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Industry peer effect and the maturity structure of corporate debt

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Abstract

Purpose – The purpose of this paper is to examine the role of industry peers in shaping firm debt maturity decisions.

Design/methodology/approach – The authors use idiosyncratic equity shocks as instruments to disentangle industry fixed and peer effects. The authors also employ a three-stage least squares regression (3SLS) model to capture the correlation among thee (short, medium, and long) debt maturity decisions.

Findings – The authors find that a one standard deviation change in peer short (medium, long) maturity debt leads to a 50 percent (37 percent, 23 percent) change in firm corresponding maturity debt and that these mimetic behaviors are statistically significant within, but not between, firm size groups. The findings also reveal that firms that mimic the short and medium (long) debt maturity structure of their peers tend to increase (decrease) firm performance as measured by profitability, return-on-assets, and stock returns.

Research limitations/implications – First, given the research design, the authors are constraint from pinpointing the exact date of the mimicking behaviors. This limitation prevents the authors from establishing the causality of the mimicking behavior and firm performance. Future research can extend the findings by solving this problem. Second, it should be interesting to address the question of whether mimicking behavior is good or bad for firm performance. The authors only compare the performance of Close Followers and Loose Followers; however, it would be more precise to compare the performance of mimicking firms with the performance of non-mimicking firms.

Originality/value – First, the findings extend the debt maturity structure literature by providing empirical evidence that an important determinant of firm debt maturity is industry peer debt maturity. Since debt maturity directly influences firm risk and performance, it is important for debt and equity holders to know how firms choose their debt maturity so that they can estimate their investment risk precisely. Second, the paper provides new empirical evidence supporting the information acquisition and principal-agent theories in demonstrating that firm performance increases when managers herd over short and medium debt maturity decisions and decreases when managers herd over long debt maturity decisions.

Keywords Finance, Corporate governance, Debt financing

Paper type Research paper

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> […] life is not long enough; – human nature desires quick results, there is a peculiar zest in making money quickly, and remoter gains are discounted by the average man at a very high rate […]. Worldly wisdom teaches that it is better for reputation to fail conventionally than to succeed unconventionally (Keynes, 1936).

Financial literature has largely ignored the importance of peer following in the determination of firm financial policies by assuming that firms make financial decisions independently. In their empirical studies, researchers routinely remove industry fixed effects by including industry dummy variables or subtracting industry means to test how firm characteristics determine financial decisions. Unfortunately, this approach does not explain how industry peers influence financial decisions. In this paper, we examine the debt maturity structures of firms and ask three formerly under-researched questions: Do changes in industry peer debt maturity structures affect firm debt maturity decisions? Which firms mimic and which firms are mimicked? And, do these mimicking behaviors improve firm performance?

Disentangling industry fixed and peer effects, we find that industry peer firms (hereafter, "peers") play an important role in shaping firm debt maturity structures and that, controlling for their own characteristics, firms exhibit mimetic behaviors significantly correlated with the exogenous characteristics of their peers. Specifically, a one standard deviation change in short (medium, long) maturity peer debt leads to a 50 percent (37 percent, 23 percent) change in corresponding firm decisions. This is the first study that establishes the role of peers in determining corporate debt maturity structure decisions.

Following Leary and Roberts (2014), we use peer idiosyncratic equity shocks as instrumental variables to model the endogenous selection of firms into peer groups. However, unlike Leary and Roberts, we employ a three-stage least squares regression (3SLS) model to capture the correlation among the three (short, medium, and long) debt maturity decisions. After accounting for the endogeneity between firm debt maturity decisions and the actions and characteristics of peers, and controlling for leverage, growth opportunity, firm size, fixed assets, profitability, earnings volatility and firm bond ratings, we document a statistically and economically significant relation between peer debt maturity decisions and corresponding firm actions.

To examine which firms mimic and which firms are mimicked, we divide the sample into terciles by firm size and profitability and test mimicking behavior within and between groups. We find evidence of mimicking behavior within, not between, small, medium and large size groups but not between or within groups classified by measures of profitability. These results differ from Leary and Roberts (2014) who find that smaller and less profitable firms are highly sensitive to larger, more profitable peers, but not vice versa.

To determine whether mimicking behaviors improve firm performance, we divide the sample into terciles based on peer (short, medium, long) Maturity Debt coefficients obtained from our 3SLS regressions. The top tercile represents close peer followers (Close Followers) and the bottom tercile represents loose peer followers (Loose Followers). We measure firm performance as Profitability (earnings before interest and tax), ROA (net income scaled by total assets), and Stock Return (quarterly stock returns). We then compare the performance of Close and Loose Followers that mimic short and medium debt maturity structures and find significantly higher performance by all measures among the Close Followers. However, Close Followers that mimic long debt maturity structures exhibit lower performance than Loose Followers by the same measures.

Our finding that Close Followers outperform Loose Followers when mimicking short and medium maturity suggests that managers may herd over optimal debt maturity decisions to acquire information otherwise available only to their peers as advanced by the information acquisition model of Hirshleifer *et al.* (1994). Our finding that Close Followers underperform Loose Followers when mimicking long debt maturity structures suggests that managers may herd over suboptimal debt maturity decisions for reputational reasons as advanced by principal-agent theory.

This paper makes two contributions. First, our findings extend the debt maturity structure literature by providing empirical evidence that an important determinant of firm debt maturity is industry peer debt maturity. Since debt maturity directly influences firm risk and performance, it is important for debt and equity holders to know how firms choose their debt maturity so that they can estimate their investment risk more precisely. Second, the paper provides new empirical evidence supporting the information acquisition and principal-agent theories in demonstrating that firm performance increases when managers herd over short and medium debt maturity decisions and decreases when managers herd over long debt maturity decisions.

Our work is related to Leary and Roberts (2014) who examine the peer effect in firm leveraging decisions. In our study, we extend the peer effect to firm decisions about the maturity classification components of debt. We further extend Leary and Roberts (2014) by answering the question of whether mimicking behaviors improve firm performance. Finally, our study compliments Mackay and Phillips (2005), who examine intra-industry variation and firm financial decisions, by showing that the variation in firm debt maturity structure is explained by industry peer debt maturity decisions.

The paper is organized as follows. In Section 1, we develop the hypothesis that relates firm debt maturity structures with corresponding industry peer decisions; Section 2 describes data sample and research methodology; our empirical findings are discussed in Section 3; and Section 4 concludes.

1. Literature review on corporate debt maturity and hypothesis development

A. Literature review on corporate debt maturity

In a frictionless and efficient market, firms can hedge against insolvency risk by matching debt maturity to asset life. Under this hedging strategy, the costs of financing the assets are known over the asset life, and the expected cash flows generated by the assets are sufficient to service and retire the debt. Deviation from this hedging strategy raises insolvency risk.

However, when the market is inefficient and capital allocation and information come at a cost, insolvency risk is not the only determinant of corporate policy on debt maturity. Other important determinants have been documented in prior theoretical and empirical studies. The extant literature emphasizes two main theories that explain corporate debt maturity decisions: information asymmetry/signaling and agency cost theories.

In Flannery's (1986) model, debt maturity serves as a signal of firm credit quality. Information asymmetry regarding firms' true credit quality prevents creditors from distinguishing "good" and "bad" firms. Creditors demand higher premiums on Long Maturity Debt because Long Maturity Debt implies higher uncertainty about future firm credit quality. Firms with high credit quality will choose to issue Short Maturity Debt to signal their true credit quality to the market, and firms with low credit quality will issue Long Maturity Debt to lock in advantageous borrowing terms. Diamond's

(1991) model relates debt maturity structure and liquidity risk. The Diamond 1991 model identifies a non-monotonic relationship between debt maturity and firm credit quality. Under asymmetric information about firms' true credit quality, firms with high and low credit quality tend to borrow Short Maturity Debt while firms with average credit quality select Long Maturity Debt. Johnson (2003) documents that Short Maturity Debt increases liquidity risk. Firms with low information asymmetry tend to prefer Long Maturity Debt (Barclay and Smith, 1995; Stohs and Mauer, 1996; Graham and Harvey, 2001).

Agency cost theory identifies two types of costs related to debt maturity decisions: costs related to debt overhang or underinvestment (Myers, 1977) and costs related to asset substitution (Jensen and Meckling, 1976). To address the debt overhang problem, Myers suggests several strategies, including using Short Maturity Debt, reducing leverage, issuing debt with strict covenants, and matching the maturity of debt to the expected life of assets.

Several studies approach the supply side of the credit market to explain corporate debt maturity structure. Faulkender and Petersen (2006) examine the impact of the source of capital on capital structure and find that firms with access to the public bond market (having debt ratings) have 35 percent more and longer maturity debt. Rauh and Sufi (2010) show that firms sharply reduce their Short Maturity Debt but not their Long Maturity Debt in response to the downgrade.

Morris (1976) and Leland and Toft (1996) document that debt maturity influences firm performance and market value through three channels: the variance of net income, cost of equity capital and after-tax cost of debt. Short Maturity Debt can reduce the risk to shareholders and increase firm market value through the covariance between net operating income and future interest rates. In the model of Leland and Toft (1996), the optimal capital and maturity structure is the point at which tax advantage of debt is balanced with bankruptcy and agency costs.

B. Hypothesis development

The principal-agent problem occurs when managers ignore their private information and make suboptimal decisions that reduce firm performance by mimicking the long debt maturity structures of their peers. Managers herd among their peers due to concerns about their reputation in the labor market. They are more likely to be fired when their firms perform poorly relative to their peers rather than when all firms perform equally poorly. Herding reduces the probability of managers being revealed to be of low-ability.

Another motivation for herding behavior is described by Hirshleifer *et al.* (1994). In their information acquisition model of herding behavior, investors discover the same information at different times and the expected utility from having the same information or performing the same action increases the number of other investors who ultimately gather that information. The prediction of the Hirshleifer *et al.* model applies in our paper in that managers follow their peers when they set optimal short and medium debt maturity structures but are unsure how to measure inputs. For example, when managers do not have as much information as their peers about future growth, investment opportunities and industry volatility, they will observe and mimic their short and medium maturity peer debt structures. In doing so, managers expect that the utility of their own financing decisions will increase and their firms will benefit as though they possessed, in a timely manner, the same information as their peers.

Recent empirical studies have provided evidence about peer effects on corporate policies. In a 2001 survey by Graham and Harvey, CFOs cite the importance of peer financing decisions for their own financing decisions. Welch (2004) finds that firms that wander away from their industry average debt-equity ratios tend to return to the herd. Mackay and Phillips (2005) examine the role of industries in firm financial decisions and find that among competitive industries, firms decide their leverages based on their proximity to a natural hedge, the median industry capital-labor ratio. Recently, Hoberg and Phillips (2010) find that peers play a central role in corporate capital financing decisions and that firms choose their organizational forms based on peer asset complementarities. Leary and Roberts (2014) also confirm the importance of peers in corporate structure and financing decisions. Their findings indicate that firms adjust their leverage based on changes in leverage and equity shocks of their peers. Morris' (1976) and Leland's and Toft's (1996) models suggest the importance of debt maturity decision in determining firm performance, and therefore, in shaping the compensation of managers.

Based on the information acquisition and principal-agent theories and the recent empirical findings described above, our first testable hypothesis is:

H1. Firm debt maturity structures are influenced by corresponding industry peer debt maturity structures.

Managerial compensation and performance evaluations are often benchmarked against other firms, not only against other firms within the same industry but also against other firms of similar size. Consequently, the principal-agent model implies that same industry managers are more likely to herd with similar, rather than different, size peers.

Although firms are more likely to face similar threats and opportunities, their abilities to respond are not always the same. Consequently, firms lacking valuable information may be motivated to mimic their peers to acquire that information. However, firms will do so only if they perceive that the information will be beneficial and this is more likely if they share similar attributes such as size.

More importantly, the "debt capacity" and borrowing constraints limit firms from mimicking industry leaders. Small and unrated firms might not be able to borrow long maturity as freely as large and rated firms (Faulkender and Petersen, 2006; and Colla *et al.*, 2013).

This leads to the second hypothesis:

H2. Within the same industry, firm debt maturity structures are influenced by similar size peers, not by different size peers.

Both the information acquisition and principal-agent models predict that managers will mimic peer decisions. However, the managerial motivations from each model are different. With the information acquisition model, managers are motivated to make better decisions to improve shareholder benefits. In the principal-agent model, managers are motivated to protect their own reputations and careers with little or no regard for shareholder interests. Interestingly, mimicking behavior predicts contrary shareholder outcomes based on the two models. The information acquisition model suggests that shareholders benefit when managers incorporate valuable peer information in their decisions. Conversely, the principal-agent model predicts an opposite outcome when managers ignore their own private information and mimic the decisions of their peers. This paradox is addressed in our paper by comparing the costs and benefits associated with the outcomes of mimicking short, medium, and long peer debt maturity structures.

This leads to the third hypothesis:

H3. Firm performance is stronger when managers mimic peer debt maturity structures.

The test of our third hypothesis aims to find the relationship between mimicking behavior and firm performance. Since our research design does not allow us to pinpoint the exact date of the mimicking behavior, we are constraint from establishing the causality between mimicking behaviors and firm performance.

II. Data sample and methodology

A. Data sample

Our data sample consists of all US non-financial, non-utility, and non-government firms from 1973 to 2012 from a merged CRSP-Compustat database. We begin with 1973 to avoid the selection bias of Compustat sample toward large and successful firms. Financial firms (SIC codes 6000-6999) and utilities (SIC codes 4900-4999) and government entities (SIC codes greater than 8999) are excluded from the sample to avoid capital structures dictated by regulations. Credit ratings are collected from Standard and Poor's domestic debt ratings from 1973 to 2012[1]. We assign firms to industries by using three-digit SIC codes from Compustat. All variables are classified into two groups: subject firms and peer firms. Peer groups are all firms in the same industry excluding the subject firms.

Variable definitions are included at the Appendix. We require that each firm-year has no missing data for all variables. To mitigate the influence of outliers and data coding errors, we winsorize all variables at the first and 99th percentiles. Table I presents the summary statistics for our final sample of 45,768 firm-year observations corresponding to 6,144 unique firms and 236 industries. Similar to Leary and Roberts (2014), we include variables for Book Leverage, Market Leverage, Log(Sales), Market-to-Book (MTB), EBITDA/Assets and Net PPE/Assets.

On average, one industry includes 194 firms. The median number of firms is 75. Short Maturity Debt is defined as debt that matures within one year or less (measured by the ratio of Firm Short Maturity Debt to Total Assets, *dlc*/*at*). Medium Maturity Debt is debt that matures in more than one year to less than five years (measured by the ratio of Firm Medium Maturity Debt to Total Assets, $(dd1+dd2+dd3+dd4)/at$). Long Maturity Debt is the difference between Compustat total Long Maturity Debt and our Medium Maturity Debt (measured by the ratio of Firm Long Maturity Debt to Total Assets, $(dltt-dd1-dd2-dd3-dd4)/at$). On average, short (medium, long) maturity debt accounts for 6.6 percent (12.6 percent, 4.8 percent) of total assets[2].

B. Methodology

B.1 Model specification. Our empirical model is similar to the model of Leary and Roberts (2014), which is a generalization of the model developed in Rajan and Zingales (1995):

$$y_{ijt} = \alpha + \beta \overline{y}_{-ijt} + \gamma' \overline{X}_{-ijt-1} + \lambda' X_{ijt-1} + \sigma' \mu j + \phi' vt + \varepsilon_{ijt} \quad (1)$$

where the indices *i, j,* and *t* correspond to firm, industry, and year, respectively. The dependent variable y_{ijt} is firm debt maturity structure, such as Short Maturity Debt, Medium Maturity Debt and Long Maturity Debt. The independent variable $\overline{y}_{-ijt}$ denotes the average short, medium or long peer debt maturity. Following

	Mean	Median	SD
Peer firm averages			
Book Leverage	0.2407	0.2271	0.0566
Market Leverage	0.2683	0.2565	0.0961
Log (Sales)	4.9990	4.6798	1.0018
Market-to-Book	1.4428	1.3344	0.4987
EBITDA/Assets	0.0824	0.0917	0.0546
Net PPE/Assets	0.2786	0.2486	0.1139
ROA	−0.0222	−0.0098	0.0616
Short Maturity Debt	0.0662	0.0315	0.0969
Medium Maturity Debt	0.1262	0.0887	0.1259
Long Maturity Debt	0.0483	0.0129	0.1058
Firm specific factors			
Book Leverage	0.2407	0.2217	0.1745
Market Leverage	0.2683	0.2150	0.2286
Log (Sales)	4.9989	4.8744	2.1260
Market-to-Book	1.4428	1.0010	1.5709
EBITDA/Assets	0.0824	0.1218	0.2031
Net PPE/Assets	0.2786	0.2474	0.1725
ROA	−0.0222	0.0404	0.2534
Short Maturity Debt	0.0662	0.0645	0.0223
Medium Maturity Debt	0.1262	0.1191	0.0312
Long Maturity Debt	0.0483	0.0451	0.0353
Industry characteristics			
No. of Firms per Industry	194	75	415
Total No. of Industries	236		
Sample characteristics			
Observations	45,768		
Firms	6,144		

Notes: The sample consists of all US non-financial, non-utility firms in Compustat database from 1973 to 2012 with non-missing data for all analysis variables. The table presents means, medians and standard deviations (SD) for variables. Short, Medium, and Long Maturity Debt is debt that matures within one year, from more than one year to five years, and after five years, respectively. Peer Firm Averages is the average of all firms within an industry-year combination, excluding the *i*th firm observation. Industries are defined by three-digit SIC codes. Firm-Specific Factors correspond to firm *i*'s value in year *t*

Table I.
Summary statistics

Leary and Roberts (2014), the debt maturity is not in lag form so as to clearly identify the contemporaneous effect of peers[3]. Vectors $\overline{X}_{-ijt-1}$ and X_{ijt-1} are peer average and subject firm characteristics, respectively. These characteristics are used throughout the debt maturity structure empirical literature and are Book Leverage, Market Leverage, Market-to-Book, Firm Size measured by Log(Sales), Profitability measured by EBITDA/Assets, Tangibility measured by Net PPE/Assets, Earnings Volatility measured by standard deviation of ROA, and Credit Rating. Industry and year fixed effects are error components μ_j and v_t, respectively. The firm-year specific error term is ε_{ijt} and is assumed to be correlated within firms and heteroskedastic. Peer effects are captured by β and γ'.

B.2 Endogeneity problem and instrumental variable construction. The correlation between firm debt maturity decisions and peer decisions peers reflects an endogeneity problem (Manski, 1993). To overcome this problem, we specify variables defining reference groups and variables directly affecting outcomes. In other words, the task is to show that controlling for other determinants of firm debt maturity, firm behaviors are significantly correlated with the exogenous characteristics of their peers.

We instrument peer debt maturity decisions with their idiosyncratic equity returns (equity shocks). The relevance of stock returns and financial policy is clearly specified in prior literature, both theoretically and empirically[4]. However, unlike Leary and Roberts (2014) who use only one instrument variable, lag of equity shock, we employ two instrumental variables, contemporaneous equity shock and lag of equity shock. We do this since using two instrumental variables allows us to perform Hansen's *J*-test for overidentifying restrictions. As shown in Tables III-V the overidentification test shows that the instruments Equity Shock and Lagged Equity Shock are appropriately uncorrelated with the error distribution.

The instrument variable, idiosyncratic stock returns, is the difference between the actual return and the expected return specified by:

$$r_{ijt} = \alpha_{ijt} + \beta_{ijt\_Market}(rm_t - rf_t) + \beta_{ijt\_Industry}(rp_t - rf_t) + \eta_{ijt} \quad (2)$$

where, r_{ijt} is the return to firm i in industry j during month t, $(rm_t - rf_t)$ is the excess return to the market, and $(rp_t - rf_t)$ is the excess return to an equally weighted industry portfolio which excludes firm i.

We estimate Equation (2) for each firm on a rolling annual basis using historical monthly returns data from the CRSP database. We require at least 12 months of historical data and include up to 24 months of data in the estimation. For example, to obtain the expected return and equity shock for a firm from January 2009 to December 2009, we estimate Equation (2) using monthly returns from January 2007 to December 2008. Then, we use the estimated coefficients from Equation (2) and monthly Fama/French Research Factors from January 2007 to December 2008 as inputs for Equation (3) to compute the expected return:

$$\text{Expected Return}_{jit} \equiv \hat{r}_{ijt} = \hat{\alpha}_{ijt} + \hat{\beta}_{ijt\_Market}(rm_t - rf_t) + \hat{\beta}_{ijt\_Industry}(rp_t - rf_t) \quad (3)$$

Idiosyncratic returns are computed as the difference between realized and expected returns, Equation (2) and (3):

$$\text{Idiosyncratic Return}_{ijt} \equiv \eta_{ijt} = \mathrm{r}_{ijt} - \hat{r}_{ijt}$$

where the idiosyncratic return is the pure firm specific unexpected return after teasing out all systemic market and industry variations. In a final step, we take the arithmetic average of monthly idiosyncratic returns across firm *i*'s industry peers to construct a contemporaneous equity shock instrument.

Table II presents summary statistics for the estimated factor regressions. On average, each of the rolling regressions has 19 monthly observations. The average adjusted R^2 is 12.25 percent and the loading factors of market and industry are 0.48 and −0.43, respectively. The average idiosyncratic return is only 11 basis points in magnitude.

B.3 Error term correlation problem and 3SLS. As managers often determine firm leverage and debt maturity structures simultaneously, we test the hypothesis that

	Mean	Median	SD
α_{it}	0.0334	0.0249	0.2283
β_{it_Market}	0.4788	0.3997	1.4057
$\beta_{it\_Industry}$	−0.4296	−0.3139	1.8946
Observations per regression	19	20	3
R^2	12.25%	9.15%	10.94%
Average Monthly Return	0.0085	0.0000	0.1400
Expected Monthly Return	0.0095	0.0094	0.0647
Idiosyncratic Monthly Return	−0.0011	−0.0064	0.1238

Notes: The sample consists of monthly returns for all US non-financial, non-utility firms in the intersection of the annual Compustat and monthly CRSP databases from 1973 to 2012. The table presents mean factor loadings and adjusted R^2's from the regression:

$$r_{ijt} = \alpha_{ijt} + \beta_{ijt\_Market}(rm_t - rf_t) + \beta_{ijt\_Industry}(rp_t - rf_t) + \eta_{ijt}$$

where r_{ijt} is the return to firm i in industry j during month t, $(rm_t - rf_t)$ is the excess return on the market, and $(rp_t - rf_t)$is the excess return on an equally weighted industry portfolio excluding firm i's return, where industries are defined by three-digit SIC codes. The regression is estimated for each firm on a rolling annual basis using historical monthly returns data from the CRSP database. We require at least 12 months of historical data and use up to 24 months of data in the estimation. Expected returns are computed using the estimated factor loadings and realized factor returns one year hence. Idiosyncratic returns are computed as the difference between realized and expected returns

Table II.
Stock return factor regression results

short, medium, and long peer debt maturity policies influence corresponding firm debt maturity decisions. Due to interdependence among decisions on Short, Medium, and Long Maturity Debt, the residuals obtained from each of the regressions should be correlated.

To deal with the issues of endogeneity and error term correlations among regressions, we employ the 3SLS method. The 3SLS uses the two-stage least squares estimated moment matrix of the structural disturbances to estimate all coefficients of the system of equations simultaneously. In the first stage regression model with peer debt maturity (short, medium, and long) as the endogenous variable, we use peer Equity Shock, peer Lagged Equity, firm Equity Shock, and firm Credit Rating as independent variables. Other independent variables for both peers and firms are Book Leverage, Market Leverage, Market-to-Book, Log(Sales), EBITDA/Assets, Net PPE/Assets, and Earnings Volatility. The motivation to control for the effects of these control variables are based on Johnson (2003).

In the second stage, the residuals from each of the three equations in the first stage are obtained to estimate a cross-equation correlation matrix. And in the third stage, we run a system of three equations with short, medium, and long maturity firm debt as dependent variables, instrumented short, medium, and long maturity peer debt as independent variables, and other control variables.

III. Multivariate analysis

A. Peer effects in maturity structure of debt

Tables III-V present the results of 3SLS estimating Equation (1). The dependent variables are Firm Short Maturity Debt, Firm Medium Maturity Debt, and Firm Long Maturity Debt in Tables III-V, respectively. *t*-Statistics robust to heteroskedasticity and

	Firm Short Maturity Debt			
	3SLS – First Stage Coefficients	3SLS –Third Stage Coefficients	3SLS – First Stage Coefficients	3SLS – Third Stage Coefficients
	Rated (1) and Unrated (0) firms		Rated firms: Investment (0) or Junk (1)	
	(1)	(2)	(3)	(4)
Peer firm averages				
Equity Shock	−0.359***		−0.193***	
	(−5.56)		(−2.28)	
Lagged Equity Shock	−0.281***		−0.311***	
	(−4.35)		(−2.52)	
Short Maturity Debt		0.704***		0.400***
		(18.72)		(7.51)
Book Leverage	0.350***	−0.159***	0.314***	−0.010***
	(50.41)	(−4.71)	(23.16)	(−5.06)
Market Leverage	−0.049***	−0.053*	−0.062***	−0.064*
	(−7.93)	(−1.92)	(−5.13)	(−1.70)
Market-to-Book	−0.005***	0.001	−0.006***	0.002
	(−5.99)	(0.19)	(−3.14)	(0.39)
Log(Sales)	−0.003***	0.006***	−0.001***	0.004***
	(−11.86)	(6.53)	(−2.59)	(2.64)
EBITDA/Assets	0.021***	0.026	0.068***	0.008
	(2.95)	(0.79)	(4.75)	(0.18)
Net PPE/Assets	−0.117***	0.039***	−0.132***	0.027**
	(−60.68)	(4.05)	(−32.22)	(1.86)
Earnings Volatility	0.064***	−0.013	0.124***	−0.060
	(10.96)	(−0.49)	(8.83)	(−1.37)
Firm specific factors				
Equity Shock	0.001	0.000	0.000	0.012
	(0.78)	(0.03)	(0.04)	(1.38)
Book Leverage	0.002	0.248***	0.002	0.130***
	(1.20)	(39.17)	(0.62)	(12.71)
Market Leverage	−0.002**	−0.000	−0.005**	0.001
	(−2.09)	(−0.06)	(−2.06)	(0.02)
Market-to-Book	−0.000	0.001*	−0.000	0.004***
	(−1.28)	(−1.81)	(−0.27)	(2.83)
Log(Sales)	0.000**	−0.000	0.001***	0.005***
	(2.05)	(−1.02)	(3.93)	(5.23)
EBITDA/Assets	0.001	−0.046***	−0.001	−0.063***
	(1.15)	(−10.21)	(−0.19)	(−3.90)
Net PPE/Assets	0.002**	−0.052***	0.011***	−0.019***
	(2.32)	(−11.18)	(4.60)	(−2.56)
Earnings Volatility	0.001	0.024***	−0.005	−0.010
	(0.52)	(3.92)	(−0.84)	(−0.56)
Credit Rating	−0.000***	−0.008***	−0.001	0.024***
	(−4.13)	(−22.39)	(−0.76)	(9.49)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Hausman *F*-statistic	87.53		87.53	
Hansen *J*-statistic *p*-value		0.85		0.74
Observations	13,964	13,964	3,377	3,377
Adjusted R^2	48.32%	28.70%	43.22%	14.67%

Notes: The sample consists of all US non-financial, non-utility firms in the annual Compustat database between 1973 and 2012 with non-missing data for all analysis variables. The table presents 3SLS estimated coefficients and *t*-statistics robust to heteroskedasticity and within-firm dependence in parentheses. The dependent variable is Firm Short Maturity Debt, measured by the ratio of Short Maturity Debt to Total Assets (*dlc/at*). In regressions 1 and 2, Credit Rating takes a value of 1 if firms have a current year Standard & Poor's Debt Rating and 0 otherwise. Regressions 3 and 4 estimate coefficients for subsample of rated firms. In regressions 3 and 4, Credit Rating takes value of 1 if firms have investment grade ratings (BBB− or better) and value of 0 firms have junk bonds ratings (BB+ or lower). The Hausman test examines whether the OLS and 3SLS coefficients on the dependent variable are statistically different. *,**,***Statistical significance at the 10, 5 and 1 percent levels, respectively

Table III.
Peer effects in short maturity policy – 3SLS

Table IV.
Peer effects in medium maturity policy – 3SLS

	Firm Medium Maturity Debt			
	3SLS – First Stage Coefficients	3SLS –Third Stage Coefficients	3SLS – First Stage Coefficients	3SLS – Third Stage Coefficients
	Rated (1) and Unrated (0) firms		Rated firms: Investment (0) or Junk (1)	
	(1)	(2)	(3)	(4)
Peer firm averages				
Equity Shock	−0.114*		−0.040*	
	(−1.88)		(−1.83)	
Lagged Equity Shock	−0.141**		−0.113	
	(−2.32)		(−0.61)	
Medium Maturity Debt		0.763***		0.775***
		(15.70)		(7.88)
Book Leverage	0.513***	−0.398***	0.550***	−0.458***
	(78.53)	(−8.82)	(44.72)	(−5.17)
Market Leverage	−0.004	0.014	−0.051***	0.040
	(−0.74)	(0.43)	(−4.61)	(0.65)
Market-to-Book	0.008***	−0.004	0.001	0.010
	(8.81)	(−0.87)	(0.64)	(1.02)
Log(Sales)	−0.012***	0.003***	−0.012***	0.003
	(−57.90)	(2.68)	(−29.99)	(1.08)
EBITDA/Assets	0.125***	0.020	0.090***	0.119*
	(18.41)	(0.51)	(6.96)	(1.61)
Net PPE/Assets	0.043***	−0.008	0.038***	0.017
	(23.52)	(−0.71)	(10.32)	(0.81)
Earnings Volatility	0.111***	−0.010	0.069***	−0.125*
	(20.24)	(−0.31)	(5.41)	(−1.72)
Firm specific factors				
Equity Shock	0.000	−0.002	0.002	0.005
	(0.22)	(0.28)	(0.64)	(0.34)
Book Leverage	−0.001	0.548***	−0.007	0.509***
	(−1.10)	(71.58)	(−2.35)	(29.93)
Market Leverage	0.005***	0.012**	0.006***	0.013
	(4.93)	(1.96)	(2.34)	(0.88)
Market-to-Book	0.000***	0.000	0.001**	0.005**
	(2.63)	(0.65)	(2.15)	(2.23)
Log(Sales)	−0.000**	−0.005***	0.000	−0.012***
	(−1.99)	(−9.89)	(0.34)	(8.10)
EBITDA/Assets	−0.000	0.030***	0.001	0.024
	(−0.42)	(5.47)	(0.27)	(0.91)
Net PPE/Assets	−0.002*	−0.016***	−0.006***	−0.033
	(−1.83)	(−2.74)	(−2.92)	(−2.71)**
Earnings Volatility	−0.000	0.031***	−0.001	0.111***
	(−0.07)	(4.27)	(−0.11)	(3.67)
Credit Rating	−0.000	−0.009***	−0.003***	−0.019***
	(−0.57)	(−20.08)	(−4.17)	(−4.44)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Hausman *F*-statistic	11.34		11.34	
Hansen *J*-statistic *p*-value		0.71		0.89
Observations	13,964	13,964	3,377	3,377
Adjusted R^2	77.74%	55.00%	78.47%	48.01%

Notes: The sample consists of all US non-financial, non-utility firms in the annual Compustat database between 1973 and 2012 with non-missing data for all analysis variables. The table presents 3SLS estimated coefficients and *t*-statistics robust to heteroskedasticity and within-firm dependence in parentheses. The dependent variable is Firm Medium Maturity Debt, measured by the ratio of Medium Maturity Debt to Total Assets [$(dd1 + dd2 + dd3 + dd4)/at$]. In regressions 1 and 2, Credit Rating takes a value of 1 if firms have a current year Standard & Poor's Debt Rating and 0 otherwise. Regressions 3 and 4 estimate coefficients for subsample of rated firms. In regressions 3 and 4, Credit Rating takes value of 1 if firms have investment grade ratings (BBB– or better) and value of 0 firms have junk bonds ratings (BB+ or lower). The Hausman test examines whether the OLS and 3SLS coefficients on the dependent variable are statistically different. *,**,***Statistical significance at the 10, 5 and 1 percent levels, respectively

Table V. Peer effects in long maturity policy – 3SLS

	Firm Long Maturity Debt			
	3SLS – First Stage Coefficients	3SLS –Third Stage Coefficients	3SLS – First Stage Coefficients	3SLS – Third Stage Coefficients
	Rated (1) and Unrated (0) firms		Rated firms: Investment (0) or Junk (1)	
	(1)	(2)	(3)	(4)
Peer Firm Averages				
Equity Shock	0.418***		0.256***	
	(6.64)		(6.59)	
Lagged Equity Shock	0.462***		0.420**	
	(7.34)		(2.14)	
Long Maturity Debt		0.206***		0.184**
		(2.34)		(2.15)
Book Leverage	0.133***	−0.084**	0.128***	−0.085
	(19.72)	(−2.06)	(9.84)	(−1.12)
Market Leverage	0.052***	0.076**	0.115***	0.084
	(8.67)	(2.11)	(9.88)	(1.24)
Market-to-Book	−0.002***	0.001	0.005***	−0.011
	(−2.72)	(0.22)	(2.82)	(−1.04)
Log(Sales)	0.014***	0.001	0.013***	0.004
	(68.47)	(0.73)	(31.18)	(1.41)
EBITDA/Assets	−0.150***	−0.160***	−0.158***	−0.228***
	(−21.47)	(−3.79)	(−11.49)	(−2.84)
Net PPE/Assets	0.075***	0.018	0.094***	0.033
	(39.82)	(1.62)	(23.82)	(1.46)
Earnings Volatility	−0.178***	−0.106***	−0.195***	−0.076
	(−31.30)	(−3.09)	(−14.41)	(0.97)
Firm specific factors				
Equity Shock	−0.001	−0.003	−0.002	−0.0018
	(−0.95)	(−0.41)	(−0.77)	(−1.13)
Book Leverage	0.003*	0.207***	0.009**	0.368***
	(1.93)	(24.98)	(2.93)	(19.95)
Market Leverage	−0.003**	−0.014**	−0.002	−0.016
	(−2.26)	(−2.09)	(0.73)	(−0.96)
Market-to-Book	−0.000	0.000	−0.001*	−0.010***
	(−0.96)	(0.66)	(−1.63)	(−3.87)
Log(Sales)	−0.000	0.005***	−0.001***	0.017***
	(−0.28)	(9.87)	(−3.96)	(10.62)
EBITDA/Assets	−0.001	0.016***	−0.001	0.038
	(−0.70)	(2.66)	(−0.19)	(1.30)
Net PPE/Assets	−0.001	0.067***	−0.005**	0.052***
	(−0.95)	(10.94)	(−2.17)	(3.96)
Earnings Volatility	−0.000	−0.055***	0.006	−0.098***
	(−0.21)	(−6.95)	1.08)	(−2.98)
Credit Rating	0.000***	0.017***	0.004***	−0.002
	(3.86)	(30.06)	(4.77)	(−0.48)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Hausman *F*-statistic	40.46		40.46	
Hansen *J*-statistic *p*-value		0.74		0.43
Observations	13,964	13,964	3,377	3,377
Adjusted R^2	82.68%	34.04%	83.72%	36.15%

Notes: The sample consists of all US non-financial, non-utility firms in the annual Compustat database between 1973 and 2012 with non-missing data for all analysis variables. The table presents 3SLS estimated coefficients and *t*-statistics robust to heteroskedasticity and within-firm dependence in parentheses. The dependent variable is Firm Long Maturity Debt, measured by the ratio of Long Maturity Debt to Total Assets [(*dltt* – *dd1* – *dd2* – *dd3* – *dd4*)/*at*]. In regressions 1 and 2, Credit Rating takes a value of 1 if firms have a current year Standard & Poor's Debt Rating and 0 otherwise. Regressions 3 and 4 estimate coefficients for subsample of rated firms. In regressions 3 and 4, Credit Rating takes value of 1 if firms have investment grade ratings (BBB– or better) and value of 0 firms have junk bonds ratings (BB+ or lower). The Hausman test examines whether the OLS and 3SLS coefficients on the dependent variable are statistically different. *,**,***Statistical significance at the 10, 5 and 1 percent, respectively within-firm dependence are in parentheses. Faulkender and Petersen (2006), Sufi and Rauh (2010), and Colla *et al.* (2013) document that having access to credit market significantly influences firm debt maturity structure, and that high and low credit ratings firms choose their debt maturity differently. Thus, we include *Credit Ratings* as a control variable in all of our tests. We also separately examine our hypothesis in a subsample of Rated Firms only. In regressions 1 and 2, Credit Rating takes a value of 1 if firms have a Standard and Poor's debt rating in the current year and 0 otherwise. Regressions 3 and 4 estimate coefficients for a subsample of rated firms. In regressions 3 and 4, Credit Rating takes value of 1 if firms have an investment grade rating (BBB− or better) and 0 if firms have a junk bond (BB+ or lower). We perform a Hausman test to examine whether the OLS and 3SLS coefficients on the dependent variables are statistically different. As shown in Tables III-V, the Hausman test statistics are 87.53, 11.34, 40.46, respectively, and support our use of 3SLS over OLS.

The first stage regressions in Table III reveal that our instrumental variables, peer Equity Shock and peer Lagged Equity Shock, are negatively correlated with peer Short Maturity Debt. The negative relation between peer Equity shock and Firm Short Maturity Debt is consistent with the prediction of Diamond's (1993) model that increased Short Maturity Debt will increase the sensitivity of financing costs and therefore reduce firm value.

The results in column 2 of Table III indicate that firm Short Maturity Debt decisions are positively and significantly influenced by the short maturity choices of their peers. Moreover, compared to traditional debt maturity determinants, peer Short Maturity Debt decisions have a significantly larger effect. The coefficients of peer Short Maturity Debt are 0.704 in column 2 and 0.400 in column 4, and both are statistically significant at the 1 percent level. The second most important determinant of firm Short Maturity Debt is Book Leverage.

These results are not only statistically but also economically significant and support our first hypothesis. Holding all other regressors at their mean levels, a one standard deviation change in peer Short Maturity Debt results in a 48.95 percent change for the total sample and a 52.49 percent change for the subsample of rated firms. On average, a one standard deviation change in peer Short Maturity Debt leads to 50.72 percent change in Firm Short Maturity Debt.

Table IV displays the results of our 3SLS estimate of Equation (1) with Firm Medium Maturity Debt as the dependent variable. The coefficients of the instruments from the first stage in columns 1 and 3 show that peer Equity Shock and peer Lagged Equity Shock are strongly negatively related with peer Medium Maturity Debt decisions.

In columns 2 and 4, the coefficients of peer Medium Maturity Debt are positively significant at the 1 percent level. This result supports our first hypothesis. The peer effect on Firm Medium Maturity Debt is the most impactful determinant (0.763 in column 2 and 0.775 in column 4). Again, the results are economically significant. Holding all other regressors at their mean levels, a one standard deviation change in peer Medium Maturity Debt results in a 37.21 percent change for the total sample and a 36.33 percent change for the subsample of rated firms. On average, a one standard deviation change in peer Medium Maturity Debt leads to a 36.77 percent change in Firm Medium Maturity Debt.

Table V shows the results of our 3SLS estimate of Equation (1) with Firm Long Maturity Debt as the dependent variable. The coefficients of the instruments from the first stage in columns 1 and 3 suggest that peer Equity Shock and peer Lagged Equity Shock are strongly positively related with peer Long Maturity Debt decisions.

This relation is consistent with the finding of Leland and Toft (1996) that increases in Long Maturity Debt signal higher firm value.

In column 2 and 4, the coefficient of our variable of interest, peer Long Maturity Debt, is positively significant at the 1 percent and 5 percent levels, respectively. This result supports our first hypothesis. Compared to the magnitudes of other traditional determinants of debt maturity, the peer effect on Firm Long Maturity Debt is most important. The coefficients of peer Long Maturity Debt are 0.206 in column 2 and 0.184 in column 4, and both are economically significant. Holding all other regressors at their mean levels, a one standard deviation change in peer Long Maturity Debt results in a 25.98 percent change for the total sample and a 20.31 percent change for the subsample of rated firms in Firm Long Maturity Debt. On average, a one standard deviation change in peer Long Maturity Debt leads to a 23.15 percent change in Firm Long Maturity Debt.

In sum, 3SLS results from Tables III-V support our first hypothesis that firm debt maturity decisions are influenced by their industry peers' corresponding debt maturity decisions. These effects are not only economically large, but also significantly larger than all other traditional determinants of firm debt maturity decisions.

B. Who mimics and who is mimicked?

Table VI presents results supporting our second hypothesis that in the same industry, firm debt maturity decisions are influenced by peers of similar size groups. These results are contrary to the findings of Leary and Roberts (2014) who find that small firms are sensitive to their large peers.

To test our second hypothesis, we divide the sample into terciles by firm size, defined as Log(Sales), within industries. Small (Medium, Large) Size Group consists of firms in the bottom (middle, top) tercile of each industry distribution. We then run 3SLS regressions for each size group. Instrumental variables are peer Equity Shock and peer Lagged Equity Shock. Panel A of Table VI shows the results from the total sample, including both rated and unrated firms, and Panel B shows the results from only the rated firm subsample. The regression results in both Panel A and Panel B suggest that firm debt maturity decisions are influenced by same size peers but small firm debt maturity decisions are not influenced by large size peers[5]. The results support our second hypothesis.

Leary and Roberts (2014) find that less profitable firms follow the decisions of their more profitable peers. Following Leary and Roberts (2014), we also divide the sample into three terciles based on profitability. However, we find no consistent following behaviors of firms within or between groups.

C. Does mimicking improve firm performance?

We measure performance by Profitability (income before interest and taxes scaled by total book assets), ROA (net income divided by total book assets), and Stock Returns (quarterly).

We divide the sample into terciles based on the coefficients of the variables of interest, Peer (Short, Medium, and Long) Maturity Debt from Tables III-V. Close Followers are firms in the top tercile and Loose Followers are firms in the bottom tercile. We then compare the performance of the followers by maturities (short, medium, and long) and Profitability, ROA, and Stock Return. Table VII presents the results.

The results partially support our third hypothesis. Close Followers have significantly higher (lower) performance than Loose Followers when they mimic the

		Firm Short Maturity Debt	Firm Medium Maturity Debt	Firm Long Maturity Debt
Panel A: Sample including rated and unrated firms				
Small Mimicking Small (1)	Peer Short Maturity Debt	0.605***		
		(8.51)		
	Peer Medium Maturity Debt		0.603***	
			(8.74)	
	Peer Long Maturity Debt			0.539***
				(7.96)
Medium Mimicking Medium (2)	Peer Short Maturity Debt	0.716***		
		(13.69)		
	Peer Medium Maturity Debt		0.671***	
			(11.95)	
	Peer Long Maturity Debt			0.605***
				(10.18)
Large Mimicking Large (3)	Peer Short Maturity Debt	0.691***		
		(14.20)		
	Peer Medium Maturity Debt		0.587***	
			(9.64)	
	Peer Long Maturity Debt			0.523***
				(9.00)
Small Mimicking Large (4)	Peer Short Maturity Debt	0.267		
		0.88		
	Peer Medium Maturity Debt		0.246	
			(0.58)	
	Peer Long Maturity Debt			0.619
				(1.18)
Panel B: Sample including rated firms				
Small Mimicking Small (5)	Peer Short Maturity Debt	0.614***		
		(8.67)		
	Peer Medium Maturity Debt		0.660***	
			(11.60)	
	Peer Long Maturity Debt			0.535***
				(3.86)
Medium Mimicking Medium (6)	Peer Short Maturity Debt	0.635***		
		(3.02)		
	Peer Medium Maturity Debt		0.654***	
			(11.62)	
	Peer Long Maturity Debt			0.645***
				(11.20)
Large Mimicking Large (7)	Peer Short Maturity Debt	0.734***		
		(14.66)		
	Peer Medium Maturity Debt		0.595***	
			(8.74)	
	Peer Long Maturity Debt			0.566***
				(9.86)
Small Mimicking Large (8)	Peer Short Maturity Debt	0.230		
		(0.11)		
	Peer Medium Maturity Debt		0.380	
			(0.62)	
	Peer Long Maturity Debt			0.444
				(1.12)

Notes: The sample consists of all US non-financial, non-utility firms in the annual Compustat database between 1973 and 2012 with non-missing data for all analysis variables. The table presents 3SLS estimated coefficients and *t*-statistics in parentheses among firms of different sales sizes. Only key outputs from 3SLS are reported. Small (Medium, Large) Size Group consists of firms in the bottom (middle, top) sales size distribution tercile. Panel A shows the 3SLS estimation results using the total sample, including both rated and unrated firms. Panel B shows the results of 3SLS estimation using only the rated firm subsample. Instrumental variables are Peer Equity Shock and Lagged Peer Equity Shock. The dependent variable is indicated at the top of columns. *,**,***Statistical significance at the 10, 5 and 1 percent levels, respectively

Table VI.
Which firms mimic and which firms are mimicked?

	Profitability Loose Followers Mean	Profitability Close Followers Mean	Test of difference *t*-stat	ROA Loose Followers Mean	ROA Close Followers Mean	Test of difference *t*-stat	Stock Return Loose Followers Mean	Stock Return Close Followers Mean	Test of difference *t*-stat
Short Maturity	0.124	0.135	19.87***	0.021	0.037	28.73***	0.012	0.016	8.03***
Medium Maturity	0.118	0.140	39.26***	0.014	0.041	41.85***	0.012	0.017	8.45***
Long Maturity	0.139	0.125	−29.51***	0.037	0.025	−22.26***	0.018	0.013	−9.08***

Notes: The sample consists of all US non-financial, non-utility firms in the annual Compustat database between 1973 and 2012 with non-missing data for all analysis variables. The sample is divided into terciles based on the coefficient of the independent variable Peer Short (Medium, Long) Maturity Debt from Tables III (IV, V). Close Followers are firms in the top tercile. Loose Followers are firms in bottom tercile. The table presents comparisons of the means of firm accounting and stock performance measures between Close Followers and Loose Followers. Profitability is income before interest and tax scaled by total book assets. ROA is net income divided by total book assets. Stock Return is quarterly firm stock returns. *,**,***Statistical significance at the 10, 5 and 1 percent levels, respectively

Table VII. Does mimicking improve firm performance?

short and medium (long) debt maturity decisions of their peers. One possible explanation is that the cost of mimicking long-term debt outweighs the potential benefits of information imbedded in peer firms' decision.

D. Robustness checks

Our results are robust to: first, different definitions of debt maturity structure (instead of more than one year and five years or less for medium and long maturity, respectively, we substitute three years or less and more than three years, again respectively); second, alternative asset pricing models (Fama-French three-factor and Carhart four-factor models to capture the expected return in Equation (2)); third, different industry classifications (using two or four-digit SIC codes); fourth, adding a one-period lag of the peer debt maturity variable to our main model[6]; and fifth, adding an interaction term between the Peer Short (Medium, Long) Debt Maturity variable and a 2008 year dummy variable that takes the value of 1 if the year is greater than or equal to 2008 and 0 otherwise in our model to examine the time sensitivity of our prior findings[7].

IV. Summary and conclusions

This is the first study to document the peer effects of corporate debt maturity decisions. Using idiosyncratic equity shocks of peer firms as instruments to disentangle industry fixed and peer effects, and controlling for previously identified determinants of debt maturity, we find that peer debt maturity decisions play an important role in determining corporate debt maturities. A one standard deviation change in short (medium, long) maturity peer debt leads to a 50 percent (37 percent, 23 percent) change in corresponding maturity firm debt. Further, these mimetic behaviors; are statistically significant within, but not between, firms in the same size group. We also find no evidence that firms mimic the debt maturity decisions of their more profitable peers.

Our findings answer an important question as to whether mimetic behaviors of managers are related to higher firm performance. By separately comparing performance measured by Profitability, ROA, and Stock Return of two groups, Close Followers and Loose Followers, we find that information acquisition benefits are extracted only when firms mimic the short and medium debt maturity decisions of their peers.

Close Followers have significantly higher performance than Loose Followers when their mangers mimic short and medium debt maturity decisions of their peers. Conversely, the costs of mimicking long debt maturity decisions of peers might outweigh the benefits of information acquisition and lead to poorer firm performance.

Our findings suggest several directions for future research. First, given our research design, we are constraint from pinpointing the exact date of the mimicking behaviors. This limitation prevents us from establishing the causality of the mimicking behavior and firm performance. Future research can extend our findings by solving this problem. Second, it should be interesting to address the question of whether mimicking behavior is good or bad for firm performance. We only compare the performance of Close Followers and Loose Followers; however, it would be more precise to compare the performance of mimicking firms with the performance of non-mimicking firms.

Notes

1. As a robustness test, later we divide our sample into pre- and post-2008 subsamples to examine the time sensitivity of our results.
2. In untabulated results, we document that 74.8 percent of the total debt in our sample matures in more than one year. Similarly, Datta *et al.* (2005) report that 78.0 percent of the total debt in their sample matures in more than one year. In total, 55 percent of the total debt in our sample matures in three or more years. The comparable number in Datta *et al.* (2005) is 60.9 percent and in Barclay and Smith (1995) is 51.7 percent. 36.6 percent of the total debt in our sample matures in more than five years and the comparable number in Datta *et al.* (2005) is 42.6 percent.
3. We also examine the lag effect of peer debt maturity decision in one of our robustness tests. We appreciate an anonymous reviewer for this suggestion.
4. See Leary and Roberts (2014) for a detailed explanation.
5. In untabulated results, we find that other firm debt maturity decisions are not influenced by peers from different size groups.
6. The authors thank an anonymous reviewer for this suggestion.
7. During our sample time period (1973-2012), the US credit market experienced several fluctuations that might have changed managers' behavior and their debt policy. Prior studies have shown that people change their behaviors and decision-making process after experiencing wealth shocks (Malmendier and Nagel, 2011; and Hoffmann *et al.*, 2013). After the financial crisis in 2008, banks and lenders tightened their lending conditions, which led to a sharp reduction in loan availability that made it difficult for firms to borrow. The market refers to this reduction as a "credit crunch." To examine the time-series sensitivity, we choose the most current and severe credit shock, the financial crisis in 2008, to divide our sample into two subsamples and re-estimate our hypothesis.

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Appendix. Variable definition

Variable definitions are specified as below. Compustat variable names are in bold.

Total Book Assets = **at**

Total Debt = Short-Term Debt + Long-Term Debt = **dltt + dlc**

Book Leverage = Total Debt/Total Book Assets

Market Value of Assets (MVA) = **prcc_f * cshpri + dlc + dltt + pstkl − txditc**

Market Leverage = Total Debt/MVA

Firm Size = Log (Sales) = Log (**sale**)

Tangibility = Net PPE/Assets = **ppent/at**

Profitability = EBITDA/Assets = **oibdp/at**

ROA = Net Income/Assets = **ni/at**

Earnings Volatility: computed each year as the standard deviation of ROA/Assets

Short Maturity = **dlc/at**

Medium Maturity = **(dd1 + dd2 + dd3 + dd4)/at**

Long Maturity = **(dltt − dd1–dd2 − dd3 − dd4)/at**

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