

# “The impact of business conditions on firms' debt-equity choice”

## AUTHORS

Halil D. Kaya

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Halil D. Kaya (USA)

## The impact of business conditions on firms' debt-equity choice

### Abstract

Campbell and Cochrane (1999) and Siegel (2005) have shown that the macroeconomic environment has an impact on equity premium. On the other hand, the previous research on market timing (Baker and Wurgler, 2002; and others) shows that equity premium is important in firms' financing decisions. Therefore, one would expect the macroeconomic environment to be a factor in firms' financing decisions (through its influence on equity premium). Yet, none of the previous studies on firms' financing choice has controlled for the macroeconomic environment. This current study explores the relation between macroeconomic environment and U.S. firms' financing activities.

Overall, the results show that the macroeconomic environment (i.e. business conditions) has a significant impact on firms' financing decisions. First, the author runs robust regressions to examine the impact of the business conditions on financial market activity. The results show that when business conditions are favorable (i.e. above-average), while the seasoned equity, the public debt, and the private placement markets become more active in terms of the number of firms coming to the market, the syndicated loan market is unaffected. Then, the author runs binary logistic regressions to examine the impact of the business conditions on firms' financing choice. The findings indicate that firms tend to prefer both public debt financing and syndicated loan financing over equity financing when business conditions are favorable (i.e. above-average).

**Keywords:** financing choice, financial market activity, business conditions, ADS index.

**JEL Classification:** G30, G32.

### Introduction

The previous studies on firms' debt-equity choice focus on firm-specific factors like the cost of capital, the market valuation, or the credit quality of the issuing firm. While Denis and Mihov (2003) show that a firm's credit quality is the most important determinant of its choice between different types of debt (i.e. bank debt, non-bank private debt, and public debt), Elliott, Koeter-Kant, and Warr (2007, 2008) contend that market's misvaluation of equity explains the debt-equity choice. Huang and Ritter (2009), on the other hand, show that several direct and indirect measures of cost of equity capital, like implied equity risk premium and average first-day return of initial public offerings (i.e. IPOs), explain the choice between equity and public debt.

Interestingly, none of these studies examines the impact of the macroeconomic environment on firms' financing choice. It is well-known that the macroeconomic environment has an impact on equity risk premium. Campbell and Cochrane (1999) and Siegel (2005) have shown that the equity premium, as well as all other risk premiums, increases in recessionary periods. Since previous research on market timing (Baker and Wurgler, 2002; Hovakimian, 2005; Altı, 2006; Taggart, 1977; Marsh, 1982; Graham and Harvey, 2001; Bancel and Mittoo, 2004; Barry, Mann, Mihov and Rodriguez, 2008) have shown that cost of capital and equity premium are important in firms' financing decisions, studies on capital structure should not ignore the macroeconomic environment.

In a recent study, Aruoba, Diebold, Scotti (2009) improve the recession/expansion classification by creating a continuous business conditions index that tracks real business conditions at high frequency. More specifically, the ADS (i.e. the Aruoba-Diebold-Scotti) index tracks economic indicators like weekly initial jobless claims, monthly payroll employment, industrial production, personal income less transfer payments, manufacturing and trade sales, and quarterly real GDP in real time, and it is now being used by researchers to compare business conditions at different times. The Federal Reserve Bank of Philadelphia updates the index and posts the new values on its website (<http://www.philadelphiafed.org/research-and-data/real-time-center/business-conditions-index>) as data on the index's underlying components are released.

The ADS index is an improvement over the recession/expansion classification in terms of its construction. First of all, unlike the recession/expansion classification, the ADS index is a continuous variable that has specific values in each calendar day. So, we know the status of the economy in exact terms rather than just saying it is a recessionary or an expansionary period. The average value of the ADS index is zero and this value reflects neutral business conditions. Progressively bigger positive values indicate progressively better-than-average conditions, whereas progressively more negative values indicate progressively worse-than-average conditions. For my sample period which is from 1984 through 2004, the index values ranged from -1.90 during the 1990-91 recession to 1.71 in 1984. There were two recessions in this whole period: the 1990-91 recession and the 2001

recession. While the 1990-91 period had the lowest values, the 2001 recession period was the second worst period with a minimum index value of -1.38.

In this study, my main objective is to complement the previous literature by testing for the impact of the macroeconomic environment on U.S. firms' financing choice. Since the ADS index is a better measure than the recession/expansion classification, I use the ADS index as a proxy for the macroeconomic environment and examine the impact of business conditions on U.S. firms' equity and debt financing activities. After downloading the data on seasoned equity offerings (i.e. SEOs), public debt offerings, private placements, and syndicated bank loan agreements from Securities Data Corporation's New Issues Database, first, I examine the impact of business conditions on firms' choice between equity and debt financing, and then I examine the relation between business conditions and financial market activity (i.e. the number of firms coming to the SEO, public debt, private placement, and syndicated loan markets). Finally, I go into more detail and test for the impact of business conditions on firms' choice between equity financing and public debt financing, equity financing and private placement financing, and equity financing and syndicated loan financing.

This study contributes to the literature in four ways. First, it is more comprehensive than the previous studies in terms of the breadth of the sample. It examines equity financing as well as all three main types of debt financing activities while previous studies mainly focus on the choice between equity and public debt. Second, this study is the first one that examines the impact of business conditions on financial market activity. Does each of these markets become more active when business conditions are more favorable? The ADS index is newly created, and to the author's best knowledge, it is used for the first time in capital structure research. Third, this is the first study that tests for the impact of business conditions on firms' financing choice. As mentioned above, the previous studies just focus on firm-specific factors and ignore the macroeconomic environment. This study contributes to the literature by linking the macroeconomic environment to the debt-equity choice while controlling for firm characteristics like size, profitability, tangibility, market-to-book ratio (i.e. M/B), and pre-issue leverage. Finally, since financial managers actually use the most recent data available to them when making their decisions, researchers should use the most recent quarter's financial data in their analyses. This study makes another important contribution to the literature by using COMPUSTAT quarterly files rather than the annual files.

The remainder of the paper is organized as follows. Section 1 summarizes the previous literature. Section 2 includes the hypotheses that are being tested. Sections 3 and 4 describe the data and the methodology, respectively. The empirical results are presented in section 5. The final section concludes the paper.

## 1. Literature

As mentioned above, all of the previous studies on firms' debt-equity choice focus on firm-specific factors like the cost of capital, the market valuation, or the credit quality of the issuing firm, while ignoring the macroeconomic environment.

Denis and Mihov (2003) use SEC filings and Dow Jones Interactive newswires to form a comprehensive sample of bank debt (not just syndicated loans), non-bank private debt, and public debt announcements, and examine the impact of several factors like the credit quality of the firm, total assets amount issued, M/B, fixed assets ratio, Altman's Z-score, profitability, insider ownership, and book leverage on firm's choice between public debt and bank debt, public debt and non-bank private debt, and bank debt and non-bank private debt. They find that the credit quality of the firm is the most important determinant of the financing choice for these firms. Firms with the highest credit quality (i.e. Moody's or S&P ratings) tend to issue public debt, firms with the lowest credit quality tend to issue private debt, and firms in the middle tend to borrow from banks. They admit that there is one important problem in their study: When they compare their sample with the Security Data Corporation's (SDC) New Issues database, they find that their sample excludes a significant portion of the actual issues, especially the smaller ones.

Elliott, Koeter-Kant and Warr (2007) examine the impact of market's misvaluation of equity on the firm's financing choice for funding the financing deficit. They find that firms which appear to be overvalued relative to previous years fund a greater proportion of their deficit with equity rather than debt. They find that the high market valuations of the 1990s led to equity being increasingly preferred over debt during that time period.

Elliott, Koeter-Kant and Warr (2008) examine the public equity vs. public and private debt issuance decision in a framework that controls for the static trade off and pecking order theories. They find that overvalued firms are more likely to issue equity, while those that are fairly valued or undervalued issue debt. Their study also provides some insight into the choice between public and private debt securities. According to their results, the decision to issue debt publicly or privately does not appear to

be influenced by the level of equity misvaluation, but rather by the characteristics of the firm. Their evidence suggests that younger, riskier firms, seeking smaller amounts of capital are more likely to utilize the private debt market.

Huang and Ritter (2009) examine firms' choice among equity and public debt, while using some explanatory variables that approximate for the relative cost of equity versus debt. A major contribution of this paper is to link equity issuance explicitly to a direct measure of cost of equity capital, which is the beginning-of-year implied equity risk premium, as well as several indirect measures, like lagged values of the average first-day return of IPOs, average closed-end fund discount, lagged realized market returns, and past and future realizations of the Fama-French SMB and HML factors. They find that firms are more likely to issue equity instead of debt when the implied equity risk premium is lower, the first-day return of IPOs is higher, the closed-end fund discount is smaller, prior market returns are higher and future market returns are lower, prior realizations of HML are lower and future realizations of HML are higher, and the expected default spread is higher, even after controlling for firm characteristics.

None of these studies examines the potential impact of the macroeconomic environment on firms' financing choice. We know that the macroeconomic environment has an impact on equity risk premium. Several studies (Campbell and Cochrane, 1999; Siegel, 2005; Arnott and Bernstein, 2002) have shown that the equity premium, as well as all other risk premiums, increases in recessionary periods. At the same time, research on market timing have shown that cost of capital and equity premium explain the timing of firms' equity and debt offerings. As mentioned above, Huang and Ritter (2009) show that equity premium explains firms' choice among equity and public debt. Baker and Wurgler (2002), Hovakimian (2005), and Alt (2006), show that cost of equity capital explains the timing of initial public and seasoned equity offerings. On the other hand, Taggart (1977), Marsh (1982), Graham and Harvey (2001), Bancel and Mittoo (2004), and Barry, Mann, Mihov, and Rodriguez (2008) show that cost of debt explains the timing of firms' debt offerings.

If macroeconomic environment has a significant impact on equity premium, and equity premium, in turn, explains the timing of firms' equity and debt offerings, we cannot ignore the state of the economy in any capital structure related research. In this study, I focus on this issue and explore the potential impact of business conditions on firms' financing activities. The next section develops the hypotheses.

## 2. Hypotheses

In this study, I examine the impact of business conditions at the time of the transaction on financial market activity (i.e. the number of firms coming to the market). Since more investment opportunities and better financing terms are available to firms when business conditions are more favorable, I expect to find more firms coming to the market during these periods. Therefore, my hypotheses of interest are:

*Hypothesis 1a: More firms go to the capital markets in periods of above-average business conditions compared to periods of below-average business conditions.*

*Hypothesis 1b: More firms go to the capital markets in periods of improving business conditions compared to periods of worsening business conditions.*

Then, I examine the impact of business conditions on the choice between equity and public debt, equity and private placement, and equity and syndicated loan. First, I look at the level of business conditions and compare the periods when the business conditions are above-average (i.e. the ADS business conditions index is positive) to the periods when the conditions are below-average (i.e. the ADS business conditions index is negative). The above-average/below-average classification, here, measures the level of business conditions at a given point in time, but it does not look at the trend (i.e. improving and worsening conditions). If conditions are above-average, the business environment is relatively strong (i.e. the economic indicators like weekly initial jobless claims, monthly payroll employment, industrial production, personal income less transfer payments, manufacturing and trade sales, and quarterly real GDP in real time are stronger). In other words, the conditions are more favorable compared to the other times.

As we know, the Pecking-order Theory states that, due to its high cost, equity financing is used only as a last resort. Since more capital will be available (and at better terms) to these firms during these favorable (i.e. "above-average") periods, I expect firms to follow the pecking-order and prefer any type of debt financing over equity financing during these periods. Hence, my hypothesis of interest is:

*Hypothesis 2a: Firms prefer any type of debt financing over equity financing in periods of above-average business conditions.*

Then, I look at the trend in the business conditions and compare the periods when the business conditions are improving (i.e. the ADS index is going up) to the periods when the conditions are worsening (i.e. the ADS index is going down). If conditions are improving, the business environment is becoming stronger (i.e. the economic indicators are becoming

stronger). It is important to note that improving conditions may occur when the conditions are above-average or when they are below-average.

Improving conditions should have two effects on the firm: (1) the firm will start considering new investments, and for these new investments, equity issues are more suitable since they provide more cash to the firm (while the median proceeds scaled by assets is 30% for the SEOs, it ranges from 2% to 16% for the three types of debt offerings), and (2) the risk appetite for both the firm and the prospective stock investors will go up when conditions are improving, therefore, equity offerings should be more frequently preferred during these periods.

Therefore, my hypothesis of interest here is:

*Hypothesis 2b: Firms prefer equity financing over any type of debt financing in periods of improving business conditions.*

### 3. Data

First, I downloaded all data on seasoned equity offerings, public debt offerings, private placements, and syndicated bank loan agreements from the Securities Data Company (SDC) New Issues Database for the 1984-2004 period, and then matched them with the corresponding accounting data from Compustat. I strongly believe that studies that focus on managerial decisions like this one should use quarterly data rather than annual data, so in this study, I use quarterly accounting data from Compustat. After excluding the financial firms, small firms (i.e. firms with book values of assets below \$10 million in 2004 dollars), the subsidiary firms, the unit offers, and the outliers (i.e. market-to-book ratio greater than 10, leverage ratio greater than 1, earnings before interest, taxes, and depreciation

scaled by assets greater than 1), I have 2,510 SEOs, and 12,144 total debt transactions in my final sample. Out of these debt transactions, 3,077 are public debt offerings, 2,164 are private placements or 144a issues, and 6,903 are syndicated bank loan agreements. I used the Federal Reserve Bank of Philadelphia's website to access the data series on the Aruoba-Diebold-Scotti Business Conditions Index.

The characteristics of the equity issuers in my final sample are shown in Table 1.

Table 1. Summary statistics for SEO firms

Variable	Median	Mean	St. dev.
<i>M/B</i>	1.61	2.37	2.10
<i>Profitability</i>	0.26	0.29	0.21
<i>Size</i>	3.55	3.60	1.96
<i>Tangibility</i>	0.28	0.36	0.27
<i>Leverage</i>	0.27	0.28	0.22
Observations	2,510		

Notes: *Size* is the natural logarithm of sales (Compustat Item 2). *Tangibility* is measured as net property, plant, and equipment (Compustat Item 42)/total assets (Compustat Item 44). *Profitability* is EBITDA (Compustat Item 21)/total assets (Compustat Item 44). The market-to-book ratio is the (total assets – book value of equity + market value of equity)/total assets. *Leverage* is long-term debt (Compustat Item 51) + short-term debt (Compustat Item 45)/total assets. All variables are measured at the end of the previous quarter ( $t-1$ ).

Table 2 shows the summary statistics for my public debt, private placement, and syndicated loan subsamples. As we can see from the table, public debt issuers are larger firms with more tangible assets compared to the other two groups of borrowers. On the other hand, syndicated loan firms are more profitable firms with higher M/B ratios compared to the public debt and private placement firms. Private placement firms are the ones that have the highest leverage among the three groups of firms.

Table 2. Summary statistics for public debt offerings, private placement/144a issues, and syndicated bank loan agreements

Variable	Public debt			Private placement/144a			Syndicated bank loan		
	Median	Mean	St. dev.	Median	Mean	St. dev.	Median	Mean	St. dev.
<i>Size</i>	7.12	7.02	1.46	5.42	5.51	1.82	5.03	5.08	1.88
<i>Tangibility</i>	0.51	0.50	0.24	0.43	0.46	0.25	0.32	0.38	0.25
<i>Profitability</i>	0.22	0.23	0.13	0.24	0.27	0.18	0.26	0.29	0.18
<i>M/B</i>	0.69	0.95	0.83	0.62	0.87	0.83	0.83	1.18	1.17
<i>Leverage</i>	0.34	0.34	0.13	0.35	0.37	0.18	0.32	0.33	0.19
<i>Proc./A<sub>t-1</sub></i>	0.02	0.05	0.11	0.05	0.15	0.35	0.16	0.40	5.10
<i>N</i>	3077			2164			6903		

Notes: The sample covers borrowing activities from January 1984 through December 2004. *Size* is the natural logarithm of sales (Compustat Item 2). *Tangibility* is measured as net property, plant, and equipment (Compustat Item 42)/total assets (Compustat Item 44). *Profitability* is EBITDA (Compustat Item 21)/total assets (Compustat Item 44). The market-to-book ratio is the (total assets – book value of equity + market value of equity)/total assets. *Leverage* is long-term debt (Compustat Item 51) + short-term debt (Compustat Item 45)/total assets. *Proc./A<sub>t-1</sub>* is the total proceeds from the debt transaction scaled by end-of-previous quarter total assets. The “total debt proceeds” is defined as the money borrowed from a creditor. All variables are measured at the end of the previous quarter ( $t-1$ ).

#### 4. Methodology

The Federal Reserve Bank of Philadelphia calculates the ADS index each day, and by looking at the historical daily index values, it classifies each day as either “above-average” or “below-average” (i.e. the business conditions index is above-average or below-average). In this paper, I use their classification and differentiate between the above-average and the below-average days. I do that by creating a dummy variable named “Above Average”. This variable takes the value “1” when the daily index value is above the historical average; and the value “0” when the daily index value is below the historical average.

Then, I create the second dummy variable called “Improving” which is equal to one if the ADS Business Conditions Index had gone up compared to the last quarter, and equal to zero if the index had gone down compared to the last quarter. Here, I am looking at the trend in the index. Improving conditions may have a positive psychological effect on both the issuers and the investors, while worsening conditions may have a negative impact on all participants.

The two dummy variables, “Above\_Average” and “Improving”, measure business conditions in two different ways. The “Above\_Average” variable differentiates between generally favorable and generally unfavorable market condition periods. It is a better measure than the Expansion/Recession classification since it is more balanced in terms of the number of days in each classification. While the expansionary days are at least 80-90% of the observations, the “Above\_Average” days are 60-65% of the observations. In other words, studies that use the Expansion/Recession classification compare 80-90% of the observations to just 10-20% of the observations (which may be problematic). Here, I use the “Above\_Average” measure which is a more balanced measure in terms of the number of observations. On the other hand, the “Improving” variable is also a good measure since it looks at the trend: Does it make any difference to the firms if the economy is in an improving trend or in a declining trend?

In the first part of this study, I focus on the impact of business conditions on financial market activity. To measure financial market activity, for each market (SEO, public debt, private placement, and syndicated loan market), I create a dummy variable named “Hot”. “Hot” is a categorical variable for each market that takes the value “1” when the issue month is among the top twenty percent of the sample months in terms of detrended number of issues in that market, and the value “0” for the remaining months. In other words, the “Hot” months are the months when a lot of firms go to the financial markets to find money. As mentioned above, this methodology is used in Alti (2006) for equity issues.

Then, I run the following robust regression for each group of firms (SEO, public debt, private placement, and syndicated loan firms) to see the impact of the business conditions on the market activity:

$$\begin{aligned} HOT = & c_0 + c_1 \text{Above\_Average} + c_2 (M/B)_{t-1} + \\ & + c_3 \text{Profitability}_{t-1} + c_4 \text{Size}_{t-1} + \\ & + c_5 \text{Tangibility}_{t-1} + c_6 \text{Leverage}_{t-1} + \\ & + c_7 (\text{Proc./}A_{t-1}) + \varepsilon_t. \end{aligned} \quad (1)$$

Here, for each market, I try to see if financing during favorable (i.e. above-average) business condition periods have a significant impact on market activity. The explanatory variables, except for “Above\_Average”, are measured at the end of the previous quarter ( $t-1$ ). All of the explanatory variables here ( $M/B$ ,  $Profitability$ ,  $Size$ ,  $Tangibility$ ,  $Leverage$ , and  $Size$  (i.e. Proceeds scaled by assets, or  $Proc./A_{t-1}$ )) are shown in previous studies as the determinants of firms’ capital structure; therefore I use them as the control variables in my regressions.

After running the first set of regressions, I run a second set of robust regressions for each group of firms as shown below:

$$\begin{aligned} HOT = & c_0 + c_1 \text{Improving} + c_2 (M/B)_{t-1} + \\ & + c_3 \text{Profitability}_{t-1} + c_4 \text{Size}_{t-1} + \\ & + c_5 \text{Tangibility}_{t-1} + c_6 \text{Leverage}_{t-1} + \\ & + c_7 (\text{Proc./}A_{t-1}) + \varepsilon_t. \end{aligned} \quad (2)$$

Here, for each market, I try to see if financing during improving business condition periods have a significant impact on market activity.

In the second part of the study, I focus on the impact of business conditions on firms’ choice between equity and different types of debt. I run three separate binary logistic regressions to see the impact of business conditions at the time of the transaction on firms’ financing choice between equity and public debt, equity and private placement, and equity and syndicated loan. In the first binary logistic regression, I compare the probability of a firm issuing equity versus issuing public debt, in the second one, issuing equity versus doing a private placement, and in the third one, issuing equity versus making a syndicated loan agreement. In other words, in Model 1, the dependent variable is equal to one if it is an equity issue and equal to zero if it is a public debt offering; in Model 2, the dependent variable is equal to one if it is an equity issue and equal to zero if it is a private placement; and in Model 3, the dependent variable is equal to one if it is an equity issue and equal to zero if it is a syndicated bank loan.

The general empirical model for these binary logistic regressions is shown below:

$$\begin{aligned} Issue\_Type = & c_0 + c_1 Above\_Average + \\ & + c_2(M/B)_{t-1} + c_3 Profitability_{t-1} + c_4 Size_{t-1} + \\ & + c_5 Tangibility_{t-1} + c_6 Leverage_{t-1} + \\ & + c_7(Proc./A_{t-1}) + \varepsilon_t. \end{aligned} \quad (3)$$

Then, I do a similar analysis for improving versus worsening business conditions. Here, the general model for each binary logistic regression is:

$$\begin{aligned} Issue\_Type = & c_0 + c_1 Improving + c_2(M/B)_{t-1} + \\ & + c_3 Profitability_{t-1} + c_4 Size_{t-1} + c_5 Tangibility_{t-1} + \\ & + c_6 Leverage_{t-1} + c_7(Proc./A_{t-1}) + \varepsilon_t. \end{aligned} \quad (4)$$

Using these binary logistic regressions, I try to see if the general level of the business conditions and/or the trend in the business conditions has a significant impact on firms' financing choice.

## 5. Empirical results

Table 3 shows the results of the robust regressions that explain the financial market activity in each market (i.e. SEO, public debt, private placement, and syndicated loan markets) with firm characteristics and issue size as well as the business conditions variable "Above\_Average" (equation (3)). The dependent variable "Hot" is a categorical

variable for each market that takes the value "1" when the issue month is among the top twenty percent of the sample months in terms of detrended number of issues in that market, and the value "0" for the remaining months.

As we can see from the table, "Above\_Average" is statistically significant in all markets except for the syndicated loan market. The regression coefficient for "Above\_Average" is 0.27 and significant ( $p$ -value < 0.01) for the SEO sample, 0.33 and significant ( $p$ -value < 0.01) for the public debt sample, 0.08 and significant ( $p$ -value < 0.01) for the private placement sample, and 0.03 and insignificant ( $p$ -value = 0.19) for the syndicated loan sample. In other words, when business conditions are above-average, the SEO, public debt, and private placement markets become more active (i.e. "Hot") in terms of the number of firms coming to the market, but there is no significant change in the number of firms coming to the syndicated loan market. Therefore, Hypothesis 1a is confirmed except for the syndicated loan market.

Since firms can find funds more easily in periods of "Above\_Average" business conditions, they come to the market and take advantage of the lower required returns in these markets. But, we are seeing that, the syndicated loan market has different dynamics than the other three markets.

Table 3. Equity and debt market activity in periods of "Above\_Average" business conditions

	SEO		Public debt		Private placement/144a		Syndicated loan	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variable	Coef.	$p$ -value	Coef.	$p$ -value	Coef.	$p$ -value	Coef.	$p$ -value
Intercept	-0.11	(0.03)	0.34	(< 0.01)	0.20	(0.01)	0.52	(< 0.01)
Above_Average	0.27	(< 0.01)	0.33	(< 0.01)	0.08	(< 0.01)	0.03	(0.19)
M/B	0.03	(< 0.01)	0.05	(< 0.01)	-0.01	(0.58)	0.04	(< 0.01)
Profitability	-0.06	(0.32)	-0.02	(0.81)	0.06	(0.49)	-0.04	(0.46)
Size	0.01	(0.27)	-0.03	(< 0.01)	-0.01	(0.38)	-0.02	(< 0.01)
Tangibility	-0.00	(0.93)	-0.03	(0.56)	0.13	(0.02)	-0.04	(0.27)
Leverage	0.26	(< 0.01)	-0.04	(0.64)	-0.00	(0.97)	0.11	(0.04)
Proc./A <sub>t-1</sub>	0.13	(< 0.01)	-0.30	(< 0.01)	-0.04	(0.30)	0.00	(0.33)
R <sup>2</sup>	0.1020		0.0928		0.0102		0.0126	
N	2507		2761		1872		5040	

Notes: The table reports the coefficients of regressions of the form:

$$Hot = c_0 + c_1(Above\_Average) + c_2(M/B) + c_3(Profitability) + c_4(Size) + c_5(Tangibility) + c_6(Leverage) + c_7(Proc./A_{t-1}) + \varepsilon_t$$

Hot is a categorical variable for each market that takes the value "1" when the issue month is among the top twenty percent of the sample months in terms of detrended number of issues in that market, and the value "0" for the remaining months. All other variables are as defined previously. All variables are measured at the end of the previous quarter ( $t-1$ ). Coefficients are reported with  $p$ -values in parentheses.

Table 4 shows the results of the robust regressions for each group where the business condition variable "Improving" is used instead of the "Above\_Average" variable (equation (4)). The regression coefficient for

"Improving" is statistically insignificant for the public debt and the private placement samples (for public debt, coef. = -0.01,  $p$ -value = 0.56; for private placements, coef. = 0.03,  $p$ -value = 0.26). But, the

“Improving” variable is positive and significant for the SEO sample (coef. = 0.25,  $p$ -value < 0.01), and interestingly negative and significant for the syndicated loan sample (coef. = -0.23,  $p$ -value < 0.01). When business conditions are improving, while the

market activity in the public debt and the private placement markets does not significantly change, the SEO market becomes more active (“Hot”), and the syndicated loan market becomes less active. Therefore, Hypothesis 1b is confirmed for only the SEO market.

Table 4. Equity and debt market activity in periods of “Improving” business conditions

	SEO		Public debt		Private placement/144a		Syndicated loan	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variable	Coef.	$p$ -value	Coef.	$p$ -value	Coef.	$p$ -value	Coef.	$p$ -value
Intercept	-0.09	(0.05)	0.66	(< 0.01)	0.23	(< 0.01)	0.66	(< 0.01)
Improving	0.25	(< 0.01)	-0.01	(0.56)	0.03	(0.26)	-0.23	(< 0.01)
M/B	0.04	(< 0.01)	0.08	(< 0.01)	-0.01	(0.64)	0.04	(< 0.01)
Profitability	-0.06	(0.27)	-0.07	(0.51)	0.05	(0.55)	-0.05	(0.36)
Size	0.01	(0.04)	-0.04	(< 0.01)	-0.01	(0.30)	-0.02	(< 0.01)
Tangibility	-0.02	(0.60)	-0.08	(0.17)	0.13	(0.02)	-0.05	(0.17)
Leverage	0.24	(< 0.01)	-0.08	(0.43)	0.01	(0.92)	0.10	(0.05)
Proc./A <sub>t-1</sub>	0.14	(< 0.01)	-0.38	(< 0.01)	-0.04	(0.32)	0.00	(0.29)
R <sup>2</sup>	0.0922		0.0170		0.0058		0.0503	
N	2507		2761		1872		5040	

Notes: The table reports the coefficients of regressions of the form:

$$Hot = c_0 + c_1(Improving) + c_2(M/B) + c_3(Profitability) + c_4(Size) + c_5(Tangibility) + c_6(Leverage) + c_7(Proc./A_{t-1}) + \varepsilon_t$$

Hot is a categorical variable for each market that takes the value “1” when the issue month is among the top twenty-percent of the sample months in terms of detrended number of issues in that market, and the value “0” for the remaining months. All other variables are as defined previously. All variables are measured at the end of the previous quarter ( $t-1$ ). Coefficients are reported with  $p$ -values in parentheses.

Tables 5 and 6 show the results of the binary logistic regressions that predict firms’ choice between equity and public debt, equity and private placement, and equity and syndicated loan. Table 5 shows the results when the “Above\_Average” variable is used as the main explanatory variable (equation (5)), and Table 6 shows the results when the “Improving” variable is used as the main variable (equation (6)). In both tables, in columns (1) and (2), the dependent variable is equal to one if it is an equity offering and equal to zero if it is a public debt offering. In columns (3) and (4), the dependent variable is equal to one if it is an equity offering and equal to zero if it is a private placement. In columns (5) and (6), the dependent variable is equal to one if it is an equity offering and equal to zero if it is a syndicated loan agreement.

Table 5 shows that the regression coefficient for “Above\_Average” is negative in all three pair-wise comparisons. The regression coefficient for “Above\_Average” is -0.43 and significant ( $p$ -value = 0.00) in the equity versus public debt comparison, -0.09 and insignificant ( $p$ -value = 0.19) in the equity versus private placement comparison, and -0.39 and significant ( $p$ -value = 0.00) in the equity versus syndicated loan comparison. In other

words, when business conditions are above-average, firms tend to prefer public debt financing and syndicated loan financing over equity financing. Therefore, I can conclude that the results in Table 5 confirm Hypothesis 2a except for the comparison between equity and private placements (here the sign is as expected but the  $p$ -value = 0.15).

Table 6 shows that when business conditions are improving, equity financing is preferred to syndicated loan financing, but it is not preferred to either public debt or private placement financing. Columns (1) and (2) show that, for the choice between equity and public debt financing, the regression coefficient for “Improving” is -0.10 and insignificant ( $p$ -value = 0.24). Columns (3) and (4) show that, for the choice between equity and private placement financing, the regression coefficient for “Improving” is -0.04 and insignificant ( $p$ -value = 0.54). The last two columns, columns (5) and (6), indicate that, for the choice between equity and syndicated loan financing, the regression coefficient for “Improving” is 0.17 and significant ( $p$ -value = 0.00). Therefore, Hypothesis 2b is confirmed only for the comparison between equity and syndicated loan financing.



Table 5. Binary logistic regressions predicting source of financing – equity vs. each type of debt (above-average versus below-average business conditions)

Independent variable	Equity vs. public debt		Equity vs. pr. placement/144a		Equity vs. syndicated loan	
	(1)	(2)	(3)	(4)	(5)	(6)
Column number	Coef.	p-value	Coef.	p-value	Coef.	p-value
Intercept	5.21	(0.00)	1.17	(0.00)	-0.42	(0.00)
<i>Above_Average</i>	-0.43	(0.00)	-0.09	(0.19)	-0.39	(0.00)
<i>M/B</i>	0.37	(0.00)	0.69	(0.00)	0.40	(0.00)
<i>Profitability</i>	2.75	(0.00)	0.69	(0.00)	0.42	(0.00)
<i>Size</i>	-1.10	(0.00)	-0.44	(0.00)	-0.33	(0.00)
<i>Tangibility</i>	-1.07	(0.00)	0.10	(0.49)	0.64	(0.00)
<i>Leverage</i>	0.82	(0.00)	-0.03	(0.89)	0.37	(0.01)
<i>Proc./A<sub>t-1</sub></i>	-0.32	(0.27)	-0.49	(0.00)	-0.05	(0.23)
LR Chi-Square	4058.24	(0.00)	1540.73	(0.00)	1604.32	(0.00)
<i>N</i>	5587		4674		9413	

Notes: The table reports the coefficients of regressions of the form:

$$Issue\_Type = c_0 + c_1(Above\_Average) + c_2(M/B) + c_3(Profitability) + c_4(Size) + c_5(Tangibility) + c_6(Leverage) + c_7(Proc./A_{t-1}) + \varepsilon_t$$

In columns (1) and (2), the dependent variable is equal to one if it is an equity issue and equal to zero if it is a public debt issue. In columns (3) and (4), the dependent variable is equal to one if it is an equity issue and equal to zero if it is a private placement or 144a issue. In columns (5) and (6), the dependent variable is equal to one if it is an equity issue and equal to zero if it is a syndicated bank loan. “*Above\_Average*” is an indicator variable, equal to one if the ADS Business Conditions Index is above its historical average, zero otherwise. All other variables are as defined in the previous tables. All variables are measured at the end of the previous quarter ( $t-1$ ). Coefficients are reported with  $p$ -values in parentheses.

Table 6. Binary logistic regressions predicting source of financing – equity vs. each type of debt (improving versus worsening business conditions)

Independent variable	Equity vs. public debt		Equity vs. pr. placement/144a		Equity vs. syndicated loan	
	(1)	(2)	(3)	(4)	(5)	(6)
Column number	Coef.	p-value	Coef.	p-value	Coef.	p-value
Intercept	4.94	(0.00)	1.15	(0.00)	-0.76	(0.00)
<i>Improving</i>	-0.10	(0.24)	-0.04	(0.54)	0.17	(0.00)
<i>M/B</i>	0.37	(0.00)	0.69	(0.00)	0.40	(0.00)
<i>Profitability</i>	2.69	(0.00)	0.68	(0.01)	0.35	(0.02)
<i>Size</i>	-1.10	(0.00)	-0.44	(0.00)	-0.32	(0.00)
<i>Tangibility</i>	-1.04	(0.00)	0.10	(0.49)	0.63	(0.00)
<i>Leverage</i>	0.86	(0.00)	-0.04	(0.84)	0.37	(0.01)
<i>Proc./A<sub>t-1</sub></i>	-0.29	(0.33)	-0.49	(0.00)	-0.05	(0.27)
LR Chi-Square	4035.07	(0.00)	1539.40	(0.00)	1562.61	(0.00)
<i>N</i>	5587		4674		9413	

Notes: The table reports the coefficients of regressions of the form:

$$Issue\_Type = c_0 + c_1(Improving) + c_2(M/B) + c_3(Profitability) + c_4(Size) + c_5(Tangibility) + c_6(Leverage) + c_7(Proc./A_{t-1}) + \varepsilon_t$$

“*Improving*” is an indicator variable, equal to one if the ADS Business Conditions index is improving (i.e. going up), zero otherwise. All other variables are as defined in the previous tables.

## Conclusion

Campbell and Cochrane (1999) and Siegel (2005) have shown that the macroeconomic environment has an impact on equity premium. More specifically, they have shown that the equity premium, as well as all other risk premiums, increases in recessionary periods. On the other hand, the previous research on market timing (Baker and Wurgler, 2002; Hovakimian, 2005; Alti, 2006; Taggart, 1977; Marsh, 1982; Graham and Harvey,

2001; Bancel and Mittoo, 2004; Barry, Mann, Mihov and Rodriguez, 2008) shows that equity premium is important in firms’ financing decisions. Therefore, we would expect the macroeconomic environment to have an impact on firms’ financing choice through its influence on equity premium. Interestingly, none of the previous studies on firms’ debt-equity choice (Denis and Mihov, 2003; Elliott, Koeter-Kant and Warr, 2007, 2008; Huang and Ritter, 2009) has controlled for the macroeconomic environment.

After recognizing this gap in the literature, I decided to explore the relation between macroeconomic environment and firms' financing activities. More specifically, I decided to examine the impact of business conditions on firms' debt-equity choice. In order to achieve this objective, I downloaded the data on a U.S. sample of 2,510 seasoned equity offerings, 3,077 public debt offerings, 2,164 private placements, and 6,903 syndicated bank loan agreements.

I run robust regressions to examine the impact of business conditions on the number of firms coming to each market (SEO, public debt, private placement, and syndicated loan markets). I find that when business conditions are more favorable, while the SEO, the public debt, and the private placement markets become more active in terms of the number of firms coming to the market, the syndicated loan market is unaffected. Interestingly, when business conditions are improving, the SEO market becomes more active, and the syndicated loan market

becomes less active, while there is no significant change in the other two markets.

After that, I go into more detail and run binary logistic regressions that test for the impact of business conditions on the choice between equity financing and public debt financing, equity financing and private placement financing, and equity financing and syndicated loan financing. The results show that, when business conditions are above-average, firms tend to prefer both public debt financing and syndicated loan financing over equity financing. On the other hand, when business conditions are improving, interestingly, equity financing is preferred to syndicated loan financing, but not to public debt or private placement financing.

The results in this study indicate that any research on capital structure should control for macroeconomic conditions. None of the recent papers on equity market timing controls for the macroeconomic conditions, and therefore, their results should be interpreted very cautiously.

## References

1. Alti, A. (2006). How persistent is the impact of market timing on capital structure? *Journal of Finance*, 61, pp. 1681-1710.
2. Arnott, R.D. and Bernstein, P.L. (2002). What Risk Premium Is "Normal"? *Financial Analysts Journal*, 58 (2), pp. 64-85.
3. Aruoba, S.B., Diebold, F.X. and Scotti, C. (2009). [Real-Time Measurement of Business Conditions](#), *Journal of Business and Economic Statistics*, 27 (4), pp. 417-427.
- a. Baker, M. and Wurgler, J. (2002). Market timing and capital structure, *Journal of Finance*, 57, pp. 1-32.
4. Bancel, F. and Mittoo, U. (2004). Cross-country determinants of capital structure choice: A survey of European firms, *Financial Management*, 33 (4), pp. 103-132.
5. Barry, C.B., Mann, S.C., Mihov, V.T. and Rodríguez, M. (2008). Corporate Debt Issuance and the Historical Level of Interest Rates, *Financial Management*, 37 (3), pp. 413-430.
6. Campbell, J.Y. and Cochrane, J.H. (1999). By Force of Habit: A Consumption-Based Explanation of Aggregate Stock Market Behavior, *Journal of Political Economy*, 107 (2), pp. 205-251.
7. Denis, D.J. and Mihov, V. (2003). The choice among bank debt, non-bank private debt and public debt: Evidence from new corporate borrowings, *Journal of Financial Economics*, 70, pp. 3-28.
8. Elliott, W.B., Koeter-Kant J. and Warr, R. (2007). A valuation-based test of market timing, *Journal of Corporate Finance*, 13 (1), pp. 112-128.
9. Elliott, W.B., Koeter-Kant J. and Warr, R. (2008). Market timing and the debt-equity choice, *Journal of Financial Intermediation*, 17 (2), pp. 175-197.
10. Graham, J. and Harvey, C. (2001). The theory and practice of corporate finance: Evidence from the field, *Journal of Financial Economics*, 60, pp. 187-243.
11. Hovakimian, A. (2005). Are observed capital structures determined by equity market timing? *Journal of Financial and Quantitative Analysis*, 41, pp. 221-243.
12. Huang, R. and Ritter, J.R. (2009). Testing theories of capital structure and estimating the speed of adjustment, *Journal of Financial and Quantitative Analysis*, 44, pp. 237-271.
13. Marsh, P. (1982). The choice between equity and debt: An empirical study, *Journal of Finance*, 37, pp. 121-144.
14. Siegel, J.J. (2005). Perspectives on the Equity Risk Premium, *Financial Analysts Journal*, 61 (6), pp. 61-73.
15. Taggart, R.A. (1977). A model of corporate financing decisions, *Journal of Finance*, 32, pp. 1467-1484.