Stock listing and financial flexibility

Frederiek Schoubben, Lessius University College

Cynthia Van Hulle, K.U.Leuven

September 2009

The authors thank Nico Dewaelheyns (K.U.Leuven, Faculty of Business and Economics), Bert D'Espallier (Lessius University College, Department of Business Studies) and Nancy Huyghebaert (K.U.Leuven, Faculty of Business and Economics) for comments and suggestions on earlier versions of this paper. Send correspondence to Frederiek Schoubben, Lessius University College, Department of Business Studies, Korte Nieuwstraat 33, 2000 Antwerpen, Belgium; tel + (32) 3 2011831 (email: frederiek.schoubben@lessius.eu); K.U.Leuven, Faculty of Business and Economics, Department of Accountancy, Finance and Insurance (Research Centre Finance), Naamsestraat 69, 3000 Leuven, Belgium; (email: frederiek.schoubben@econ.kuleuven.be). Cynthia Van Hulle, K.U.Leuven, Faculty of Business and Economics, Department of Accountancy, Finance and Insurance (Research Centre Finance), Naamsestraat 69, 3000 Leuven, Belgium; tel. + (32) 16 326734; (email: cynthia.vanhulle@econ.kuleuven.be).

Stock listing and financial flexibility

Abstract

A stock listing usually reflects easy access to external equity. However, although scant empirical evidence exists on the matter, the literature suggests that the enhanced standing towards creditors which would result in easier access to debt financing is an extra advantage of being publicly quoted. This paper tests whether or not a stock listing leads to more flexibility of debt financing, using a data set of listed and comparably large unlisted companies. The data reveals that notwithstanding their size, unlisted firms are not able to substitute internal financing with debt, while listed firms experience little difficulty on this score. The results are robust for different estimation methods and are consistent with the view that increasing substitutability between internally generated funds and debt financing is an important channel through which a stock listing improves financial flexibility.

Keywords: Financial flexibility, external financing, stock listing, financing frictions

Stock listing and financial flexibility

1. Introduction

The extensive literature on corporate governance, initial public offerings and going private transactions discusses benefits of going/being public (e.g., Faure-Grimaud and Gromb, 2004; Huyghebaert and Van Hulle, 2006; Pagano, Panetta, and Zingales, 1998). These studies indicate that one of the most important advantages of being publicly quoted is a reduction in financing frictions through easier access to external equity. Next, a stock listing also results in easier access to debt financing due to an increased standing towards banks and other creditors. Consequently, listed companies report significantly less financing obstacles in comparison to unlisted firms (Beck, Demirguc-Kunt, Laeven, and Maksimovic, 2006).

This paper contributes to the literature by examining whether and how a stock listing provides more flexibility of debt financing. The present paper may be the first that evaluates the impact of a stock listing on the substitutability between financing sources in general, and on the substitutability between internally generated funds and debt financing in particular. This method provides a means to evaluate the contribution of a stock listing on financial flexibility. Since financial flexibility is arguably the most important form of organizational flexibility (e.g., Dreyer and Gronhaug, 2004), the empirical evidence in this paper adds to the understanding of how a stock listing could provide firms with a competitive advantage. This study should be of interest to researchers studying ownership structure and to managers contemplating a going-public transaction.

The sample consists of listed and large unlisted Belgian companies that all meet the listing requirements, imposed by stock market authorities, in terms of size. Looking at listed and large unlisted firms in one country has the advantage that one can study the impact of a stock listing under the same level of financial development. This approach allows for a relatively clean test because this avoids the problem of having to control for the possibly many influencing institutional differences between countries (e.g., Laeven, 2003). The fact that in Belgian law, accounting rules and monitoring rules by external auditors are the same for all large firms – irrespective of the listing status – further improves the empirical setting.

The key result of this study is that although the sample consists of large firms only, the unlisted firms have difficulty in substituting internal financing sources for debt financing. As the pecking order theory of Myers and Majluf (1984) shows that the latter is the preferred source of external financing, this result underscores the limitations in financial flexibility of even the large unlisted firms. Simultaneously, the evidence in this study supports the notion that increased access to debt financing likely is an important financial advantage of a stock listing. The results are robust to different definitions and methods of estimation.

The article proceeds as follows. Section 2 provides a literature review and develops the main hypothesis. Section 3 contains the sample description and methodology. Section 4 presents and discusses the results, while section 5 contains the conclusions.

2. Literature review and hypothesis building

2.1 Stock listing and financial flexibility

Research indicates that increased access to financial resources is one of the most important advantages of a stock listing. Specifically, because of the transparency linked to listing and the information production in public markets, asymmetric information problems and financial frictions should decrease with a stock listing. Researchers therefore expect that listed firms are less financially constrained (e.g., Beck et al., 2006; Giannetti, 2003; Holod and Peek, 2007; among others). Next to easier access to outside equity, the literature also indicates that a stock listing causes a lower cost of credit, a larger supply of debt or a mixture of both (e.g., Pagano et al., 1998; Rajan, 1992). To test for differences in financing constraints, studies usually focus on the impact of a stock listing on investment behavior (e.g., Kim, 1999; Mahérault, 2000; Yang, Baker, and Lu, 2008). This paper borrows from the logic of this literature, but mainly tries to provide empirical evidence on financial flexibility by focusing on the substitution between internally generated funds and debt financing.

2.2. Financial flexibility and substitution between internal funds and debt financing

Using the methodology of Almeida and Campello (2007) and Acharya, Almeida, and Campello (2007), this study develops a testable hypothesis concerning the difference in substitutability between internally generated funds and debt financing, depending on a firm's public/private status. The following argument pinpoints the substitutability logic. Consider the impact of a shock to a firm's cash flow that is uncorrelated with investment opportunities. This cash flow shock will have a different impact on the behavior of firms depending on the financing frictions they face.

Financially unconstrained firms set the optimal investment policy independently from current income. Under such circumstances, investment decisions focus purely on value creation (i.e., positive NPV). Since these firms face no credit constraints when raising funds for positive NPV projects, their spending remains insensitive to cash flow shocks. The substitution of financing sources will however strongly depend on this cash flow shock. If, as the pecking order theory of Myers and Majluf (1984) predicts, firms prefer using internal over external funds, higher (lower) internal cash flows will trigger a decline (increase) in the use of external financing.

When firms face financing frictions (i.e., financially constrained firms) however, the substitution effect between internal and external financing will be much smaller. Investment spending will then have to change in order to accommodate for cash flow shocks. If the cash flow shock is positive, constrained firms will optimally channel at least part of the income surplus into additional investment spending as, due to capital constraints, these firms likely have under invested in the past (Fazzari, Hubbard, and Petersen, 1988; 2000). Consequently, financially constrained firms' use of external funding tends to decline by less than the decline for unconstrained firms experiencing similar income windfalls. Likewise, if the cash flow shock is negative, financially constrained firms are not able to fully compensate its impact on investments by way of raising external funds. Therefore, external financing increases by less than the increase for unconstrained firms experiencing a similar income shock. Put differently, as financing constraints increase, adjustments in investment spending partially absorb cash flow shocks and reduce the substitution between cash flow and external financing (Acharya et al., 2007; Almeida and Campello, 2007; Fazzari et al., 1988).

Since unlisted firms face more financing frictions in comparison to listed firms, the main hypothesis for unlisted firms is that they show little substitutability between internally generated funds and debt financing. The hypothesis for listed firms is that they show a strong substitution effect between internal and external financing because they face less financing frictions.

3. Sample, variables and methodology

3.1 Sample

The sample covers a 14 year period (1992–2005) and initially consists of all consolidated financial statements of Belgian firms, listed as well as unlisted. Contrary to the US, larger companies in Europe often split off their production entities into subsidiaries with separate legal identity (Bianco and Nicodano, 2006). Hence, to obtain a clear picture of these larger companies, one needs to use consolidated accounts. Consolidated accounts also help to overcome distortions due to the presence of pyramidal ownership, in particular, the fact that subsidiaries of groups have access to internal capital markets. By looking only at consolidated statements, the study treats each firm as a stand-alone entity as subsidiaries from parents that have to issue consolidated accounts do not need to issue these consolidated statements themselves. This approach avoids problems and/or noise from including both stand-alones and subsidiaries. The data sources are the NBB (i.e., National Bank of Belgium) and the Bureau van Dijk's BelFirst database. Issuing consolidated statements only became a requirement in 1992, and then only for firms of sufficient size (i.e., when the firm exceeds two of the following three thresholds: turnover larger than 50 million euros, total assets larger than 25 million euros, the company employs more than 500 workers; from the year 2000 on, these criteria were relaxed to 25 million, 12.5 million

and 250 respectively). These thresholds are significantly above the minimal size requirements for listing on European stock exchanges, that is, size does not hamper the unlisted sample firms to go public. Next, the study excludes all companies that are mere production entities of a large international parent. Either the Bureau van Dijk's Amadeus database or information on the firms' websites identifies these latter companies. Finally, the study excludes all financial firms. To minimize the influence of outliers in the analysis, this study replaces extreme observations of all ratio variables with missing values. Extreme observations include values in the 99th percentile and, for variables with negative values, also those in the 1st percentile.

TABLE 1 ABOUT HERE.

Table 1 gives an overview of the sample composition and industry distribution. The full sample of 471 firms consists of a subsample of 383 unlisted firms and a subsample of 88 listed firms. Manufacturing includes the largest number of firms (140), followed by services (130) and trade (106). This distribution over industries is quite representative for the Belgian economy as a whole.

3.2 Substitution between internally generated funds and debt financing

The hypotheses in Section 2 predict that listed firms should show a negative relation between cash flow shocks and debt financing (i.e., substitution effect). For the unlisted firms, this substitution between internal funds and debt financing should be much weaker or even non-existing. In order to test the substitution effect, this study adopts a similar methodology as in Almeida and Campello (2007) and Acharya et al.

(2007). The empirical model, relating a firm's change in debt with its internal cash flow has the following specification:

$$\begin{aligned} DebtFin_{it} = \quad & \alpha_0 + \alpha_1 Size_{it} + \alpha_2 Growth_{it} + \alpha_3 CF_{it} \\ & + \alpha_4 Lev_{it-1} + \alpha_4 Maturity_{it-1} + \gamma_i + \delta_t + \varepsilon_{it} \end{aligned} \qquad (1)$$

Equation (1) models the substitution effect as the cash flow sensitivity of debt financing for the subsamples of listed and unlisted companies separately. The basic equation uses debt financing as the dependent variable. Debt financing (DebtFin) equals the change in interest bearing debt divided by sales. Although equity financing is considerably less relevant in comparison to debt financing, especially in the unlisted subsample, an alternative model uses external financing (ExtFin) as dependent variable. The external financing variable is the sum of changes in interest bearing debt and paid in capital, divided by sales. Finally, in a third model the dependent variable is equity financing (EquitFin), measured as paid in capital divided by sales. Similar to Audretsch and Weigand (2005), the measure for internally generated funds (CF) equals operating income plus depreciation and amortization divided by sales. Next to the substitution effect of internal financing, several variables control for financing potential and growth prospects as well as the pre-existing financial structure. The study borrows insights from the literature on capital structure and financing behavior that uses similar control variables (e.g., Acharya et al., 2007; Rajan and Zingales, 1995). This literature commonly uses size and growth opportunities as proxies for the firm's capacity to access external financing. To make sure that size or growth differences do not distort the findings concerning differences in financing behavior between listed and unlisted firms, the study explicitly accounts for these firm characteristics in the

substitution models. Size equals the natural logarithm of total assets in book value while sales growth is the growth rate of sales from year t–1 to year t. Due to the unavailability of a market price for unlisted firms, sales growth replaces the more dominant Tobin's Q ratio as a measure for growth opportunities. As the existing capital structure may influence a firm's financing decisions, the study controls for leverage (Lev), measured by the beginning of year ratio of total liabilities to total assets. Debt maturity, measured by the beginning of year long term debt divided by total debt controls for differences in frictions from renegotiation of debt. Firms with low debt maturity will need to negotiate the renewal of their credits more frequently, with the consequent risk of refinancing. Finally, the substitution model includes firm (γ)– and time (δ)–fixed effects to control for biases stemming from unobserved individual heterogeneity and time idiosyncrasies. In addition, fixed firm effects control for systematic differences in financing behavior across firms. In fitting the data, the fixed effects least squares regression models will correct for heteroskedasticity using White's heteroskedasticity consistent covariance.

4. Empirical Results

4.1 Univariate statistics

Table 2 contains summary statistics of the main variables. The table splits up the full sample (Column 1) in an unlisted (2) and a listed (3) subsample to test for possible differences between firms according to the listing status. Overall, the sample consists of 2647 firm year observations for which 2135 correspond to unlisted and 512 to listed companies. Due to the use of lagged variables, some firm year observations are lost in the multivariate testing. Table 2 indicates considerable differences between unlisted and listed companies. The change in debt financing as

well as total external financing are significantly higher for listed firms, although the differences are small in economical terms. Listed companies are also larger and show significantly higher growth rates in comparison to their unlisted counterparts. These statistics confirm the importance of controlling for size and growth in the substitution models. Table 2 also shows a significant difference in internal cash flow generation.

TABLE 2 ABOUT HERE.

Concerning the capital structure variables, only leverage is significantly different between listed and unlisted companies. The proportion of long term debt in total debt (Maturity) does not significantly differ between subsamples.

4.2 Differences in financing substitutability between listed and unlisted firms

Table 3 presents the results from the fixed effects least squares regression models for the baseline equation on both the unlisted (1) and listed (2) subsamples. Listed companies display significantly negative sensitivities of debt financing to cash flow. By contrast, the estimated debt-cash flow sensitivity for unlisted companies is much less negative, and not significant. Table 3 also provides the significance of the difference between coefficients for the listed and unlisted subsamples. Column (3) reports the t-statistics for the coefficient estimates of the interaction terms between a stock listing dummy (i.e., 1 if a company is publicly quoted and 0 otherwise) and the respective variables from Equation (1), estimated on the full sample. Audretsch and Weigand (2006) apply a similar approach. The coefficient estimate of the interaction term for CF with the stock listing dummy is significant, indicating that the debt-cash flow sensitivity for listed firms is significantly more negative than for unlisted firms.

This result is in line with the hypothesis that unlisted firms face more financing frictions as in comparison to listed companies and are therefore less financially flexible.

Next, the coefficient estimates of the control variables size and growth are in line with the findings in the literature (e.g., Acharya et al., 2007). An increase in growth opportunities forces firms to seek external funding while larger firms generally increase external financing more easily in comparison to smaller ones. Both coefficients are not significantly different between the unlisted and listed subgroups according to the t statistics in Column (3) of Table 3. The variable controlling for the pre-existing capital structure, beginning of year leverage, is negative but only significant in the listed subsample. This result is again in line with Asharya et al. (2007) who find a negative impact of existing debt on the net debt issuance of listed companies, as the latter may more easily rebalance their capital structure. Finally, the existing maturity structure of debt is not significant in both the unlisted and listed subsample.

TABLE 3 ABOUT HERE.

An alternative test, not in this report, re-estimates the models of Table 3 with a different measure for cash flow. This measure takes into account that some of the internally generated funds go to debtors (via interests) or to the government (through taxes). This alternative cash flow variable equals the original cash flow measure minus interests and taxes (see, Bhagat, Moyen, and Suh, 2005 and Lins, Strickland, and Zenner, 2005; for a discussion of this alternative definition). Results are similar to those from Table 3 and again reveal a strong substitution effect for listed companies

and no significant substitution between cash flow and debt financing for the unlisted firms.

Thus far, the analysis focuses only on debt financing. However, the flexibility with which firms use different sources of external financing, that is, debt and equity, can influence the substitution effect. Therefore, the second model re-estimates the baseline substitution model for unlisted and listed companies using the total change of external financing (ExtFin) as the dependent variable. Table 4 reports the results.

TABLE 4 ABOUT HERE.

As in Table 3, the fixed effect models in Table 4 show a strong substitution effect between internal (CF) and external financing for listed companies. The coefficient estimate for cash flow in the unlisted subsample is negative but not significant in comparison to a significantly negative cash flow coefficient for listed firms. The difference between the cash flow coefficient for listed and unlisted companies is also strongly significant, indicating that even on the level of total external financing, listed firms are more financially flexible. The coefficient estimates of the control variables are similar to the results in Table 3 except for leverage that is no longer significant for listed firms. The latter result is not surprising as the dependent variable comprises the change in equity and debt, so that the leverage variable can no longer capture rebalancing effects in capital structure.

Overall, in line with the hypotheses, results for the regression models in Table 3 and Table 4 provide strong evidence of differences in the substitutability between internal and external financing for unlisted and listed companies, indicating that the latter are more financially flexible.

4.3 Further Checks

Hovakimian, Hovakimian, and Tehranian (2004) show that firms may combine debt and equity issues in order to offset possible shocks in earnings. This may relax constraints on the substitutability of internal financing and debt financing by increasing the proportion of equity financing when the direct and indirect costs of extra debt financing become relatively high. In order to test whether the possibility of dual issuing influences the results, the study re-estimates the models of Table 3 excluding all equity issue observations. Taking into account only the firm year observations with no positive change in paid in capital, excludes 17% of the observations in the unlisted subsample and 42% in the listed subsample. Table 5 reports the results on the substitution between internally generated funds (CF) and debt financing for firm year observations with no equity issuance. Overall, results in Table 5 are similar to Table 3 and again show a strong cash flow substitution effect with debt financing for the listed companies, while this effect is insignificant for unlisted firms.

TABLE 5 ABOUT HERE.

A second robustness check focuses on the equity financing possibility in a different way. Analogous to Almeida and Campello (2007), this check includes testing for a possible substitution effect between internally generated funds and equity financing only. The change in equity financing equals the change in paid in capital divided by sales. Table 6 reports the results.

TABLE 6 ABOUT HERE.

Table 6 shows a somewhat different picture for equity financing in comparison to the models on debt financing and total external financing. While the listed subsample still shows a negative cash flow coefficient, the estimate is no longer significant. This result suggests, consistent with the pecking order theory, that listed firms focus more on the substitution opportunities with debt financing than on those with equity financing. In line with rebalancing behavior, leverage now has a positive impact on the change in equity for the listed subsample. Hovakimian et al. (2004) find similar results in their model explaining the choice for either debt or equity. In sum, preceding findings indicate that in their ongoing operations, listed firms obtain financial flexibility from substitution between internal financing and debt financing rather than from substitution between internal financing and external equity.

Finally, in order to control for possible endogeneity of the explanatory variables, the study additionally re-tests all of the models applying Equation (1) with the Arellano and Bond (1991) GMM methodology. This technique consists of taking the first differences of all variables in the model and then applying the generalized method of moments (GMM) using the lagged levels of the endogenous variables as instruments. The use of first differences also controls for the unobserved firm level fixed effect and possible measurement error. The results from these GMM models are very similar to the results from the fixed effect models and are available upon request.

5. Conclusions and directions for further work

This paper is the first to offer empirical evidence on the impact of a stock listing on the substitutability between internal financing and debt financing. The results show that while listed companies are able to substitute internal funds with debt

financing when needed, comparably large unlisted firms are not able to access debt financing that flexibly. This finding underscores the importance of the enhanced standing towards creditors, and the resulting financial flexibility, as a major benefit of a stock listing.

The results in this paper suggest two promising avenues for further research. First, testing the impact of differences in financial flexibility on both investment behavior and firm performance may be interesting. Second, why so many large firms still remain private in view of the apparent financial consequences, and how unlisted firms adapt their corporate strategy to the lack of financial flexibility may be important research questions.

References

Acharya V, Almeida H, Campello M. Is Cash Negative Debt? A Hedging Perspective on Corporate Financial Policies. J Financ Intermed 2007; 16(4):515–54.

Almeida H, Campello M. Financial Firctions and the Substitution between Internal and External Funds. Working paper University of Illinois; 2007.

Arellano M, Bond S. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. Rev Econ Stud 1991;58:277–97.

Audretsch DB, Weigand J. Do Knowledge Conditions Make a Difference? Investment, Finance and Ownership in German Industries', Res Policy 2005;34:595–613.

Bianco M, Nicodano G. Pyramidal groups and debt. Eur Econ Rev 2006;50:937–61.

Bhagat S, Moyen N, Suh I. Investment and internal funds of distressed firms. J Corp Financ 2005;11:449–72.

Beck T, Demirguc-Kunt A, Laeven L, Maksimovic V. 2006. The Determinants of Financing Obstacles. J Int Money Financ 2006;25(6)932–52.

Dreyer B, Gronhaug K. Uncertainty, flexibility, and sustained competitive advantage. J Bus Res 2004;57:484–94.

Faure-Grimaud A, Gromb D. Public trading and private incentives. Rev Financ Stud 2004;17:985–1014.

Fazzari SM, Hubbard RG, Petersen BC. Financing constraints and corporate investment. Brookings Pap Econ Act 1988;1:141–95.

Fazzari SM, Hubbard RG, Petersen BC. Investment–Cash Flow Sensitivities are Useful: A Comment on Kaplan and Zingales. Q J Econ 2000;115:695–705.

Giannetti M. Do Better Institutions Mitigate Agency Problems? Evidence From Corporate Finance Choices. J Financ Quant Anal 2003;38:185–212.

Holod D, Peek J. Asymmetric Information and Liquidity Constraints: A New Test. J Bank Financ 2007;31:2425–51.

Hovakimian A, Hovakimian G, Tehranian H. Determinants of target capital structure: The case of dual debt and equity issues. J Financ Econ 2004;71:517–40.

Huyghebaert N, Van Hulle C. Structuring the IPO: empirical evidence on primary, secondary and combined offerings. J Corp Financ 2006;12:296–320.

Kim J. The Relaxation of Financing Constraints by the Initial Public Offering of Small Manufacturing Firms. Small Bus Econ 1999;12:191–202.

Laeven L. Does financial liberalization reduce financing constraints. Financ Manage 2003;32:1–12.

Lins KV, Strickland D, Zenner M. Do Non–US firms Issue Equity on US Stock exchanges to relax Capital constraints? J Financ Quant Anal 2005;40:109–33.

Mahérault L. The Influence of Going Public on Investment Policy: An Empirical Study of French Family–Owned Businesses. Fam Bus Rev 2000;13:71–9.

Myers SC, Majluf N. Corporate financing and investment decisions when firms have information that investors do not have. J Financ Econ 1984;13:187–221.

Pagano M, Panetta F, Zingales L. Why do companies go public? An empirical analysis. J Financ 1998;53:27–64.

Rajan RG. Insiders and outsiders: The choice between informed and arm's–length debt. J Financ 1992;47:1367–1400.

Rajan RG, Zingales L. What Do We Know about Capital Structure? Some Evidence from International Data. J Financ 1995;50:1421–60.

Yang CC, Baker HK, Lu BW. Does switching from Nasdaq to the NYSE affect investment–cash flow sensitivity? J Bus Res 2008; forthcoming.

Table 1

Sample Composition

Industry	Full Sample	Unlisted	Listed
Food & Agriculture	40	32	8
Manufacturing	140	105	35
Construction	21	18	3
Trade (Wholesale & Retail)	106	89	17
Transportation	34	31	3
Services	130	108	22
Number of firms	471	383	88

Table 2

Summary statistics and univariate tests

		Full Sample (1) N = 2.647	Unlisted (2) N = 2.135	Listed (3) N = 512	Test (4)	p–value (5)
External Financing	Mean	0.0164	0.0099	0.0408	22.67	0.00
	Median	0.0000	–0.0002	0.0022	–3.80	0.00
Debt Financing	Mean	0.0081	0.0034	0.0255	14.76	0.00
	Median	–0.0005	–0.0009	0.0001	–2.95	0.00
Equity Financing	Mean	0.0083	0.0065	0.0153	4.12	0.04
	Median	0.0000	0.0000	0.0000	–10.62	0.00
Size	Mean	11.3851	11.1577	12.2435	325.06	0.00
	Median	11.0970	10.9502	11.9493	–14.47	0.00
Growth	Mean	0.0713	0.0579	0.1219	35.54	0.00
	Median	0.0442	0.0399	0.0614	–4.73	0.00
Cash Flow	Mean	0.0912	0.0854	0.1131	39.70	0.00
	Median	0.0791	0.0747	0.0972	–7.55	0.00
Leverage	Mean	0.6070	0.6189	0.5577	44.00	0.00
	Median	0.6273	0.6493	0.5724	–8.01	0.00
Maturity	Mean	0.4818	0.4832	0.4759	0.17	0.67
	Median	0.4493	0.4494	0.4501	0.47	0.64

Notes: Section 3.2 provides the definitions for all variables. Column (4) provides the F–test statistic for the means test and the Wilcoxon Mann–Whitney Z–statistic for the median test in the respective rows. Column 5 reports the corresponding p–values of the means and median tests.

Table 3

Substitution between internally generated funds and debt financing

Dependent variable: debt financing			
Indep. variables	Unlisted (1)	Listed (2)	Listed – Unlisted (3)
Constant	–0.5285***	0.0632	1.95*
	(–3.93)	*(0.22)*	
SIZE	0.0535***	0.0262	–1.04
	(5.07)	*(1.25)*	
Growth	0.0509***	0.0178	–0.56
	(2.69)	*(0.27)*	
CF	–0.1909	–0.5072**	–2.46**
	(–1.45)	*(–2.19)*	
Lev	–0.0853	–0.5729***	–3.30***
	(–1.58)	*(–4.46)*	
Maturity	0.0005	0.0264	0.69
	(0.03)	*(0.78)*	
N	1946	463	
Adj R^2	0.369	0.143	

Notes: Debt financing (DebtFin), measured as the change in interest bearing debt divided by sales is the dependent variable in all models. Section 3.2 provides the definitions for all variables. The least squares regression models include fixed firm and year effects and test the substitution effect for the unlisted subsample (1) and the listed subsample (2) separately. Column (3) provides the significance of coefficient differences between the listed and unlisted subsamples by reporting the t–statistic for the coefficient estimate of the interaction term between a stock listing dummy and the corresponding variable, estimated on the full sample. The regression estimates are corrected for heteroskedasticity using White's heteroskedasticity consistent covariance.*, ** and *** indicate significance of coefficients at the 10%, 5% and 1% level respectively.

Table 4

Substitution between internally generated funds and total external financing

Dependent variable: external financing			
Indep. variables	Unlisted (1)	Listed (2)	Listed–Unlisted (3)
Constant	–0.6120***	–0.3785	1.12
	(–3.52)	*(–1.22)*	
SIZE	0.0592***	0.0494**	–0.82
	(3.72)	*(2.20)*	
Growth	0.0602***	0.1431***	1.27
	(3.04)	*(2.77)*	
CF	–0.1885	–0.7096**	–3.08***
	(–1.36)	*(–2.20)*	
Lev	–0.0434	–0.2401	–0.99
	(–1.17)	*(–1.26)*	
Maturity	–0.0029	0.0220	0.72
	(–0.18)	*(0.53)*	
N	1946	463	
Adj R^2	0.399	0.239	

Notes: External financing (ExtFin), measured as the sum of changes in interest bearing debt and paid in capital divided by sales is the dependent variable in all models. Section 3.2 provides the definitions for all variables. The least squares regression models include fixed firm and year effects and test the substitution effect for the unlisted subsample (1) and the listed subsample (2) separately. Column (3) provides the significance of coefficient differences between the listed and unlisted subsamples by reporting the t–statistic for the coefficient estimate of the interaction term between a stock listing dummy and the corresponding variable, estimated on the full sample. The regression estimates are corrected for heteroskedasticity using White's heteroskedasticity consistent covariance.*, ** and *** indicate significance of coefficients at the 10%, 5% and 1% level respectively.

Table 5

Substitution between internal financing and debt financing for non equity issuers

Dependent variable: debt financing			
Indep. variables	Unlisted (1)	Listed (2)	Listed–Unlisted (3)
Constant	–0.6523***	–0.6569	0.73
	(–4.37)	*(–1.17)*	
SIZE	0.0647***	0.0785*	0.33
	(5.21)	*(1.71)*	
Growth	0.0484*	0.1670**	1.35
	(1.82)	*(2.46)*	
CF	–0.1546	–0.7168**	–1.94*
	(–0.94)	*(–1.91)*	
Lev	–0.0825	–0.4443***	–2.29**
	(–1.32)	*(–3.18)*	
Maturity	–0.0083	0.1358**	2.47**
	(–0.45)	*(2.23)*	
N	1607	271	
Adj R^2	0.138	0.237	

Notes: Debt financing (DebtFin), measured as the change in interest bearing debt divided by sales is the dependent variable in all models. Section 3.2 provides the definitions for all variables. The least squares regression models include fixed firm and year effects and test the substitution effect for the (reduced) unlisted subsample (1) and the (reduced) listed subsample (2) separately. Column (3) provides the significance of coefficient differences between the listed and unlisted subsamples by reporting the t–statistic for the coefficient estimate of the interaction term between a stock listing dummy and the corresponding variable, estimated on the (reduced) full sample. The regression estimates are corrected for heteroskedasticity using White's heteroskedasticity consistent covariance.*, ** and *** indicate significance of coefficients at the 10%, 5% and 1% level respectively.

Table 6

Substitution between internal financing and equity financing

Dependent variable: equity financing			
Indep. variables	Unlisted (1)	Listed (2)	Listed–Unlisted (3)
Constant	–0.0834 *(–0.82)*	–0.4418*** *(–2.66)*	–1.30
SIZE	0.0056 *(0.61)*	0.0231** *(2.09)*	0.24
Growth	0.0092* *(1.74)*	0.1253* *(1.93)*	1.71*
CF	0.0023 *(0.04)*	–0.2024 *(–1.02)*	–0.64
Lev	0.0418 *(1.46)*	0.3328** *(2.46)*	2.04**
Maturity	–0.0035 *(–0.71)*	–0.0043 *(–0.21)*	0.28
N	1946	463	
Adj R^2	0.718	0.232	

Notes: Equity financing (EquitFin), measured as changes in paid in capital divided by sales is the dependent variable in all models. Section 3.2 provides the definitions for all variables. The least squares regression models include fixed firm and year effects and test the substitution effect for the unlisted subsample (1) and the listed subsample (2) separately. Column (3) provides the significance of coefficient differences between the listed and unlisted subsamples by reporting the t–statistic for the coefficient estimate of the interaction term between a stock listing dummy and the corresponding variable, estimated on the full sample. The regression estimates are corrected for heteroskedasticity using White's heteroskedasticity consistent covariance.*, ** and *** indicate significance of coefficients at the 10%, 5% and 1% level respectively.