Do Convertible Bond Issuers Cater to Investor Demand?

Abe de Jong, Eric Duca and Marie Dutordoir[1]

Abstract

This paper investigates catering in convertible bond markets. While existing papers on convertible debt issuance mainly focus on supply-driven motivations, we examine whether issuance is higher during windows with a larger investor demand for convertible securities. Convertibles bond design allows managers to cater towards specific demands in financial markets, whereas equity and straight debt do not exhibit such flexibility. We develop six proxies for time-varying investor preferences for convertibles. Using a time-series framework, we find that catering measures have a significant impact on issuance volumes. Our findings are robust to controlling for other factors that may explain issuance activity and to adopting different estimation frequencies.

Keywords: Convertible bonds, Catering, Security issues

JEL classification codes: G32, G39

[1] All authors are from Rotterdam School of Management, Erasmus University, Burg. Oudlaan 50, PO Box 1738, 3000 DR Rotterdam, The Netherlands.
Corresponding author: Eric Duca. Phone: +31-(0)104082601, E-mail: educa@rsm.nl.

1. Introduction

Convertibles are bonds that can be converted into equity at the option of the investor. Convertible debt is an important source of financing for U.S. firms: U.S. convertible debt issuance amounted to $61.6 billion in 2007, compared with $71.8 billion raised from seasoned equity offerings and $388.5 billion from straight debt issues.

Prior literature provides different rationales for issuing convertible debt. These include mitigating asset substitution problems (Green, 1984), resolving the disagreement between managers and bondholders regarding the risk of a firm's activities (Brennan and Kraus, 1987; Brennan and Schwartz, 1988), providing backdoor-equity financing when conventional equity issuance is difficult due to asymmetric information (Stein, 1992), and reducing the issuance costs of sequential financing while at the same time mitigating overinvestment (Mayers, 1998). Together, the rationales on convertible debt imply that convertibles are a suitable financing tool for firms with high costs of attracting straight debt or common equity financing. Lewis et al. (1999, 2003) find empirical evidence consistent with this prediction. Other empirical studies on convertible debt issuance motivations focus on macroeconomic determinants. A common finding of these papers is that firms are more likely to issue convertibles during periods with higher economy-wide debt- and equity-related financing costs (Hoffmeister et al., 1987; Mann et al., 1999; Krishnaswami and Yaman, 2007b).

In this paper we hypothesize that, next to firm-specific and general macroeconomic determinants, convertible debt issuance might also be driven by investor demand for convertible securities. As an asset class, convertible bonds are different from equities or straight debt since they allow the holder to benefit from upside movements in stock

prices, while being less affected by downward movements due to their debt component. There are several reasons why convertibles should be considered as a separate asset class whose payoffs cannot easily be replicated. Convertibles may be attractive to certain types of investors that have restrictions on the amount of equity they can hold in their portfolios, such as insurance companies and public employee pension funds (Lummer and Riepe, 1993). Convertibles offer diversification benefits as well as indirect participation in equities to this class of investors, who would otherwise mainly hold fixed-income securities and real estate. Eckmann et al. (2007) note that convertibles also provide hedging opportunities for stocks for which there is no liquid option market, such as small caps and stocks that are hard to short. They also compare the payoffs of a convertible to a combination of straight debt and options and note that the value of a convertible reflects the interaction between the debt and equity components rather than simply their sum. A study by Long and Sefcik (1990) also identifies differences between convertibles and a combination of straight debt and warrants, such as their maturity and frequency of issue. Meanwhile, Ranaldo and Eckmann (2004) and Ammann et al. (2007) empirically show that the return process of convertible bond funds cannot be fully explained by factors typically related to stock and bond markets. We argue that investor preferences for these typical convertible-debt related features fluctuate over time, and that companies issue convertibles to satisfy this time-varying investor appetite. Evidence that investor appetite for convertibles varies over time can also be found in the popular press.[2]

We develop six proxies that capture these time-varying fluctuations in convertible debt demand. As a first proxy variable we use the abnormal stock returns around recent

2 For instance, an article by Gaunt (2008) in the Herald Tribune reports that "Companies like (…) JPMorgan Asset Management are opening new convertible bond funds to exploit demand."

convertible bond issues. Periods with more favorable convertible debt announcement returns should reflect windows with a higher investment preference for convertible debt securities. Baker and Wurgler (2004) use a similar measure to capture time-varying investor preferences for dividends. Our second proxy captures flows into convertible bond mutual funds. This proxy is inspired by Cha and Lee (2001), who suggest that flows into equity mutual funds proxy for equity demand. In recent years hedge funds have also assumed a larger role in the primary convertible debt market (Choi et al., 2009), so we also construct a measure of flows into convertible arbitrage hedge funds. Risk aversion is another factor that we include to measure demand, since convertible bonds offer downside protection that makes them more desirable in periods of heightened uncertainty.[3] We construct a proxy similar to Kumar and Persaud (2002), who extract risk aversion from the relation between risk and returns across a broad group of assets. As a fifth proxy for time-varying demand for convertible debt, we use the number of firms using the over-allotment option in the convertible offering as a percentage of issuers in any given month. During periods with higher demand for convertibles, more firms should use the over-allotment option. Our final measure aims to directly capture time-varying preferences for the option component of a convertible bond. We follow Garleanu et al. (2006) and calculate the difference between implied volatility and realized volatility on the S&P500 index for this purpose.

We examine our hypothesis by regressing quarterly U.S. convertible debt issuance volumes over the period from January 1975 to December 2007 on lagged values of the above six proxies. We find that flows into convertible bond mutual funds and convertible

3 Several studies show that risk aversion is time-varying (for instance, Campbell and Cochrane, 1999; Kumar and Persaud, 2002; Brandt and Wang, 2003).

bond arbitrage hedge funds, the level of risk aversion in the market, the use of the over-allotment option, and the market demand for option-like features are all significantly positively related to aggregate convertible debt issuance. Our findings hold after controlling for firm-specific characteristics and for general economy-wide financing costs measures. Altogether, our catering measures are able to explain around 27% of the quarterly intertemporal variation in convertible issues. We also show that most of the proxies for time-varying convertible debt demand do not influence straight debt or equity issuance volumes. This result further supports our hypothesis that convertible bonds are an independent asset class catering to a specific clientele.

We provide several contributions to the literature. First, we add more insight into the motivations for firms to issue convertibles. Previous studies on convertible debt issuance mainly focus on the supply-side of the market (i.e., the preferences of the issuing companies). Our study shows that demand-side factors (i.e., temporal fluctuations in investor preferences for convertible securities) also play an important role in explaining issuance choices. We look at several sources of demand for convertibles, thus extending current research that has mainly focused on demand from convertible bond arbitrage hedge funds (Choi et al., 2007). Our findings complement the growing literature on catering incentives in corporate finance decisions (see, e.g., Baker and Wurgler 2004; Baker et al., 2007; Polk and Sapienza, 2008) by showing that managers acknowledge changing preferences for convertible securities and cater to this demand in order to obtain financing. Second, our results contribute to the literature by reinforcing the notion of convertible bonds as a separate asset class. Anecdotal evidence by Eckmann et al. (2007) suggests that investors are underexposed to this asset class since they might assume that

convertibles can be replicated by a combination of equities and bonds, whereas Lummer and Riepe (1993) and Ranaldo and Eckmann (2004) analytically show that convertibles should form part of an efficient portfolio, particularly for risk-averse investors. We show that the characteristics of convertible bonds create a clientele attracted by factors peculiar to these instruments and mostly unrelated to straight debt or equity features.

The remainder of the paper is structured as follows: In the next section we review the literature and develop the theoretical background for our hypothesis. Section 3 describes the methodology and the data. In Section 4 we discuss our empirical results, while Section 5 concludes the paper.

2. Literature review

The reference literature for this paper consists of two strands. A first strand of papers analyzes motivations for firms to issue convertible debt. A second strand of papers examines the impact of catering incentives on corporate finance decisions.

A. Studies on the motivations for convertible debt issuance

The literature presents several viewpoints on why firms issue convertible debt. Green (1984) states that, due to the convexity in their payoffs, convertible bonds are useful in reducing contracting costs associated with asset substitution behavior of shareholders. Brennan and Schwartz (1988) show that convertible bonds substitute for straight debt if information asymmetry about the riskiness of the firm's assets is high, since convertibles are less sensitive to risk as a result of their option component. Convertibles reduce this risk-shifting problem by allowing bondholders to participate in any potential upside thus

lowering the potential payoffs of shareholders. In the Stein (1992) framework, firms with high financial distress costs issue convertibles as an alternative to equity in order to alleviate equity-related adverse selection costs. On the whole, these theories predict that convertibles are most useful for firms with high firm-specific costs of attracting straight debt or equity financing. Using a security choice model that incorporates convertible debt, straight debt, and equity, Lewis et al. (1999) find empirical evidence consistent with this hypothesis.

Another implication of the theoretical convertible debt models is that, irrespective of firm-specific characteristics, convertible debt issuance should be more attractive during windows with higher economy-wide costs for attracting debt or equity financing. A number of empirical studies have therefore examined the impact of aggregate debt- and equity-related financing costs on the convertible debt issuance choice. Alexander et al. (1979) and Henderson (2006) conclude that managers do not time convertible issues during conditions that are favorable for convertible issuance, since convertible bond prices rise after issuance. Hoffmeister et al. (1987), however, do find evidence that convertible debt issuers try to time the market. Dutordoir and Van de Gucht (2007) show that firms with high costs of attracting standard financing tools time their convertible offering during periods with low debt- and equity-related financing costs. Krishnaswami and Yaman (2007b) document that companies are more likely to substitute convertible debt for straight debt during periods with high economy-wide debt-related financing costs.[4]

[4] A number of other studies have examined temporal fluctuations in straight debt and equity issuance volumes. Choe et al. (1993) study the impact of economy-wide adverse selection costs (measured by macroeconomic variables) on seasoned equity offerings and argue that adverse selection costs vary counter-cyclically to explain the general increase in equity issues during expansions. Korajczyk and Levy (2003)

The afore-mentioned empirical studies have the common feature that they all treat convertible debt as a combination of straight debt and equity. However, as stated by Eckmann et al. (2007), convertibles are more than that since they also incorporate an option component, resulting in asymmetric payoffs that are not simple to replicate through a combination of underlying assets. For instance, options may not be available on small stocks or to retail investors, whereas convertible bond funds provide an easier route to the same features that investors require. Ranaldo and Eckmann (2004) empirically show that convertibles offer protection against downside equity movements, but allow upside participation, so that demand for convertibles embodies fear and expectations of investors. Our key hypothesis in this paper is that companies cater to temporal fluctuations in investor preferences for these specific features of convertible debt.

B. Studies on catering incentives in corporate finance decisions

A second relevant strand of literature examines how managerial decisions may be influenced by changing investor preferences over time. Kim and Stulz (1992) show that US convertible bond issuers took advantage of increased demand for convertibles in the Eurobond market caused by a relative tax advantage with respect to US bonds that persisted until the change in US withholding taxes in 1984. Baker and Wurgler (2004) propose a model in which managers cater to periods of increased preference for dividend-paying firms by initiating dividends. They run time-series regressions of initiations on

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look at the determinants of capital structure choice and find that macroeconomic conditions explain 12 to 51% of the variations in leverage. Lowry (2003) examines IPOs and finds that, apart from changes in the economy-wide level of capital demand and information asymmetry, changes in investor sentiment explain a significant amount of the time-series variation in IPO volume. Krishnaswami and Yaman (2007) carry out a study for bond markets and find that abnormal returns are influenced by contracting costs of moral hazard, adverse selection, and financial distress.

four proxies for investor demand for dividends. Baker et al. (2007) find evidence that managers choose to maintain share prices at a low level in response to higher investor preference for low-price firms. Polk and Sapienza (2008) show that there is a time-varying price premium for the level of firm investment, and that firms cater to this premium by altering their investment policy. Aghion and Stein (2008) provide a theory in which managers actively cater to the stock market's preferences for sales growth versus profit margins when deciding whether to maximize sales growth or cut costs.

3. Methodology and data

A. Methodology

The main goal of this paper is to demonstrate the role of demand factors in the convertible bond issuance decision, while controlling for other macroeconomic variables that have previously been used to explain issuance. For this purpose, we analyze aggregate issuance in a time-series framework, where the number of issues every quarter is regressed against lagged quarterly proxies for convertible bond demand, as well as lagged quarterly proxies for aggregate debt- and equity-related financing costs as controls. We estimate the following regression model:

$$\begin{aligned} Issue_t = {} & \beta 0 + \beta 1 GDP_{t-1} + \beta 2 Default_{t-1} + \beta 3 Runup_{t-1} + \beta 4 Sent_{t-1} \beta 5 Abnret_{t-1} \\ & + \beta 6 Mflows_{t-1} + \beta 7 Hflows_{t-1} + \beta 8 RiskAversion_{t-1} + \beta 9 Overallot_{t-1} + \\ & \beta 10 Option_{t-1} + U_t \end{aligned} \quad (1)$$

Where:
Issue refers to the number of convertible issues, *GDP* is growth in output, *Default* refers to changes in the default premium, *Runup* captures the stock market returns, *Sent* proxies for investor sentiment, *Abnret* are the abnormal convertible issue returns, *Mflows* is

growth convertible mutual fund flows, *Hflows* is growth in convertible hedge fund flows, *Risk aversion* captures risk aversion, *Overallot* is the over-allotment option variable, *Option* proxies for the demand for options.

B. Dependent variable

As the dependent variable we use the number of companies issuing convertible debt in each quarter. Figure 1 shows the variation in the quarterly number of issues since 1975. We consider the number of issues as a better proxy than the dollar volume since the latter can be biased if a small number of firms have large dollar issues. We obtain data for U.S. convertible bond issues between 1975 and 2007 from the Securities Data Company (SDC) New Issues Database. We deflate the number of issues by the number of firms listed on the NYSE, AMEX and NASDAQ, in a similar fashion as Lowry (2003) and Pastor and Veronesi (2005) do for IPOs. A small modification is that we first construct an index for the number of listed firms, with 1975 taking the value of one, so as to avoid dividing by a large number, which would make interpretation less clear. After excluding financials (SIC codes 6000-6999) and consolidating multiple tranches of convertibles issued by the same firm, we are left with a sample of 3,497 issues corresponding to a total of $900.8 billion dollars expressed in year-2007 dollars. We follow a similar procedure to obtain the number of US public straight debt and equity issues from SDC, leaving us with a sample of 22,284 straight debt offerings and 12,272 seasoned equity offerings with year-2007 dollar values of $6,196.7 billon $1,613.6 billion, respectively. The deflated numbers of convertible debt, straight debt and seasoned equity issues are depicted in Figure 1, which clearly shows the limited overlap between convertible bonds and the other two series.

<< Please include Figure 1 about here >>

C. Proxies for investor preferences for convertible debt

To capture time-varying prefences for convertible securities, we develop several proxy variables. Below, we motivate and describe each of these variables.

Baker and Wurgler (2004) use the abnormal stock returns upon recent announcements of dividend initiations to capture investor preferences for dividend-paying stocks. Similarly, Baker et al. (2007) use abnormal stock returns at stock split announcements to capture time-varying preferences for low-priced stocks. The rationale behind these proxy variables is that more favorable announcement returns should reflect a higher investor appetite for a particular feature. In line with these studies, we use the abnormal stock returns around recent convertible debt announcements as a first proxy variable. We apply standard event study methodology as in Brown and Warner (1985) to calculate abnormal returns over the windows (-1 to 1) around the announcement date. As proxy for the market index we use CRSP value-weighted index. We estimate the market model over the window –200 and –61, relative to the announcement date 0.

As a second proxy we use growth in flows into convertible bond mutual funds. Flows into equity funds have been previously used to capture demand for equities (Cha and Lee, 2001; Baker and Wurgler, 2007) so that a similar measure for convertible bond mutual funds seems a logical extension. We obtain data for mutual fund flows from the CRSP Survivorship-Bias Free Mutual Fund Database. To identify mutual funds investing predominantly in convertible bonds, we follow Agarwal et al. (2006) who select those funds that have "CVR" stated as a Strategic Insight (SI) objective. In addition we also

include those funds with a Lipper objective code as "CV" and funds that have at least 50% of their holdings in convertibles for the whole period they report.[5] The SI and Lipper objectives are classifications of mutual funds reported to CRSP, and 'CVR'/'CV', respectively, are the categories referring to convertible bond mutual funds. Our final sample consists of a total of 126 funds that report their inflows over (part of) the 1975-2007 period. The number of funds rises from 4 in 1986 to over 10 thereafter, so we decide to use data beginning only after 1986 to limit potential biases.

Next to mutual funds specialized in convertible bonds, hedge funds also play a very important role in the convertible debt market over recent years, as they purchase around 70% of primary market issues of convertible bonds (Choi et al., 2009). These funds typically take a long position in the bond and hedge it by shorting the issuer's stock. Agarwal et al. (2006) describe several alternative strategies that these funds may engage in on the secondary market, apart from purchasing new issues. Flows into these funds should therefore capture demand from this sophisticated type of investor. We select our sample of convertible bond arbitrage hedge funds from the Tass Live and Graveyard sub-databases, which provide coverage from 1994 onwards. We select those funds having a 'primary category' of convertible arbitrage and a US-oriented 'geographical focus', and convert all asset values to US dollars. Our final sample consists of a total of 164 funds reporting their inflows over (part of) the 1994-2007 period. For both hedge fund and convertible fund flows we calculate inflows as follows. First we calculate dollar flows using the change in total net assets adjusted for returns as follows:

[5] Wermers (2000) also uses the 50% criteria.

$Flow_t = assets_t - assets_{t-1}(1+r_t)$.

Where r_t is the asset return from time *t-1* to *t*.

We then aggregate flows and total net assets across funds and take the change in total flows, divided by total lagged assets to get a growth rate in flows as our proxy.

Our fourth proxy is the level of risk aversion. Canner et al. (1997), Campbell and Viciera (2001) and Kayidala (2004), amongst others, show that the allocation between stocks and bonds varies according to risk aversion. Lummer and Riepe (1993) document that convertible bonds are less risky than equities, while Ranaldo and Eckmann (2004) analytically show that convertibles should form a significant part of a minimal risk portfolio. Hence, if risk aversion increases, raising the price of risk, demand for convertibles should increase. To capture time-varying risk aversion we adopt a measure based on the distribution of returns across assets.[6] Kumar and Persaud (2002) hypothesize that as risk aversion increases, riskier assets will underperform relative to less risky assets, all else equal. Thus, the correlation between changes in excess returns and the level of risk across a number of assets should indicate changes in risk appetite. Our measure of risk aversion is intended to capture time-variation in the slope of the mean-variance frontier. We compute it as the contemporaneous correlation between volatility and returns across the 49 Fama and French industry portfolios (obtained from CRSP).[7] A negative correlation indicates that risk aversion has increased, shifting demand away from riskier stocks, which subsequently underperform. In all subsequent analyses we

[6] Our proxy is also similar to an indicator developed by Credit Suisse First Boston in 2001 (see Deutsche Bundesbank 2005 for a description).

[7] These data are available on the website of Kenneth French:
http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

reverse the coefficient so that a positive sign implies an increase in risk aversion, to make the variable easier to interpret.

Issuers of bonds, equity and convertible bonds commonly incorporate an over-allotment option that into their offering, that they may exercise if demand for the offering exceeds expectations. This useful piece of information has rarely been used in studies on security issues, apart from Chiu (2006), who uses the over-allotment accompanying seasoned equity offerings to capture investor sentiment. In similar fashion, the over-allotment option associated with convertible offerings seems logical as a proxy for investor demand. In the case of convertible offerings, the amount normally made available through the over-allotment option is around 15 percent of the total issue proceeds. We calculate the ratio of the number of firms using the over-allotment option (obtained from SDC Platinum) divided by the number of issues in every period.

The conversion feature of convertible bonds gives them asymmetric payoffs that mimic to some extent the payoffs of a long position in a call option. While the theoretical determinants of option prices, such as volatility, are well-known, there are few empirical papers that actually measure demand for options. One exception is a study by Garleanu et al. (2006), who show that the difference between implied and realized volatility on the S&P 500 index is a good indicator of option demand. They use the realized volatility over the 60 trading days leading up to the observation of an option price as an estimate of the expected volatility. They suggest that net option demand may cause excess implied volatility, which is defined as the difference between implied volatility and expected volatility in the market index. As in Garleanu et al., we calculate the difference between the VIX (Chigago Board Options Exchange Volatility Index) and realized daily volatility

on the S&P 500 index over the 60 trading days prior to the VIX observation. The VIX measures the market's expectation of 30-day volatility, as implied from S&P500 index options, and is available from OptionMetrics. We calculate daily differences and then take the monthly average. Data for this measure is available in OptionMetrics from 1996 onwards.

D. Control variables

We include several widely-used macroeconomic variables to control for intertemporal variations in general debt- and equity-related contracting costs. All variables are obtained from Datastream. Following Lowry (2003), we control for the demand for capital by including GDP growth, defined as the quarterly percentage change in real GDP (annualized). GDP growth may also proxy for time-variation in information asymmetry, as noted by Choe et al. (1993). The default premium serves as a proxy for bankruptcy risk, and is calculated as the difference between yields on Baa-rated bonds and the 10-year U.S. Treasury rate. As in Choe et al. (1993), we take the change in the default premium over the quarter preceding the issue quarter. The market run-up is calculated as the monthly growth in the S&P 500 index, averaged over the quarter preceding the issue, and is included to control for market conditions, as well as for growth expectations (Korajczyk and Levy, 2003; Lowry, 2003). Growth opportunities, in turn, are related to the contracting costs of moral hazard, as noted by Krishnaswami and Yaman (2007b). Finally we control for sentiment following several studies that highlight its importance in security issuance decisions (see for instance, Morck et al. 1990; Lowry 2003). As our sentiment proxy we use the University of Michigan Consumer Sentiment Index.

Table 1 provides descriptive statistics for each of the catering proxies and control variables The returns represent the average of the monthly values over the quarter and are expressed in decimals. The unit root tests indicate that all variables are stationary. We also calculated VIF statistics (unreported) for each variable, for each regression and find that these are lower than 2 in all cases, so that multicollinearity is not an issue. Table 2 presents the correlation coefficients between the explanatory variables defined in Equation (1). The catering proxies tend to have low correlations, suggesting that they capture different aspects of demand for convertibles. Growth in mutual fund flows is significantly related to growth in hedge fund flows, indicating that investors in these funds seek similar characteristics in convertible bonds, in line with findings of Ammann et al. (2007). However, mutual fund flows are more sensitive to risk aversion, suggesting that these investors seek the diversification and protection offered by convertible bonds, rather than simply exploit arbitrage strategies.

<< Please insert Table 1 about here >>

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4. Results

A. Times series regressions

In the first step of our analysis we examine the importance of our catering proxies for convertible issues in a time-series framework. First we report results for regressions of

quarterly convertible issuance against these demand proxies as well as control variables. The regressions are all estimated by means of the Newey-West technique to obtain heteroskedasticity- and autocorrelation-consistent standard errors. In addition, we include an autoregressive parameter [AR(1)] to correct for residual serial correlation. Results are reported in Table 3.

<< Please insert Table 3 about here>>

In the first column of Table 3 we include the control variables only, which turn out to be insignificant. The second column indicates that our first proxy for convertible demand, the abnormal issue returns, has the predicted sign but is insignificant. As a robustness check we use the difference between abnormal returns at convertible debt issues and abnormal returns at straight debt issue and find that these are positive and significant in explaining convertible debt issues.[8] This is in line with firms issuing more convertibles when there is a preference shift away from straight debt securities towards convertible debt. If instead we regress convertible issues on the difference between convertible debt abnormal returns and equity abnormal returns, the estimated coefficient is positive but insignificant.

Our second proxy, the growth rate in flows into convertible bond mutual funds, enters with a strongly significant and positive coefficient. In fact, it almost doubles the baseline R^2 from 21.8% to 40.8%. A one-standard deviation increase in this variable leads to an increase of 9.5 issues over a quarter, illustrating its economic significance. In addition,

[8] The results of this robustness check are not reported for parsimony. Results of all non-reported robustness checks described throughout the paper are available upon request from the corresponding author.

this variable is robust to difference transformations. First, if we extend the period to 1975, the results hardly change. The same applies if we calculate the abnormal flows as in Warther (1995), or if we orthogonalize the flows to remove the effects of flows into equity funds, bond funds, government bond funds, or convertible bond arbitrage hedge funds.

The coefficient for growth in convertible arbitrage hedge fund flows is positive but insignificant (column 4). However, when we change the starting period from 1994 to 2000, this coefficient increases and becomes significant (column 5). This finding is in line with the growing importance of hedge funds in the primary market for convertible issues in recent years (see for instance Choi et al. 2009). A one-standard deviation increase in inflow growth leads to a 4.4 quarterly increase in convertible issues.

Our proxy for risk aversion is statistically significant and enters the regressions with a positive sign, as hypothesised, implying more convertibles are issued when risk aversion in the previous quarter is higher. As an alternative measure for risk aversion, we follow a similar methodology as Chiu (2006), who uses the difference between equity fund flows and government bond fund flows as a proxy for risk preference. Accordingly we use the difference in flows between equity funds and government bond funds, with a smaller difference implying higher risk aversion. We classify equity and government bond mutual funds in a similar way as convertible bond mutual funds. We make sure there are no convertible bond funds in any of these groups. We use values for this proxy from 1982 onwards, since there are less than 10 funds before this date. The results for this alternative risk aversion proxy are similar in nature as those reported in Table 3.

The seventh column shows that the lagged quarterly change in the proportion of issuers using the over-allotment option is also a significant determinant of inter-temporal issuance activity. A one-standard deviation increase in this variable, which is equivalent to a further 6.5% of issuers using the over-allotment option, leads to an additional 3 convertible bond issues over the quarter. The alternative measure for over-allotment, the ratio of over-allotment to the total amount offered is also positive and significant, while the ratio of the number of firms using an over-allotment option to the number of firms having the option is positive but insignificant. For robustness we also run regressions using the ratio of over-allotment proceeds to the total amount offered, first averaged across firms and then summed up monthly. In addition, we compute the ratio of the number of firms using an over-allotment option to the number of firms having the option in every period. Since these variables are non-stationary, we take first differences

Our final proxy for catering incentives, intended to capture the demand for options, is the difference between the VIX and realized daily volatility on the S&P 500 index (see column 8). It enters the regression with the predicted sign and is significant at the 0.1 level. The R^2 also rises five-fold compared with the baseline R^2, further highlighting the contribution of this variable. The sensitivity of convertible issues to this variable is considerable, with a one-standard deviation increase leading to almost 6 further issues. To check the robustness of our finding, we compute a second measure that captures the demand for individual stock options. To construct the second measure we first obtain the daily implied 30-day volatility for all stocks available in the OptionMetrics database, as well as the realized volatility for each stock in the prior 30 days. We then compute the difference in this measure for each stock before taking the average across all shares, and

finally forming monthly averages from the daily values. While this measure of option demand enters the regression with a positive coefficient, it is less significant than the proxy measuring demand for index options.

In summary, the findings reported in Table 3 provide support to the catering story, whereby managers cater to increased preference for convertible debt by issuing these securities in the primary market. Our proxies for demand all have the predicted sign and are mostly significant. We also find support for the increased influence of convertible bond arbitrage hedge funds in recent years.[9] When all the catering variables are included in the regression (column 9), the flows measures and the risk aversion proxy become insignificant, probably reflecting somewhat high correlation between these variables.

In the second step of our analysis we estimate regressions with the quarterly numbers of seasoned equity and corporate bond issues as the dependent variables. The estimation technique is virtually identical as for the convertible bond issues, with the same explanatory variables included. If the six demand proxies identified earlier truly proxy for investor demand specific to convertible bonds, then they should not have a significant impact on equity or straight debt issue volumes. Results of the analysis of seasoned equity volumes are presented in Table 4.

<< Please insert Table 4 about here >>

Table 4 indicates that almost all proxies for convertible debt demand are insignificant, apart from the over-allotment proxy. On the other hand, the market run-up becomes

[9] As a robustness check, we also regress the monthly (instead of quarterly) number of issues against variables that are averaged over the preceding quarter. Results qualitatively the same, but the over-allotment and option demand proxies are no longer significant.

strongly significant across all specifications, having a positive impact on the number of equity issues. This is in line with findings of Choe et al. (1993) as well as Bayless and Chaplinsky (1996) and could reflect market timing, or investment opportunities of equity issuers.

In Table 5 we report the results of a similar regression with the number of straight debt issues as dependent variable. We see that only risk aversion and the over-allotment proxy are significant. The positive coefficient for the risk aversion proxy indicates that more issuers tap the straight debt market when risk aversion increases, seemingly suggesting that demand for riskier stock decreases.

<< Please insert Table 5 about here >>

The fact that most of the catering proxies are insignificant in Tables 4 and 5 strengthens our argument that these proxies capture fluctuations in demand specific to convertibles, which is different from demand for straight debt or equity.

In Table 6 we test whether flows into equity mutual funds and straight debt mutual funds can explain convertible issues, and also whether convertible mutual fund flows and convertible arbitrage hedge fund flows can be used to explain seasoned equity and straight debt issues. Our intention is again to show that convertible debt volumes are driven by convertible bond demand proxies rather than by proxies for equity or straight debt demand. Column 1 shows that flows into equity mutual funds are insignificant, but flows into straight debt funds are also important in explaining convertible issues. Columns 3-6 indicate that flows into convertible mutual funds are insignificant in

explaining equity and straight debt issuance volumes, so that they seem to be specific in capturing demand for convertible bond issues (Column 1).

<< Please insert Table 6 about here >>

Overall, the results in Table 3 suggest that our proxies are able to capture changes in convertible debt preferences, which firms seem to acknowledge and cater to by issuing more convertible bonds. The findings in Tables 4 to 6 substantiate this claim since they indicate that the convertible debt demand proxies are largely uncapable of explaining changes over time in the number of straight debt or equity issues. We also carry out Granger causality tests to determine whether our demand proxies lead convertible issues or vice versa. For up to 4 quarterly lags the tests strongly suggest that the over-allotment and mutual fund proxies cause issuance, whereas there is no clear direction for the remaining proxies.[10]

B. Crossectional probit analyses

There is a possibility that fluctuations in the number of convertible issues may in fact reflect changing characteristics of convertible issuers over time. In order to control for this possibility, we estimate a probit model for the choice between convertible debt and seasoned equity, as well as for the choice between convertible debt and straight debt. We include the catering proxies and control variables as defined previously, with these variables taking the average value over the quarter preceding the issue month. In addition,

[10] We do not carry out this test for the option demand and risk aversion proxies since there seems to be no economic rationale for reverse causality.

we include the following standard firm-specific variables that capture costs associated with straight debt and equity financing, in line with other papers (Lewis et al., 1999; Krishnaswami and Yaman, 2007b). All the variables are retrieved from Compustat and measured as at the end of the fiscal year prior to the offering, unless stated otherwise:

Volatility: the annualized standard deviation calculated from returns over trading days -240 to -40 before the issue data. It is included to proxy for firm risk.

Stock runup: the cumulative stock return over days -240 to -40 prior to the announcement date. An increase in prices could reflect better investment opportunities, thus lowering information asymmetries.

Slack: calculated as cash and short-term investments divided by total assets (Compustat item 1 divided by item 6). This variable proxies for internal fund availability (adverse selection costs). Firms with higher slack could engage in wasteful use of resources, so that the interest payments on debt-like instruments act as a control mechanism to limit this practice.

FixedAssets: calculated as plant, property and equipment divided by total assets (Compustat item 8 divided by item 6). Firms with more tangible assets could take on more leverage since they have lower financial distress costs. Asset tangibility could also be negatively associated with information asymmetry.

Tax: this variables captures the tax liabilities benefit associated with issuing debt and is computed as Compustat item 16 divided by item 6.

MTBV (Market to book value) of equity: calculated as the number of shares (item 24) multiplied by the price (item 25), divided by common equity (item 60). This variable can

proxy for profitable growth opportunities, but may also capture asymmetric information (equity issues), or underinvestment problems (debt issues).

Size: calculated as the natural logarithm of total assets (item 6). Larger firms face smaller information asymmetries regarding their value and risk.

Leverage: Book leverage is taken as long-term debt (item 9) divided by total assets (item 6). Higher leverage is included to proxy for greater distress costs associated with debt, and firms with high leverage should find it harder to attract more debt.

Asset growth: calculated as the growth in assets over the year prior to the offering, and included as a proxy for growth opportunities. Firms with high growth opportunities could be more liable to exercise this growth options and engage in risk shifting.

Table 7 presents the results of a probit model where the dependent variable takes a value of 1 for convertible debt issues and a value of 0 for seasoned equity issues. The catering proxy variables and aggregate controls show the average value in the 3 months prior to issue, whereas for the firm-specific variables they are lagged one year.

<< Please insert Table 7 about here >>

All the catering proxies that were significant in the time-series regressions (Table 3) are still significant at the 0.05 level with the predicted sign, although flows into convertible hedge funds and the option demand proxy are now insignificant.[11] Thus, the probability of issuing a convertible instead of equity increases with higher flows into convertible mutual funds, higher risk aversion and when more companies make use of the

[11] The hedge fund proxy is also insignificant for the period after year 2000, in contrast with the results in Table 3.

over-allotment option. With respect to the firm-specific and economy-wide variables, our findings are largely consistent with those of previous studies (Lewis et al. (1999, 2003), Krishnaswami and Yaman (2007b)). Convertible issuers have significantly more volatile stock returns than equity issuers and have less tangible assets, so that information asymmetry costs are larger and financial distress costs higher. Interestingly, convertible bonds tend to be issued when the market has been rising, but the issuer's stock has actually fallen prior to the issue. The significance of the firm-level and aggregate controls is quite stable across regressions.

In Table 8 we show the results for a probit model where a convertible issue takes the value of 1 and a straight debt issue takes the value of 0.

<< Please insert Table 8 about here >>

Only mutual fund flows are significant with the predicted sign. With regards to the firm-specific characteristics, we find that the estimated coefficient for size is negative and highly significant.[12] Convertible issuers are also significantly riskier and have less fixed assets (higher financial distress costs) than debt issuers, supporting the argument that convertible debt reduces agency problems associated with risk shifting (Green, 1984). As expected, convertible issuers also have less to gain from tax benefits.

Together, the security choice models in Tables 7 and 8 indicate that the catering proxies are more pertinent for the choice of financing instrument between equity and

[12] Convertible issuers have an average total assets size of $3.4 billion, whereas straight debt issuers have average total assets of $10.9 billion. In separate analyses we find that out of the 2,069 firms that issued convertibles between 1975 and 2007, 652 also issued equity, whereas only 389 also issued straight debt, in the previous 3 years. Hence, convertible debt issuers might be excluded from issuing straight debt because they are too small to have access to bond markets.

convertible debt, whereas firm-specific characteristics are the main factor influencing the choice between straight debt and convertible debt. Firms are more likely to cater to investor demand for convertibles if they have to decide between equity and convertibles, than if they have to decide between straight debt and convertibles.

5. Conclusions

Convertible bond issuance fluctuates substantially over time, indicating that there are periods where financing conditions are preferential to issuers using this instrument to obtain funds. We follow a recent strand of literature that studies how corporate decisions are influenced by demand forces in the market. We note that convertible bonds can be considered as a separate asset class, distinct from equities and bonds, and find proxies to capture intertemporal variations in demand for this asset class. Our results provide support to the catering story, whereby managers cater to increased preference for convertible debt by issuing these securities in the primary market. Our proxies for convertible debt demand all have the predicted sign and are most of the time significant. We also find support for the increased influence of convertible bond arbitrage hedge funds in recent years. In contrast, the catering factors are mainly insignificant in explaining seasoned equity or straight debt offerings, supporting the hypothesis that firms cater to a specific clientele when issuing convertibles.

Our findings add more insight into why firms issue convertible bonds, by complementing previous literature that has mainly focused on firm-specific variables and changes in general debt- and equity-related contracting costs. We also contribute to the growing literature on catering that examines how corporate decisions are influenced by

demand forces. Specifically, our results indicate that managers acknowledge changing preferences for convertible securities and cater to this demand in order to obtain finance. We leave the issue of what causes these changing investor preferences as an interesting venue for future research.

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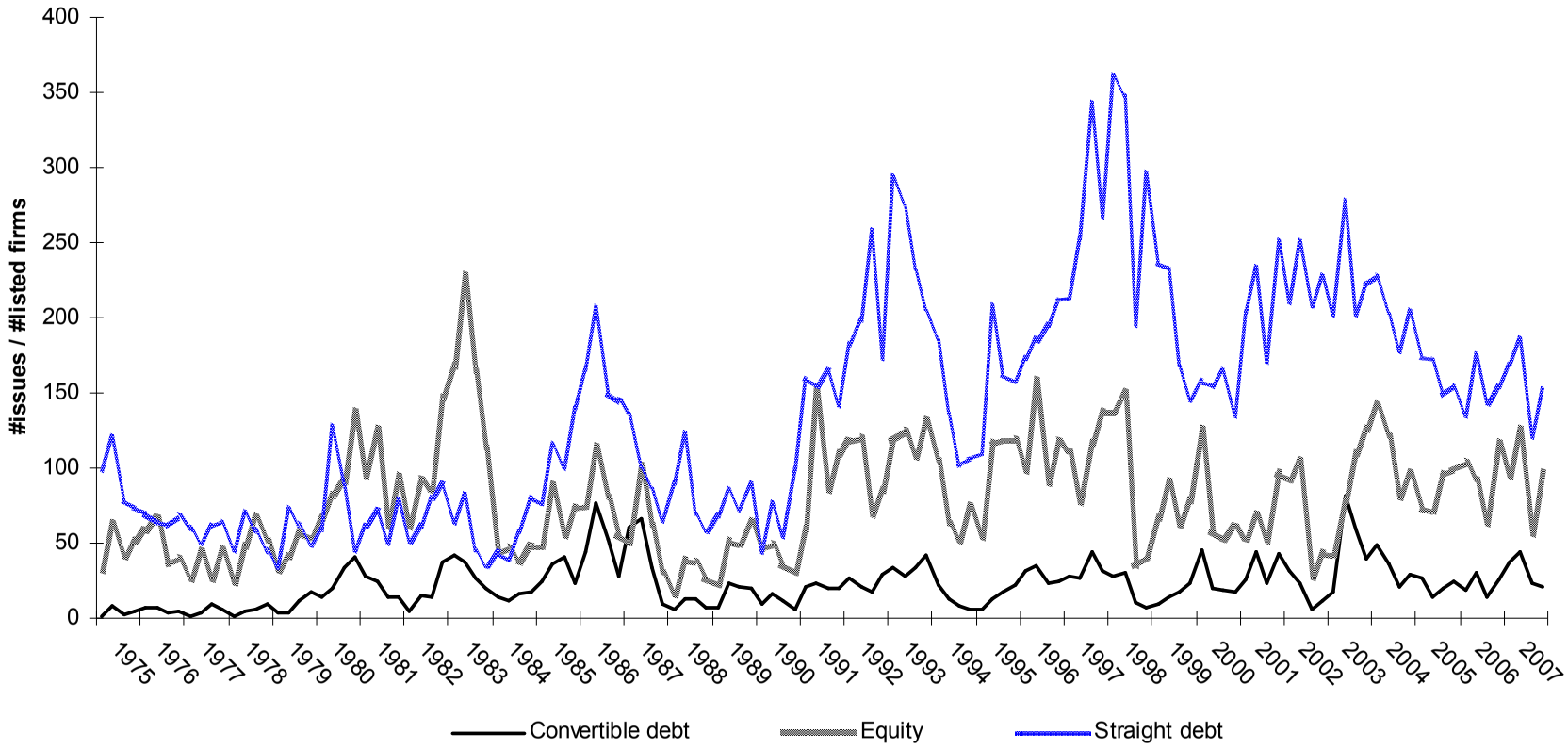

Fig.1. Time series of quarterly number of security issues between 1975–2007. The number of issues is deflated by an index of the estimated number of public firms, which takes a value of 1 in 1975. The data section in the text describes how the number of issues and the index are computed.

Table 1: Descriptive statistics for convertible issues, aggregate measures and catering proxies

Issuse refers to the number of convertible issues, *GDP* is growth in output, *Default* refers to the change in default premium, *Runup* is the return on the S&P 500 Index, *Sent* is the level of the Michigan Consumer Sentiment Index, *Abnret* are the abnormal convertible issue returns, *Mflows* is the growth in convertible mutual fund flows, *Hflows* is the growth in convertible arbitrage hedge fund flows, *RA* is the proxy for risk aversion, *Overallot* is the over-allotment option variable, *Option* proxies for the demand for options. All variables are in decimals and explained in fuller detail in the data section of this paper. The Dicky-Fuller unit root test has as a unit root as null hypothesis.

		Aggregate financing cost measures				*Convertibe debt catering proxies*					
	Issues	GDP	Default	Runup	Sent	Abnret	Mflows	Hflows	RiskAversion	Overallot	Option
Mean	22.395	0.031	0.000	0.008	87.480	-0.013	0.005	0.006	-0.039	0.002	0.042
Median	19.145	0.030	-0.012	0.008	90.500	-0.014	0.002	0.007	-0.007	0.000	0.039
Std. Dev.	15.789	0.032	0.113	0.026	11.741	0.015	0.021	0.015	0.306	0.065	0.024
Observations	132	132	132	131	131	130	88	54	132	87	47
Unit root: t-statistic	-5.94	-8.53	-14.37	-11.63	-3.19	-4.94	-3.68	-4.14	-4.13	-15.47	-5.63
Unit root: p-value	0	0	0	0	0.0226	0.0001	0.006	0.0019	0.0013	0.0001	0
Period	1975-2007	1975-2007	1975-2007	1975-2007	1975-2007	1975-2007	1986-2007	1995-2007	1975-2007	1986-2007	1996-2007

Table 2: Correlations among the variables

The variables are as defined in Table 1.

	Aggregate financing cost measures				*Convertibe debt catering proxies*					
	GDP	Default	Runup	Sent	Abnret	Mflows	Hflows	RiskAversion	Overallot	Option
GDP	1.00									
Default	-0.38**	1.00								
Runup	-0.04	-0.04	1.00							
Sent	0.36**	-0.10	-0.02	1.00						
Abnret	0.06	0.07	-0.18*	-0.26**	1.00					
Mflows	0.07	-0.05	0.20	0.15	-0.15	1.00				
Hflows	-0.14	-0.11	-0.11	0.05	0.12	0.42*	1.00			
Risk aversion	-0.07	0.08	0.10	0.23**	-0.07	0.44*	0.22	1.00		
Overallot	0.01	0.11	-0.17	-0.05	-0.02	-0.01	0.03	-0.01	1.00	
Option	0.05	0.06	-0.10	0.25	0.31*	0.13	0.29*	0.23	0.01	1.00

** correlation significant at the 0.01 level

* correlation significant at the 0.05 level

Table 3: Quarterly time series analysis for convertible debt issues

The dependent variable is the number of convertible bond issues deflated by an index of the estimated number of public firms. The explanatory variables are as defined in Table 1. The starting period varies but all data span till end-2007. The baseline R-squared is from a regression using the control variables only, for the same time-period as that with the catering proxy. All regression are estimated using the Newey-West technique. An autoregressive parameter [AR(1)] is also included in each regression to correct for residual serial correlation. T-statistics are in brackets.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	26.87 *	29.80 *	47.34 **	72.21 *	46.65	31.22 *	43.71 *	72.91 *	90.07 **
	(1.75)	(1.81)	(3.43)	(1.81)	(1.70)	(1.95)	(1.91)	(1.76)	(2.08)
Convertibe debt catering proxies									
$Abnret_{t-1}$		97.77							434.43 **
		(1.60)							(2.07)
$Mflows_{t-1}$			451.82 **						528.58
			(7.40)						(0.97)
$Hflows_{t-1}$				182.26	284.01 **				-82.28
				(1.12)	(2.06)				(-0.61)
$RiskAversion_{t-1}$						13.80 **			-4.18
						(2.33)			(-0.25)
$Overallot_{t-1}$							46.13 **		70.99 **
							(2.12)		(3.22)
$Option_{t-1}$								245.21 *	205.78 **
								(1.69)	(2.15)
Aggregate financing cost measures									
GDP_{t-1}	-28.12	-16.34	-59.98	15.60	-46.29	-23.02	-54.99	10.38	0.82
	(-1.02)	(-0.46)	(-0.76)	(0.20)	(-0.37)	(-0.85)	(-0.76)	(0.10)	(0.77)
$Default_{t-1}$	-4.41	-3.60	4.07	12.80	-47.69	-5.60	-4.24	1.52	15.84
	(-0.44)	(-0.38)	(0.22)	(0.37)	(-0.54)	(-0.56)	(-0.24)	(0.05)	(0.72)
$Runup_{t-1}$	77.85	91.16	96.70	35.92	163.44	75.36	91.39	67.08	151.13 *
	(1.39)	(1.48)	(1.38)	(0.45)	(0.88)	(1.35)	(1.55)	(0.84)	(1.69)
$Sent_{t-1}$	-0.04	-0.06	-0.25 *	-0.51	-0.19	-0.09	-0.20	-0.60	-0.69
	(-0.25)	(-0.35)	(-1.67)	(-1.24)	(-0.64)	(-0.50)	(-0.86)	(-1.29)	(-1.43)
AR(1)	0.56 **	0.58 **	0.13	0.32 **	-0.30	0.54 **	0.48 **	0.34 **	0.53 **
	(8.62)	(9.25)	(1.18)	(2.67)	(-1.58)	(8.02)	(6.24)	(2.74)	(3.31)
Adjusted R-squared	33.3 %	32.4 %	40.8 %	8.6 %	-6.3 %	35 %	27 %	11.5 %	27.1 %
Baseline R-squared		33.3 %	21.8 %	7.1 %	-9 %	33.3 %	21.8 %	2.2 %	2.2 %
No. of Observations	130	128	88	53	30	130	86	46	44
Starting period	1975	1975	1986	1994	2000	1975	1986	1996	1996

** significant at the 0.05 level, * significant at the 0.10 level

Table 4: Quarterly time series analysis for seasoned equity issues

The dependent variable is the number of seasoned equity issues deflated by an index of the estimated number of public firms. The explanatory variables are as defined in Table 1. The starting period varies but all data span till end-2007. The baseline R-squared is from a regression using the control variables only, for the same time-period as that with the catering proxy. All regression are estimated using the Newey-West technique. An autoregressive parameter [AR(1)] is also included in each regression to correct for residual serial correlation. T-statistics are in brackets.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	126.22 **	127.56 **	125.29 **	139.37 **	132.44 **	105.84 **	118.20 **	142.11 **
	(3.01)	(2.96)	(2.97)	(2.38)	(3.18)	(2.46)	(2.43)	(2.43)
Convertibe debt catering proxies								
$Abnret_{t-1}$		121.14						760.18 **
		(0.80)						(2.63)
$Mflows_{t-1}$			341.18					602.94
			(1.60)					(0.94)
$Hflows_{t-1}$				88.94				-196.06
				(0.48)				(-0.89)
$RiskAversion_{t-1}$					19.20			-35.94
					(1.28)			(-1.26)
$Overallot_{t-1}$						83.38 **		85.51 **
						(2.19)		(2.17)
$Option_{t-1}$							297.94	204.85
							(1.51)	(1.01)
Aggregate financing cost measures								
GDP_{t-1}	15.42	26.08	-13.44	66.93	22.99	-73.94	132.92	1.50
	(0.22)	(0.30)	(-0.09)	(0.33)	(0.33)	(-0.56)	(0.63)	(0.65)
$Default_{t-1}$	-44.51 **	-43.62 **	3.23	85.78	-45.99 **	0.90	52.70	61.58
	(-2.10)	(-2.06)	(0.08)	(1.40)	(-2.17)	(0.02)	(1.03)	(1.11)
$Runup_{t-1}$	242.82 **	259.76 **	293.11 **	499.71 **	239.08 **	376.40 **	484.36 **	540.67 **
	(2.95)	(2.86)	(3.03)	(2.91)	(2.94)	(3.97)	(2.80)	(3.28)
$Sent_{t-1}$	-0.55	-0.55	-0.51	-0.59	-0.61	-0.26	-0.54	-0.60
	(-1.16)	(-1.13)	(-1.06)	(-0.94)	(-1.31)	(-0.54)	(-1.03)	(-0.88)
AR(1)	0.60 **	0.61 **	0.45 **	0.31 **	0.59 **	0.49 **	0.22	0.34 **
	(6.94)	(7.06)	(4.58)	(2.69)	(6.95)	(4.10)	(1.46)	(2.29)
Adjusted R-squared	41.8 %	41.1 %	30.4 %	20.2 %	42 %	33.5 %	16.6 %	21.4 %
Baseline R-squared	%	41.8 %	29.5 %	19 %	41.8 %	29.5 %	13.2 %	13.2 %
No. of Observations	130	128	88	53	130	86	46	44
Starting period	1975	1975	1986	1994	1975	1986	1996	1996

** significant at the 0.05 level, * significant at the 0.10 level

Table 5: Quarterly time series analysis for straight debt issues

The dependent variable is the number of straight debt issues deflated by an index of the estimated number of public firms. The explanatory variables are as defined in Table 1. The starting period varies but all data span till end-2007. The baseline R-squared is from a regression using the control variables only, for the same time-period as that with the catering proxy. All regression are estimated using the Newey-West technique. An autoregressive parameter [AR(1)] is also included in each regression to correct for residual serial correlation. T-statistics are in brackets.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	148.28 *	160.73 **	175.08 *	203.01	137.96 *	121.10	141.91	203.61 *
	(1.85)	(1.97)	(1.73)	(1.26)	(1.79)	(1.23)	(0.89)	(1.80)
Convertibe debt catering proxies								
$Abnret_{t-1}$		190.16						1194.29 **
		(0.84)						(2.28)
$Mflows_{t-1}$			830.83					92.59
			(1.59)					(0.11)
$Hflows_{t-1}$				476.37				220.36
				(1.35)				(0.64)
$RiskAversion_{t-1}$					53.41 **			108.92 **
					(2.42)			(2.41)
$Overallot_{t-1}$						128.56 **		104.39
						(2.01)		(1.58)
$Option_{t-1}$							267.17	95.99
							(0.78)	(0.29)
Aggregate financing cost measures								
GDP_{t-1}	73.87	114.96	187.88	406.00 **	88.34	74.51	377.72 *	4.91 **
	(0.90)	(1.19)	(1.03)	(2.25)	(1.10)	(0.38)	(1.81)	(2.91)
$Default_{t-1}$	27.83	30.19	85.45 *	196.46 **	26.64	57.87	127.54 *	118.48 *
	(1.20)	(1.30)	(1.72)	(2.16)	(1.20)	(1.16)	(1.71)	(1.80)
$Runup_{t-1}$	-124.35	-82.33	-96.08	1.14	-137.64	4.92	-87.34	79.99
	(-1.15)	(-0.72)	(-0.63)	(0.00)	(-1.31)	(0.03)	(-0.50)	(0.36)
$Sent_{t-1}$	-0.11	-0.22	-0.09	-0.21	0.03	0.54	0.39	0.18
	(-0.12)	(-0.23)	(-0.08)	(-0.12)	(0.03)	(0.49)	(0.22)	(0.13)
AR(1)	0.86 **	0.87 **	0.75 **	0.63 **	0.86 **	0.78 **	0.62 **	0.55 **
	(19.94)	(20.79)	(10.06)	(6.14)	(18.42)	(11.94)	(5.99)	(4.07)
Adjusted R-squared	72.9 %	72.5 %	57.6 %	53 %	73.4 %	59.9 %	35.7 %	43.9 %
Baseline R-squared	%	72.9 %	56.8 %	41.3 %	72.9 %	56.8 %	37 %	37 %
No. of Observations	130	128	88	41.7	130	86	46	44
Starting period	1975	1975	1986	1994	1975	1986	1996	1996

** significant at the 0.05 level, * significant at the 0.10 level

Table 6: Quarterly time series analysis for Convertible debt, straight debt, and seasoned equity issues

The dependent variable in regressions 1 and 2 is the number of convertible debt issues; in regressions 3 and 4 it is the number of seasoned equity issues; in regressions 5 and 6 it is the number of straight debt issues. The number of issues are all deflated by an index of the estimated number of public firms. *Convertible MF flows, Equity MF flows, Debt MF flows, Convertible HF flows* measure growth in flows to convertible mutual funds, equity mutual funds, corporate debt mutual funds and convertible arbitrage hedge funds, respectively. The aggregate financing cost measures are as defined in Table 1. The starting period varies but all data span till end-2007. All regression are estimated using the Newey-West technique. An autoregressive parameter [AR(1)] is also included in each regression to correct for residual serial correlation. T-statistics are in brackets.

	Dependent variable					
	No. of CD issues		**No. of EQ issues**		**No. of SD issues**	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	43.51 **	50.40	94.53 **	121.68 *	177.39 *	45.56
	(2.34)	(1.34)	(2.43)	(1.80)	(1.70)	(0.39)
Fund flow measures						
Convertible MF flows$_{t-1}$	373.13 **	517.37	-235.78	-92.79	563.94	887.62
	(2.75)	(1.21)	(-0.77)	(-0.22)	(0.75)	(1.04)
Equity MF flows$_{t-1}$	-157.85	-660.45	1787.67 **	1846.25	112.74	-2212.29
	(-0.50)	(-1.26)	(3.15)	(1.43)	(0.15)	(-1.66)
Debt MF flows$_{t-1}$	390.63 **	1225.94 **	676.28 *	1763.02 **	897.59	3269.88 **
	(2.25)	(4.78)	(1.67)	(3.30)	(1.05)	(3.78)
Convertible HF flows$_{t-1}$		-31.00		-108.69		397.73
		(-0.27)		(-0.56)		(1.12)
Aggregate financing cost measures						
GDP$_{t-1}$	-0.17	0.76	0.70	1.39	2.45	4.76 *
	(-0.24)	(1.12)	(0.47)	(0.67)	(1.49)	(1.85)
Default$_{t-1}$	-0.92	-9.18	32.89	79.78	77.28	128.72
	(-0.05)	(-0.27)	(0.77)	(1.29)	(1.53)	(1.61)
Runup$_{t-1}$	76.04	-28.13	200.80 *	351.63 **	-148.17	5.16
	(1.06)	(-0.32)	(1.88)	(2.23)	(-1.01)	(0.02)
Sent$_{t-1}$	-0.22	-0.27	-0.31	-0.54	-0.16	1.48
	(-1.13)	(-0.64)	(-0.69)	(-0.73)	(-0.14)	(1.18)
AR(1)	0.19 *	0.43 **	0.40 **	0.35 **	0.76 **	0.43 **
	(1.95)	(3.58)	(3.30)	(2.74)	(9.71)	(2.99)
Adjusted R-squared	43.3 %	28.1 %	38.1 %	30 %	57.6 %	48.7 %
No. of Observations	87	53	87	53	87	53
Starting period	1986	1994	1986	1994	1986	1994

** significant at the 0.05 level, * significant at the 0.10 level

Table 7: Firm level Probit regression: convertible versus seasoned equity issues

The table presents the results of a probit regression where the dependent variable is an indicator variable that takes the value of 1 for convertible debt and 0 for seasoned equity issues. The catering proxies and aggregate financing measures are as defined in Table 1 and calculated as the average over the quarter preceding the issue month. The following firm-specific variables are as at the end of the fiscal year prior to the issue (Compustat item numbers are in brackets): *StockVol* is the annualized standard deviation calculated from returns in days -240 to -40 before the issue data. *StockRet* is the cumulative stock return over days -240 to -40 prior to the announcement date. *Slack* is calculated as cash and short-term investments total assets (item 1 divided by item 6). *FA* is fixed assets and calculated as plant, property and equipment divided by total assets (item 8 divided by item 6). *Tax* is the tax liabilities benefit associated with issuing debt (item 16 divided by item 6). *MTBV* refers to the market to book value of equity and is calculated as the number of shares (item 24) multiplied by the price (item 25), divided by common equity (item 60). *Size* is calculated as the natural logarithm of total assets (item 6). *Lever* is book leverage, taken as long-term debt (item 9) divided by total assets (item 6). *AssetGrowth* is calculated as the growth in assets over the year prior to the offering. The full sample consists of 3002 convertible debt offerings and 10,658 seasoned equity offerings, but the number of observations varies due to missing data. The starting period varies but all data span till end-2007. The baseline R-squared is from a regression using the firm-specific characteristics and aggregate cost measures only, for the same time-period as that with the catering proxy. T-statistics, estimated using Huber-White robust standard errors, are in brackets.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-1.43 **	-1.89 **	-1.88 **	-1.77 **	-2.31 **	-1.85 **	-1.88 **	-2.59 **	-2.86 **
	(-17.30)	(-13.68)	(-13.49)	(-9.10)	(-8.04)	(-13.30)	(-9.91)	(-8.54)	(-8.65)
Firm-specific characteristics									
StockVol	0.92 **	0.95 **	0.95 **	0.86 **	1.07 **	0.95 **	0.77 **	1.04 **	1.13 **
	(12.66)	(12.88)	(12.80)	(10.65)	(10.95)	(12.89)	(9.86)	(10.16)	(10.05)
StockRet	-0.80 **	-0.83 **	-0.83 **	-0.81 **	-0.67 **	-0.83 **	-0.80 **	-0.67 **	-0.74 **
	(-22.13)	(-22.44)	(-22.39)	(-19.31)	(-13.99)	(-22.35)	(-19.23)	(-13.34)	(-13.98)
Slack	0.11	0.10	0.10	0.35 **	0.49 **	0.11	0.31 **	0.56 **	0.53 **
	(1.31)	(1.23)	(1.25)	(3.88)	(4.67)	(1.35)	(3.42)	(4.98)	(4.62)
FA	-0.63 **	-0.58 **	-0.59 **	-0.37 **	-0.36 **	-0.58 **	-0.33 **	-0.36 **	-0.38 **
	(-11.01)	(-9.91)	(-9.93)	(-5.24)	(-4.10)	(-9.93)	(-4.78)	(-3.88)	(-3.92)
Tax	0.61	0.73 *	0.71 *	0.61	0.82	0.74 *	0.84	0.94	1.03
	(1.46)	(1.74)	(1.67)	(1.18)	(1.20)	(1.76)	(1.60)	(1.29)	(1.37)
MTBV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(1.33)	(1.03)	(1.06)	(1.30)	(1.23)	(1.11)	(0.44)	(1.06)	(1.23)
Size	0.13 **	0.14 **	0.14 **	0.21 **	0.27 **	0.14 **	0.19 **	0.29 **	0.30 **
	(15.16)	(15.14)	(15.29)	(18.54)	(18.10)	(15.24)	(17.17)	(17.98)	(17.72)
Lever	0.01	0.02	0.00	-0.27 **	-0.39 **	0.02	-0.27 **	-0.57 **	-0.54 **
	(0.07)	(0.16)	(-0.01)	(-2.56)	(-3.04)	(0.24)	(-2.56)	(-4.20)	(-3.94)
AssetGrowth	0.01 *	0.01 *	0.01	0.01 *	0.01	0.01 *	0.01 *	-0.03	-0.02
	(1.94)	(1.66)	(1.61)	(1.79)	(1.38)	(1.67)	(1.73)	(-1.21)	(-0.78)
Convertibe debt catering proxies									
Abnret			0.71						-0.99
			(0.66)						(-0.41)
Mflows				9.92 **					20.15 **
				(12.29)					(6.77)
Hflows					1.58				-1.44
					(1.09)				(-0.79)
RiskAversion						0.11 **			-0.65 **
						(2.26)			(-5.23)
Overallot							0.52 **		0.58 *
							(2.12)		(1.85)
Option								-0.22	0.76
								(-0.21)	(0.68)
Aggregate financing cost measures									
GDP		0.01 **	0.01 *	0.02 **	0.04 **	0.01 **	0.03 **	0.03 **	0.03 **
		(1.96)	(1.73)	(2.60)	(3.20)	(2.12)	(2.91)	(2.55)	(2.38)
Default		0.08	0.07	0.09	-0.08	0.06	0.01	-0.23	0.28
		(0.57)	(0.53)	(0.42)	(-0.27)	(0.45)	(0.06)	(-0.80)	(0.86)
Runup		4.65 **	4.73 **	2.88 **	3.61 **	4.29 **	4.99 **	3.47 **	3.25 **
		(7.04)	(7.12)	(3.33)	(3.38)	(6.35)	(5.82)	(2.98)	(2.67)
Sent		0.00 **	0.00 **	0.00 *	0.00	0.00 **	0.00	0.00	0.00
		(2.66)	(2.56)	(-1.71)	(-1.58)	(2.25)	(-0.10)	(-0.65)	(-0.58)
McFadden R-squared	9.8 %	10.4 %	10.5 %	13.3 %	14.5 %	10.4 %	11.7 %	14.9 %	16.3 %
Baseline R-squared			10.4 %	11.6 %	14.5 %	10.4 %	11.6 %	14.7 %	14.7 %
No. of Observations	10432	10416	10366	7384	4909	10416	7234	4260	4150
Starting period	1975	1975	1975	1986	1994	1975	1986	1996	1996

** significant at the 0.05 level, * significant at the 0.10 level

Table 8: Firm level Probit regression: convertible versus straight debt issues

The table presents the results of a probit regression where the dependent variable is an indicator variable that takes the value of 1 for convertible debt and 0 for straight debt issues. The catering proxies and aggregate financing measures are as defined in Table 1 and calculated as the average over the quarter preceding the issue month. The following firm-specific variables are as at the end of the fiscal year prior to the issue (Compustat item numbers are in brackets): *StockVol* is the annualized standard deviation calculated from returns in days -240 to -40 before the issue data. *StockRet* is the cumulative stock return over days -240 to -40 prior to the announcement date. *Slack* is calculated as cash and short-term investments total assets (item 1 divided by item 6). *FA* is fixed assets and calculated as plant, property and equipment divided by total assets (item 8 divided by item 6). *Tax* is the tax liabilities benefit associated with issuing debt (item 16 divided by item 6). *MTBV* refers to the market to book value of equity and is calculated as the number of shares (item 24) multiplied by the price (item 25), divided by common equity (item 60). *Size* is calculated as the natural logarithm of total assets (item 6). *Lever* is book leverage, taken as long-term debt (item 9) divided by total assets (item 6). *AssetGrowth* is calculated as the growth in assets over the year prior to the offering. The full sample consists of 3002 convertible debt offerings and 12,804 seasoned equity offerings, but the number of observations varies due to missing data. The starting period varies but all data span till end-2007. The baseline R-squared is from a regression using the firm-specific characteristics and aggregate cost measures only, for the same time-period as that with the catering proxy. T-statistics, estimated using Huber-White robust standard errors, are in brackets.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	1.01 **	1.81 **	1.87 **	2.27 **	2.19 **	1.83 **	2.24 **	2.59 **	2.23 **
	(9.56)	(11.77)	(12.04)	(11.27)	(7.38)	(11.79)	(11.19)	(8.35)	(6.88)
Firm-specific characteristics									
Volatility	1.31 **	1.35 **	1.33 **	1.33 **	1.36 **	1.35 **	1.30 **	1.30 **	1.44 **
	(12.88)	(12.99)	(12.77)	(11.80)	(10.65)	(13.00)	(11.51)	(9.97)	(10.20)
StockRunup	-0.09 **	-0.09 *	-0.09 **	-0.10 *	-0.04	-0.09 *	-0.08	-0.05	-0.14 **
	(-1.98)	(-1.87)	(-1.98)	(-1.93)	(-0.75)	(-1.81)	(-1.41)	(-0.89)	(-2.24)
Slack	2.46 **	2.44 **	2.44 **	2.61 **	3.05 **	2.45 **	2.60 **	3.04 **	2.92 **
	(12.92)	(12.89)	(12.87)	(12.69)	(12.79)	(12.88)	(12.52)	(12.54)	(11.76)
FixedAssets	-0.51 **	-0.56 **	-0.55 **	-0.54 **	-0.42 **	-0.56 **	-0.52 **	-0.39 **	-0.40 **
	(-8.33)	(-9.01)	(-8.86)	(-7.77)	(-4.89)	(-9.02)	(-7.43)	(-4.27)	(-4.37)
Tax	-3.84 **	-4.12 **	-4.06 **	-4.50 **	-4.40 **	-4.10 **	-4.57 **	-5.13 **	-4.87 **
	(-6.62)	(-7.05)	(-6.94)	(-6.59)	(-5.27)	(-7.03)	(-6.56)	(-6.29)	(-5.96)
MTBV	0.00	0.01 **	0.01 **	0.01 *	0.00	0.01 **	0.00	0.00	0.00
	(1.13)	(2.28)	(2.15)	(1.78)	(0.51)	(2.30)	(1.21)	(0.51)	(0.77)
Size	-0.27 **	-0.26 **	-0.27 **	-0.26 **	-0.19 **	-0.26 **	-0.27 **	-0.20 **	-0.19 **
	(-29.04)	(-27.48)	(-27.48)	(-22.97)	(-13.62)	(-27.48)	(-23.57)	(-13.06)	(-12.41)
Leverage	-0.67 **	-0.69 **	-0.69 **	-0.71 **	-0.72 **	-0.68 **	-0.75 **	-0.80 **	-0.78 **
	(-5.98)	(-6.11)	(-6.14)	(-5.81)	(-5.08)	(-6.10)	(-6.07)	(-5.35)	(-5.15)
AssetGrowth	0.02	0.02	0.02	0.07 **	0.06 **	0.02	0.07 **	0.09 **	0.09 **
	(1.13)	(1.15)	(1.16)	(3.04)	(2.58)	(1.15)	(2.96)	(2.69)	(2.72)
Convertibe debt catering proxies									
Abnret			-2.10 **						-5.61 **
			(-1.96)						(-2.48)
Mflows				5.07 **					9.97 **
				(6.91)					(3.57)
Hflows					-0.27				-0.63
					(-0.17)				(-0.34)
RiskAversion						0.06			-0.82 **
						(1.08)			(-6.94)
Overallot							0.27		-0.14
							(1.10)		(-0.47)
Option								-1.81 *	0.16
								(-1.94)	(0.16)
Aggregate financing cost measures									
GDP		0.00	0.00	-0.02 **	-0.02	0.00	-0.02 **	-0.01	-0.01
		(-0.21)	(-0.03)	(-2.58)	(-1.53)	(-0.15)	(-2.52)	(-0.99)	(-0.42)
Default		-0.51 **	-0.47 **	-0.55 **	-0.74 **	-0.51 **	-0.71 **	-0.69 **	-0.27
		(-3.83)	(-3.55)	(-2.91)	(-2.90)	(-3.84)	(-3.71)	(-2.75)	(-0.92)
Runup		1.51 **	1.64 **	0.93	-0.13	1.37 **	1.42 **	-0.21	0.13
		(2.53)	(2.71)	(1.33)	(-0.15)	(2.27)	(2.05)	(-0.22)	(0.13)
Sent		-0.01 **	-0.01 **	-0.02 **	-0.02 **	-0.01 **	-0.01 **	-0.02 **	-0.02 **
		(-7.06)	(-7.47)	(-8.15)	(-7.48)	(-7.15)	(-7.47)	(-7.99)	(-7.87)
McFadden R-squared	28.1 %	28.7 %	28.7 %	31.1 %	30.4 %	28.7 %	30.7 %	30.6 %	31.5 %
Baseline R-squared			28.7 %	30.7 %	30.2 %	28.7 %	30.7 %	30.5 %	30.5 %
No. of Observations	13826	13786	13731	11475	7757	13786	11249	6864	6717
Starting period	1975	1975	1975	1986	1994	1975	1986	1996	1996

** significant at the 0.05 level, * significant at the 0.10 level