Public Debt" firms – firms that have public debt and private equity

We classify firms as having public equity if there is at least one price quoted for their shares either on the CRSP or on the COMPUSTAT databases any time during a year. We classify firms as having publicly traded debt if they have at least $50 million of long-term debt outstanding and there is debt rating on the COMPUSTAT database. We examine only the firm years in which firms transition from being private to being either Public Equity or Public Debt firms. We exclude all firms for which we do not have data on Total Assets, Dividends (from the cash flow statement), Cash (including marketable securities), and Earnings.

We report liquidity indicators in the year before a firm switches from being private to being either Public Debt or Public Equity firm ("**before**") and in the year the firm switched ("**after**"). For each variable we report the mean and standard deviation (in parentheses). We test for significance of the differences of liquidity characteristics between sample firms that transitioned from being private to being Public Equity and Public Debt firms using the following cross-sectional equation:

$$Y_i = c + \beta \cdot I_{Public-equity} + \varepsilon_i$$

where Y_i denotes the compared characteristic and $I_{Public\text{-}equity}$ is a dummy variable that equals "1" for Public Equity firms and "0" for Public Debt firms.

Table 8 (cont.)

Liquidity Indicators of Public Equity Firms and Public Debt Firms around the Time of Transition from being Private to being Public

Variable	To Public Equity	To Public Debt	Difference (Std. error)
Number of observations	723	221	
Cash/assets before	7.1%	5.0%	2.1** (0.772)
Cash/assets after	8.9%	4.6%	4.3** (0.808)
Change in cash/assets	1.8%	-0.4%	2.2%** (0.629)
Dividend/assets before	1.6%	1.3%	0.3 (0.436)
Dividend/assets after	2.4%	1.3%	1.1 (0.877)
Dividend/earnings before	45.5%	58.8%	-13.3** (3.444)
Dividend/earnings after	45.4%	65.1%	-19.7** (3.382)
Change in dividend/assets	0.8%	0.0%	0.7% (0.917)
Change in dividend/earnings	-0.1%	6.3%	-6.4%* (3.621)

* Significant at 5%

** Significant at 1%

Table 9

Sample Distribution of Firms that Pay Dividends and Concurrently Issue Equity

The sample consists of firms on the COMPUSTAT database that have at least $50 million long-term debt, that pay dividends, and that issue equity in the period 1987 to 2002. Each year, we classify firms into one of the following two groups:

"Public Equity" firms – firms that have public equity and private debt; and

"Public Debt" firms – firms that have public debt and private equity

We classify firms as having public equity if there is at least one price quoted for their shares either on the CRSP or on the COMPUSTAT databases any time during a year. We classify firms as having publicly traded debt if they have at least $50 million of long-term debt outstanding and there is debt rating on the COMPUSTAT database.

Panel A: Number of firms that pay dividends and concurrently issue equity

Year	Public Equity	Public Debt
1987	272	44
1988	262	40
1989	299	33
1990	286	30
1991	278	28
1992	287	53
1993	286	56
1994	318	39
1995	324	23
1996	309	32
1997	310	19
1998	312	20
1999	272	22
2000	240	13
2001	205	14
2002	182	10
Grand Total	**4442**	**476**

Table 9 (Cont.)

Sample Distribution of Firms that Pay Dividends and Issue Equity

Panel B: Fraction of firms that pay dividends and concurrently issue equity of total number of firms in each cell

Year	Public Equity	Public Debt
1987	47.3%	17.2%
1988	41.7%	14.1%
1989	43.7%	10.4%
1990	40.2%	9.5%
1991	39.4%	9.7%
1992	39.4%	19.4%
1993	32.9%	20.8%
1994	31.4%	13.8%
1995	29.8%	8.6%
1996	26.0%	11.9%
1997	23.9%	7.3%
1998	23.6%	7.2%
1999	20.6%	6.8%
2000	19.0%	4.0%
2001	17.7%	4.4%
2002	17.6%	3.5%
Grand Total	**28.5%**	**10.3%**

Table 10

Differences between Public Equity Firms and Public Debt Firms

for Firms that Pay Dividends and Concurrently Issue Equity

The sample consists of firms on the COMPUSTAT database that have at least $50 million long-term debt, pay dividends, and issued equity in the period 1987 to 2002. Each year, we classify firms into one of the following two groups:

"Public Equity" firms – firms that have public equity and private debt; and

"Public Debt" firms – firms that have public debt and private equity

We classify firms as having public equity if there is at least one price quoted for their shares either on the CRSP or on the COMPUSTAT databases any time during a year. We classify firms as having publicly traded debt if they have at least $50 million of long-term debt outstanding and there is debt rating on the COMPUSTAT database. We define firms as being not cash constrained if they both issue equity and pay dividends.

Assets and Sales are measured in constant 2002 dollars using the change in the CPI to adjust prior years' data. VSALES measures the coefficient of variation of Sales over three preceding years. PP&E refers to the ratio of net PP&E to total assets. R&D is the ratio of R&D expenses to sales. ROA is the ratio of operating income to total assets. VROA is the coefficient of variation of the ROA of the firm over three preceding years.

For each variable we report the mean and standard deviation (in parentheses) for every one of the two groups: Public Equity firms, Public Debt firms. Numbers in bracketed parenthesis are the corresponding averages for all firms - cash constrained or not.
We test for significance of the differences of firm characteristics between Public Equity firms and Public Debt firms using the following cross-sectional equation:

$$Y_i = c + \beta I_{Public-equity} + \varepsilon_i$$

where: Y_i denotes the compared characteristic and $I_{Public-equity}$ is a dummy variable that equals "1" for Public Equity firms and "0" for Public Debt firms.

Table 10 (cont.)

Differences between Public Equity Firms and Public Debt Firms

for Firms that Pay Dividends and Concurrently Issue Equity

Variable	Public Equity firms	Public Debt firms	Expected Difference	Difference (Stand. error)
VSALES	11.70 [13.38]	9.07 [8.37]	-/+	2.629** (0.727)
VROA	17.29 [21.93]	16.26 [15.78%]	-/+	1.032 (1.738)
R&D	1.0% [1.0%]	0.3% [0.3%]	- /+	0.700** (0.068)
PP&E	43.8% [35.5%]	62.3% [56.2%]	-/+	-18.494** (1.476)

* Significant at 5%

** Significant at 1%

Table 11

Differences between Public Equity Firms and Public Debt Firms Immediately After They Become Public

The sample consists of firms on the COMPUSTAT database that have at least $50 million long-term debt in the period 1987 to 2002. Each year, we classify firms into one of the following three groups:

"Public Equity" firms – firms that have public equity and private debt

"Public Debt" firms – firms that have public debt and private equity; and

"Private" firms – firms that have neither publicly traded shares nor public debt

We classify firms as having public equity if there is at least one price quoted for their shares either on the CRSP or on the COMPUSTAT databases any time during a year. We classify firms as having publicly traded debt if they have at least $50 million of long-term debt outstanding and there is debt rating on the COMPUSTAT database. We report statistics in the year that follows the time a firm becomes Public Debt or Public Equity for the first time.

Assets and Sales are measured in constant 2002 dollars using the change in the CPI to adjust prior years' data. VSALES measures the coefficient of variation of Sales over three preceding years. PP&E refers to the ratio of net PP&E to total assets. LEVERAGE is the ratio of long-term debt to total assets. R&D is the ratio of R&D expenses to sales. ROA is the ratio of operating income to total assets. VROA is the coefficient of variation of the ROA of the firm over three preceding years. %DEBT is the percentage of debt issuance to total funds raised in a given year. CAPX is the ratio of annual capital expenditure to total assets.

For each variable we report the mean and standard deviation (in parentheses) for every one of the three groups: Public Equity firms, Public Debt firms, and Completely Public firms. We test for significance of the differences of firm characteristics between Public Equity firms and Public Debt firms using the following cross-sectional equation:

$$Y_i = c + \beta \cdot I_{Public-equity} + \varepsilon_i$$

where Y_i denotes the compared characteristic and $I_{Public\text{-}equity}$ is a dummy variable that equals "1" for Public Equity firms and "0" for Public Debt firms.

Table 11

Differences between Public Equity Firms and Public Debt Firms Immediately After They Become Public

Variable	Public Equity firms	Public Debt firms	Expected Difference	Difference (Std. error)
VSALES	22.95 [697]	17.94 [173]	-/+	5.006** (1.886)
VROA	53.78 [631]	48.51 [172]	-/+	5.271 (19.69)
R&D	1.4% [720]	0.4% [180]	- /+	0.928 (1.323)
PP&E	39.5% [664]	39.1% [176]	-/+	0.387 (2.307)
CAPX	8.9% [659]	5.1% [175]	+	3.067** (0.872)
ROA	11.6% [659]	13.9% [179]	-	-2.339** (0.827)
LEVERAGE	36.4% [721]	57.8% [180]	-	-21.463** (2.097)
%DEBT	82.0% [588]	82.6% [149]	-	-0.563 (2.873)

* Significant at 5%

** Significant at 1%

Table 12

Changes in Firm Characteristics around the Time the Firms Become Public

The sample consists of firms on the COMPUSTAT database that have at least $50 million long-term debt in the period 1987 to 2002. Each year, we classify firms into one of the following three groups:

"Public Equity" firms – firms that have public equity and private debt

"Public Debt" firms – firms that have public debt and private equity; and

"Private" firms – firms that have neither publicly traded shares nor public debt

We classify firms as having public equity if there is at least one price quoted for their shares either on the CRSP or on the COMPUSTAT databases any time during a year. We classify firms as having publicly traded debt if they have at least $50 million of long-term debt outstanding and there is debt rating on the COMPUSTAT database.

For each group, we examine the status of the firm – private, public equity, public debt, or completely public – one year after their classification to examine the transition from one status group to another. We focus on firms that transition from being Private to being either Public Debt or Public Equity firms and examine the change in their characteristics from the year before the transition to the year following the transition.

We examine changes in the following variables. Assets and Sales are measured in constant 2002 dollars using the change in the CPI to adjust prior years' data. PP&E refers to the ratio of net PP&E to total assets. LEVERAGE is the ratio of long-term debt to total assets. R&D is the ratio of R&D expenses to sales. ROA is the ratio of operating income to total assets. %DEBT is the percentage of debt issuance to total funds raised in a given year. CAPX is the ratio of annual capital expenditure to total assets.

For each variable we measure the change from the year before the transition to the year after the transition. We report the means of the changes and standard deviations of the changes (in parentheses) separately for firms that transition from being Private firms to being Public Equity firms and for firms that transition from being Private firms to being Public Debt firms. We test for significance of differences in changes in firm characteristics around the transition from being Private firms to being either Public Equity firms or Public Debt firms using the following cross-sectional equation:

$$Y_i = c + \beta \cdot I_{Public-equity} + \varepsilon_i$$

where Y_i denotes the compared characteristic and $I_{Public\text{-}equity}$ is a dummy variable that equals "1" for Public Equity firms and "0" for Public Debt firms.

Numbers in brackets are the number of sample transition firms in each cell.

Table 12 (cont.)

Changes in Firm Characteristics around the Time the Firms Become Public

Change in Characteristic	Become Public Equity firms	Become Public Debt firms	Difference (Std. error)
SALES	461 [715]	440 [174]	20.842 (198)
ASSETS	1,412 [721]	1,065 [180]	346.562 (778)
R&D	-0.9% [720]	0.1% [180]	-0.974 (1.631)
PP&E	-0.67% [663]	-0.66% [176]	-0.014 (0.949)
ROA	-0.2% [647]	1.2% [173]	-1.429* (0.663)
CAPX	0.55% [641]	-0.04% [167]	0.594 (0.726)
LEVERAGE	-8.9% [721]	1.3% [180]	-10.241** (1.853)
%DEBT	-4.2% [502]	-4.4% [123]	0.187 (3.802)

* Significant at 5%

** Significant at 1%