THE DETERMINANTS OF FIRMS' ACTIVITY IN THE PRIMARY COPRORATE BOND MARKET – EVIDENCE FROM TRINIDAD AND TOBAGO

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Abstract

Corporate bond markets play a significant role in any financial system by being the channel through which corporations can access large sums of savings to finance capital-investment projects and/or spending for general corporate purposes. However corporations in many CARICOM member countries still prefer bank financing as their main source of debt. Research on the structure, functioning and possible development of corporate bond markets in the CARICOM region on a macro level and from a firm-level perspective has been lacking. This paper seeks to fill this gap in the literature by investigating the underlying factors that stimulate activity in the corporate bond market of Trinidad and Tobago. Using information obtained from the 2009 CSO Business Register as well as fractional probit and panel probit models on data attained from firms' annual financial statements bond issuance by firms registered at the Trinidad and Tobago Securities and Exchange Commission (TTSEC) as reporting issuers was found to be influenced by firm size, the amount of equity financing used by firms, the amount of bank financing used by firms and the number of years a firm has been listed on the local stock exchange. Factors found to influence the likelihood of reporting issuers investing in corporate bonds include: investment portfolio size and the industry classification of the reporting issuer.

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1. INTRODUCTION

The global financial crisis that started in 2008 and eventually transformed into a global economic crisis demonstrates the need for diversified financial markets particularly deeper and more active corporate bond markets within CARICOM member countries. The main negative consequences of this crisis in CARICOM countries was an increased fear by banks of moral hazard and an increased fear by potential investors of adverse selection. Banks within the CARICOM region developed a greater mistrust for borrowers, particularly corporate borrowers, and thus implemented stricter lending criteria. Additionally, the global economic crisis exacerbated the difficulty corporations within the CARICOM Sub-Region encountered with matching long-term cash inflows from investment projects against the shorter-term cash outflows for repaying bank loans as many banks become hesitant to lend funds for very long periods of time so many corporations avoided bank loans altogether. On the investor side, the failure of large regional financial institutions, such as CLICO/CLICO Investment Bank and Stanford Bank, fuelled an increased scepticism by investors in the reliability and stability in the regional banking system. This spurred an increased desire for investment choices other than those offered by banks in the Region. Since many regional investors are seeking alternatives to the popular investment instruments that promise regular and frequent payments (i.e. shares) and many corporations within the region are seeking an alternative form of debt financing, developing a deeper and better functioning corporate bond market will meet these needs.

Unlike the government bond market that focuses on debt instruments issued by the government and government owned enterprises, the corporate bond market is concerned with debt instruments issued by private sector firms, these are firms for which the government owns 49% or less of the shares outstanding. The corporate bond market consists of two components: the primary corporate bond market and the secondary corporate bond market. The primary corporate bond market refers to the market in which private sector firms obtain short, medium or even long -term debt financing via the issuance of debt instruments called bonds, while the secondary corporate bond market is concerned with the trading of these debt instruments. Since the primary corporate bond market is concerned with the volume of bond offerings, the frequency of bond offerings and the size and maturity of bond issues, development of this

component of the bond market is key to ensuring two things: more activity and liquidity in the secondary aspect of the corporate bond market and more importantly the establishment of a well-functioning, deep, liquid and vibrant corporate bond market as a whole.

The purpose of this paper is to attempt to answer the following question: what factors influence private sector firms' activity in the primary corporate bond market of Caribbean countries? However as micro-level data for firms registered as reporting issuers in Trinidad and Tobago was the most readily available out of all the Caribbean countries and as Trinidad and Tobago's corporate bond market has the most activity in the Caricom sub-region as measured by the number of bonds outstanding (Economic Commission for Latin America and the Caribbean Website), this paper was forced to focus on Trinidad and Tobago's corporate bond market. Consequently this paper attempts to answer the research question by identifying if firm-specific factors, such as profitability and liquidity, or bond market conditions such as the size of the bond market influence bond issuance and investment by firms in the Trinidad and Tobago primary corporate bond market.

Unlike comparable work done on the factors that influence bond issuance in developing bond markets such as the Latin American and Asian bond markets and developed bond markets such as the Japanaese American and bond market in Japan, the United State, this paper will be concentrating on trying to identify the firm-specific factors that influence the dollar value of bonds issued by firms operating in a Caribbean country. Although this paper looks at the firm-specific factors that influence corporations' issuance of bonds, existing market factors such as the size of the corporate bond market and macroeconomic factors such as the level of inflation, economic growth and interest rates in the country indirectly influence the value of bonds issued through some of the firm-specific factors (Titman and Wessels, 1988; Harris and Raviv, 1991). Since the environments and circumstances under which a firm operates affect its firm-specific characteristics and the environment and circumstances under which a firm operates are endless (Frydenberg, 2004), it is thus necessary to include in the literature on firm-specific factors that influence bond issuance and investment, an assessment that attempts to identify the firm

specific factors that influence firms decisions to issue and invest in bonds from a Caribbean perspective.

Using information obtained from the annual financial statements of forty-two firms registered as reporting issuers of stocks and/or bonds at the Trinidad and Tobago Securities and Exchange Commission (TTSEC), for the period 1996 – 2008, pooled fractional probit regression analysis is used to identify the factors that influence the dollar value of bonds issued by firms as a means of raising long-term capital, while random effects probit regression analysis is used to identify the factors that influence these forty-two companies to invest in corporate bonds. Since firms that operate in the Caribbean are extremely guarded about releasing financial information, this paper's research will focus on firms for which financial data was available, that is firms registered at the TTSEC as reporting issuers of bonds and/or stock.

The rest of this paper is organized as follows: section two provides a review of the literature on the determinants of bond market issuance, section three presents the data and methodology used in the study, section four provides a profile of the sample firms used in the study, section five reports the results of the empirical analysis, while section six highlights the policy implications of the paper's findings and concludes the paper.

2. LITERATURE REVIEW

Research focused on understanding the factors that influence corporations' usage of bonds and other forms of debt is enveloped by the research on firms' capital structure decisions. Capital structure refers to the amount of debt and/or equity financing a firm obtains to fund its projects and operations. To date the empirical evidence on firms' capital structure decisions is mixed and does not identify a single empirical model that can act as a general guide of corporate practice on capital structure (Frydenberg, 2004). Instead, there exist several models that describe how firms should operate and invest contingent on the environment and circumstances surrounding the firms. The goal of this section is to provide a précis of the capital structure literature that focuses on the factors that influence firms' use of bond financing. However as the bulk of the capital structure literature assesses firms' capital structure decisions combining

the various components of debt, this section will also summarise the capital structure literature that focuses on the factors that influence firms' use of total debt financing.

Within the literature on corporations' usage of total debt there exists a modicum of research that focuses on identifying the factors that influence corporations' usage of bond financing. Unfortunately this aspect of the literature only assesses the decisions of firms in developed countries such as the United States of America or in Latin American countries such as Brazil, Colombia and Argentina (Aguilar et al. (2008); Leal and Carvalhal-da-Silva (2008) and Fernández et al. (2008)). Research by these authors have found that firms' investment opportunities as measured by Tobin's Q and firm's collateral value as measured by the ratio of fixed assets to total assets are all positively related to corporate bond financing (Leal and Carvalhal-da-Silva (2008). Profitability as measured by the return on assets was found to be negatively related to corporate bond financing and Brazilian firms with bank loans tended to issue fewer domestic bonds, indicating that bank loans were used as an alternative to domestic bonds (Leal and Carvalhal-da-Silva, 2008). Additionally, contrary to Bolton and Freixas' (2000) hypothesis that riskier firms prefer bank loans and safer firms issue bonds, Carvalhal-da-Silva (2008) using firms' volatility as a proxy for risk found that riskier Brazilian firms preferred to issue bonds.

On the other hand the capital structure literature that does not focus on either debt financing only or equity financing only but instead assesses firms' total capital structure have identified several factors that influence the amount of debt or leverage used by a firm. For some factors the literature provides conflicting results about its effect on firms' usage of debt or leverage. Examples of these factors include profitability and the amount of free cash flow. Authors whose work can be classified under the Static Trade-Off school of thought, such as Chang (1987), and Harris and Raviv (1991), state that the amount of debt used by a firm decreases with firms' profit levels. On the other hand authors whose research can be classified under the Pecking Order school of thought such as Ross (1977), Leland & Pyle (1977), Heinkel (1982), Poitevin (1989) and Ravid & Sarig (1989) found that leverage increases with increases in profitability. Authors such as Myers & Majluf (1984) whose work falls under the Pecking Order Theory found that leverage increases with decreases in free cash flow, while work that fall under

the Static Trade-Off Theory such as work by Jensen (1986) and Stulz (1990) found that leverage increases with increases in free cash flow. Factors found to be positively related to the amount of debt used by firms include: the size of the firm, the amount of collateralized assets owned by a firm, firms' non-debt tax shields and the investment opportunities or growth opportunities of a firm. Authors whose works fall under both the Static Trade-Off Theory and the Pecking Order Theory contributed to research on these factors. Harris and Raviv (1990) and (1991) found that firms' leverage increased with the value of fixed assets/tangible assets. According to Titman and Wessels (1988), DeAngelo and Masulis (1985) found that firms with large non-debt tax shields relative to their expected cash flow include more debt in their capital structure. Harris and Raviv (1991) also state that firms' debt ratios were positively related to the level of non-debt tax shields. Research by Jensen and Meckling (1976), Smith and Warner (1979), and Green (1984) suggests that short-term debt may be positively related to growth rates if growing firms substitute short-term financing for long-term financing and that convertible debt may be positively related to growth opportunities. Titman and Wessels (1988) state that Warner (1977) and McConnell (1982) found that large firms should be more leveraged than small firms since relatively large firms tend to be more diversified and less prone to bankruptcy than small firms. Conversely, the literature has identified the following factors as being negatively related to firms' debt usage: firms' volatility, advertising expenditure, the probability of bankruptcy, the uniqueness of the firm's product and industry classification (Harris and Raviv, 1991). Authors whose works fall under both the Static Trade-Off Theory and the Pecking Order Theory contributed to research on these factors. Additional factors identified in the literature as influencing firms' debt usage include: information asymmetry, firm value, default probability, managerial equity ownership, and interest coverage ratio as a measure of liquidity. A summary of the findings made in the capital structure literature that focuses on the factors that influence firms' debt financing decisions is shown in Table 1 on the next page

TABLE 1
Summary Of Factors That Influence Firms' Decision To Use Debt Financing

Factor/Variable	Type of Influence on Debt Financing	Author(s) who conducted the Research
Profitability	Negative relationship	Chang (1987), Harris and Raviv (1991), Titman and Wessels (1988)
	Positive relationship (for total debt financing and corporate bond financing)	Ross (1977), Leland & Pyle (1977), Heinkel (1982), Poitevin (1989) and Ravid & Sarig (1989), Leal and Carvalhal-da-Silva, 2008
The amount of Free Cash Flow	Negative relationship	Myers & Majluf (1984),
	Positive relationship	Jensen (1986) and Stulz (1990)
Size of the Firm	Positive Relationship	Warner (1977) and McConnell (1982)
Amount of Collateralised Assets Owned by the Firm	Positive Relationship (for total debt and corporate bond financing)	Harris and Raviv (1990) and (1991), Aguilar et al. (2008); Leal and Carvalhal-da-Silva (2008) and Fernández et al. (2008)
Firms' Non-Debt Tax Shields	Positive Relationship	Harris and Raviv (1991) and DeAngelo and Masulis (1985)
Firms' Investment or Growth Opportunities	Positive Relationship (for short-term debt, convertible debt and corporate bond financing)	Jensen and Meckling (1976), Smith and Warner (1979), and Green (1984), Aguilar et al. (2008); Leal and Carvalhal-da-Silva (2008) and Fernández et al. (2008)
Information Asymmetry	Positive Relationship	Pecking Order School of Thought: Myers and Maljuf (1984)
Extent of Managerial Equity Ownership	Positive Relationship	Leland & Pyle (1977), Harris and Raviv (1988) and Stulz (1988)
Firm Value	Positive Relationship	Harris and Raviv(1988) and (1990), Stulz (1988) and (1990), Hirshleifer & Thakor (1989), Ross (1977), Noe (1988), Narayanan (1988), Poitevin (1989), According to Harris and Raviv (1991): Lys & Sivaramakrishnan(1988), Cornett & Travlos (1989)

TABLE 1 (CONT'D)
Summary Of Factors That Influence Firms' Decision To Use Debt Financing

Factor/Variable	Type of Influence on Debt Financing	Author(s) who conducted the Research
Probability of Bankruptcy or Default	Negative Relationship	Harris and Raviv (1991)
	Positive Relationship	Ross (1977)
Advertising Expenditure	Negative Relationship	Harris and Raviv (1991)
Industry Classification	Negative Relationship	
Uniqueness of Firms' Product	Negative Relationship	Titman (1984)
Extent of Regulation	Negative Relationship	Jensen & Meckling (1976), Stulz (1990)
Interest Coverage Ratio	Negative Relationship	Harris and Raviv (1990a)
Volatility of Firms' Value	Negative Relationship	Harris and Raviv (1991), Bolton and Freixas' (2000)
	Positive Relationship	Leal and Carvalhal-da-Silva, 2008

There are a number of factors that influence firms' decision to use leverage and more specifically corporate bond financing. Some of these factors, such as information asymmetry, the probability of bankruptcy, the uniqueness of firms' product(s), the extent of regulation in the market, firms' non-debt tax shields and the extent of managerial equity ownership, are not directly observable and are extremely difficult to proxy. Thus, this paper will not attempt to investigate these factors. Instead this paper will investigate the influence of the following factors on firms' decisions to issue bonds and invest in corporate bonds: profitability, the amount of free cash flow, size of the firm, amount of collateralised assets owned by the firm, firms' investment or growth opportunities, industry classification of the firms and volatility of firms' value.

Studies focused on the factors that influence firms' use of debt financing have employed a variety of econometric techniques, including: survey analysis (Titman, 1984 and Fernández et al., 2008), event studies analysis (Cornett and Travlos, 1989 and Masulis, 1980), OLS panel regression analysis (Leal and Carvalhal-da-Silva, 2008), Tobit Regression analysis (Fernández et al., 2008), Probit regression analysis (Aguilar et al., 2008), tests of significance to conduct hypothesis tests (Lys and Sivaramakrishnan, 1988), mathematical modeling (Israel et al., 1990 and Bradley et al., 1984), cross-sectional analysis (Cornett and Travlos, 1989), linear structural modeling (Titman and Wessels, 1988) and even qualitative assessments of commentaries (Smith and Warner, 1979). Except for the probit analysis studies (for example Aguilar et al., 2008), the studies that employed some form of regression analysis used a ratio of total debt to a proxy for firm value to represent leverage and a ratio of the different components of debt (i.e. bank financing or bond financing) to a proxy of firm value to represent the various components of debt financing. This thus resulted in studies having fractions as dependent variables. The fractions in all studies were greater than 0, however in some studies (for example Fernández et al., 2008) the fractions were bounded between 0 and 1. The various techniques available to model fractional dependent variables include: the log-transformation of the dependent variable, Tobit analysis, fractional logistic regression analysis, fractional probit regression analysis and forcing the fractional dependent variable to become binary by approximating the dependent variable values to the nearest unit (Wagner, 2001; Maddala, 1983; Papke and Wooldridge, 1996 and Papke and Wooldridge, 2008). However of the aforementioned techniques available to model fractional dependent variables, the empirical work that uses ratios of debt values to firm values has only employed: Tobit analysis (Fernández et al., 2008). The other techniques used in this aspect of the literature have been cross-sectional regression analysis and OLS panel regression analysis. Unfortunately both these techniques by its nature are not to be used when dependent variables are by definition fractions that will be bounded between 0 and 1. The main disadvantage of using Tobit analysis is that it is supposed to be used when the dependent variable is censored. However, in cases like Fernández et al. (2008) where the dependent variable is a ratio that is bounded by the interval zero and one by definition rather than by censoring, the Tobit model may provide inaccurate results. Instead techniques such as fractional logit and fractional probit analysis are more appropriate.

3. DATA & METHODOLOGY

This section will be divided into three parts. In the first two subsections, 3.1 and 3.2, a detailed explanation of the methodology used to identify the factors that influences firms' decisions to issue bonds and invest in corporate bonds respectively will be given. The third subsection 3.3 will describe the data used in the study.

3.1 Methodology – Factors that Influence Firms' Decision to Issue Bonds

To investigate the factors that influence firms' decision to issue bonds during the period 1996 – 2008 fractional probit analysis was applied to the following model:

$$E(Bonds_{it} \mid x_{i1}, x_{i2}, ...x_{it}) = \Phi(\Psi_{it} + x_{it}\beta_i + \bar{x}_i\xi_i)............(1)$$

where i indexes firms, t indexes year, Ψ_{at} emphasizes the use of a different intercept in each year[2], $\Phi(.)$ is the standard normal cumulative distribution function, Ψ_{it}, β_i and ξ_i are the scaled coefficients, while the unobserved effects are represented by: $\Phi(\Psi_{it} + \bar{x}_i\xi_i)$ and x_{it} is the matrix of independent variables =

$$\begin{bmatrix} Tang_{it}, Size_{it}, Growth_{it}, TobinsQ_{it}, ROA_{it}, Equity_{it}, \\ Bank_{it}, ComDebt_{it}, YrsStkEx_{it}, Year_i, SMkt_t, CSize_t, \\ PSecMkt_t \end{bmatrix}$$

Bond$_{it}$, the dependent variable, represents the total amount of bonds issued by the firm, and is the ratio of total bond debt to total assets. This dependent variable shows the extent to which a business relies on bond financing to finance its total assets. The explanatory variables in model (1) are: **Tang** which is the ratio of fixed assets to total assets which is used as a measure of the amount of collateralised assets owned by firms (i.e. the tangibility of assets). **Size** is the natural logarithm of total assets, and represents firm size. **Tobin's Q**, which is the market value of assets divided by the book value of assets, is used as a measure of firms' investment

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[2] The use of a different intercept each year means that even if none of the explanatory variables helped to explain the amount of bond financing a firm uses to finance its total assets the average amount of bond financing used by a firm to finance its total assets will be allowed to change over time.

opportunities, while **Growth**, which is the relative change in firms' profit, is used as a measure of firms' growth. **ROA**, which is operating income to total assets, is used as a measure of a firm's profitability. The ratio of total private bonds outstanding to total public bonds outstanding at each point in time, **CSize**, is used to measure the size of the corporate bond market relative to the size of the public debt market[3]. **Equity**, which is the ratio of shareholders' equity to total assets, is used as a measure of the amount of equity financing used by the firm. **Bank** represents a firm's bank debt and is the ratio of the firm's bank loans to total assets. This variable shows the amount of bank debt a firm uses to finance the business' assets. **ComDebt** represents the firm's level of commercial debt, and is the ratio of Commercial Debt to total assets. This variable shows the extent to which a business relies on creditors' loans, which results from not paying for goods or paying expenses immediately, to finance its assets. And finally, **YrsStkExc**, which is the number of years firms have been on the local stock exchange and is used as a proxy for firms' reputation in the capital market. In an attempt to identify the influence of some of the time varying unobserved bond market factors that are common to all firms, the following variables were also included to the list of explanatory variables used in model (2): **SMkt,** which represents the size of the local stock market and is stock market capitalization as a percentage of GDP and **PSecMkt**, which is a proxy for the size of the private credit sector market and is the value of domestic credit extended to the private sector as a percentage of GDP. **Year**$_{it}$ represents year dummies that are included to control for differences in time varying unobserved factors that are common to all firms such as macroeconomic factors like GDP growth, volatility of interest rates, interest rates and inflation. The implicit assumption of the above mentioned model is that the amount a firm uses of one type of debt financing instrument is relatively independent of the amount the firm uses of another debt financing instrument.

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[3] This measure is used instead of the ratio of local currency corporate bonds outstanding relative to Gross Domestic Product (GDP) because some studies, such as Fernández et al (2008), have shown that the public sector market crowds out activity in both the primary and secondary corporate bond markets and I wanted to investigate the possible influence of this possibility on the value of bonds issued by firms

A priori, the coefficients of the following variables should be positively signed: ***Tang***, ***Size,*** ***TobinsQ***, ***Growth*** and ***Csize***. ***Equity***, ***Bank*** and ***PSecMkt*** are expected to be negatively signed while the signs of all the other coefficients may be either positive or negative.

Fractional probit analysis, a non-linear model, was used because it provides an accurate picture of the effects of the continuous and categorical regressors on the dependent variable. This is done by imposing a bounded effect when predicting fractional dependent variables that are bounded between 0 and 1. Consequently the dependent variable will be predicted to be between 0 and 1 instead of outside the range as is done when standard linear models, such as logit, probit and multiple regression models, predict fractional dependent variables that are bounded between 0 and 1. Though the Tobit model has been used in studies when the dependent variable's values lie between zero and one, in cases like this study where the values assumed by the dependent variable equals to zero and one when rounded to the nearest unit because the dependent variable is a ratio and it is not due to censoring, the Tobit model may provide inaccurate results. Fractional logit modelling, as dubbed by John Mullahy, was not used because it does not account for unobserved heterogeneity that is possibly correlated with explanatory variables when there is a large cross-sectional dimension and relatively few time periods, as is the case in this study. The fractional probit model as used by Papke and Wooldridge (2008) and Wagner (2008), addresses the unobserved heterogeneity by allowing for time-constant unobserved effects that can be correlated with explanatory variables. Rather than treating the unobserved effects as parameters to estimate as was done by Wagner (2003), Papke and Wooldridge (2008) model the distribution of the unobserved effects conditional on the strictly exogenous variables, as was done by Mundlak (1978) and Chamberlian (1980). To accommodate this approach Papke and Wooldridge (2008) exploit features of the normal distribution by using a probit response function.

$$E(y_{it} \mid x_{it}, c_i) = \Phi(x_{it}\beta + c_i), \text{ t} = 1, ...\text{T}$$

where $\Phi(.)$ is the standard normal cumulative distribution function c_i is the unobserved effect.

As Φ is strictly monotonic, the elements of β give the directions of the partial effects. For continuous regressors this is done by

$$\frac{\partial E(y_t \mid x_t, c)}{\partial x_{it}} = \beta_j \Phi(x_i \beta + c)$$

While to obtain the changes for discrete explanatory variables we use

$$\Phi\left(x_t^{(1)} \beta + c\right) - \Phi\left(x_t^{(0)} \beta + c\right)$$

where $x_t^{(1)}$ and $x_t^{(0)}$ represent the two values (1 and 0) that the discrete explanatory variable can assume.

To deal with the unobserved heterogeneity that is present in panel data a measure that takes into consideration the importance of the observed covariates will be employed. This measure averages the partial effects across the distribution of the unobserved effects, c, to obtain the average partial effects (APE). For continuous explanatory variables the APE with respect to x_{it}, evaluated at x_i is:

$$E\left[\beta_{tj} \Phi(x_i \beta + c)\right] = \beta_t E_c\left[\Phi(x_i \beta + c)\right]$$

This shows that the APE depends on x_i, β but not on c. On the other hand, the APE for changes in discrete explanatory variables is obtained by averaging $\Phi\left(x_t^{(1)} \beta + c\right) - \Phi\left(x_t^{(0)} \beta + c\right)$ across the distribution of c.

For β and the APE to be identified two assumptions are made. The first is that conditional on the unobserved effects the independent variables are strictly exogenous.

$$E\left(y_{it} \mid x_i, c_i\right) = E\left(y_{it} \mid x_{it}, c_i\right), \text{ t} = 1, ...\text{T}$$

where $x_i \equiv (x_{i1}, ... x_{iT})$ is the set of covariates in all time periods

The second assumption restricts the distribution of the unobserved effects, c_i given the observed effects, x_i by using a conditional normality assumption, as in Chamberlain (1980)

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$$c_i \mid (x_{i1}, x_{i2}, ...x_{iT}) \sim \text{Normal}\left(\Psi + \bar{x}_i \xi, \sigma_a^2\right)$$

where $\bar{x}_i \equiv T^{-1}\sum_{t=1}^{T} x_{it}$ is the 1 x K vector of time averages[4]

To obtain consistent estimates of the scaled coefficients, the pooled Bernoulli quasi-maximum likelihood estimator (PQMLE)[5] which is obtained by maximising the pooled probit log-likelihood is employed. Also bootstrapping is employed to ensure that the standard errors calculated are robust to general heteroscedasticity and serial correlation.

3.2 Methodology – Factors that Influence Firms' Decision to Invest in Corporate Bonds

To investigate the factors that influence firms' decision to invest in bonds during the period 1996 – 2008 probit random effects regression analysis was applied to the following model:

$$\Pr(BondPur_{it} = 1) = \Phi\left(\begin{array}{l} \tau_0 + \tau_1 Invest_{it} + \tau_2 PDebt_{it} + \tau_3 ROA_{it} + \\ \tau_4 CRATIO_{it} + \tau_5 CSize_{it} + \tau_6 BoSize_{it} + \tau_7 Size_{it} + \\ \tau_8 TypeofFirm_{it} + \tau_9 Time_i + \varepsilon_{it} \end{array}\right)\text{.......}(2)$$

where $\Phi(.)$ denotes the standard normal distribution cumulative function. The dependent variable, **BondPur**, is a dichotomous variable that measures whether investors invest in or purchase corporate bonds, where 1 will be used to represent investors whose corporate bond holdings are greater than zero at time *t*, and 0 will be used to represent investors who do not have any corporate bonds in their portfolio at time *t*. Investor characteristics used as explanatory variables include: the log of the investor's investment portfolio, **Invest** as a measure of the value of money available for investments; the natural logarithm of total assets, **Size** as a measure of firm size; the ratio of government bonds holdings to total portfolio investments as a measure of the share of the investors' portfolio invested in public debt, **PDebt**; return on assets as a measure of firms' performance, **ROA**; the current ratio which is the ratio of current assets

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[4] According to Papke and Wooldrige (2008) if time period dummies are included in the vector x_i then time averages of these in x_i are not needed.

[5]The pooled Bernoulli quasi-maximum likelihood estimator is also known as the pooled fractional probit (PFP) estimator.

to current liabilities, **CRATIO**, as a measure of a company's liquidity; a dichotomous variable, **TypeofFirm**, that measures whether firms are financial or non-financial, where 1 will be used to represent financial firms[6], and 0 will be used to represent non-financial firms. Since investors are concerned about the liquidity of their investments, it is reasonable to expect that their decision to buy corporate bonds will depend to some extent on the size of the corporate bond market, as measured by the bond supply. Two variables used to measure this include: **CSize** which looks at the amount of bonds that is available for purchase in the primary market and **BoSize**, which measures the number of bonds available for purchase in the primary market. Finally, the regression includes time dummies, **Time** to control for factors that are common to all firms such as macroeconomic factors that may affect firms' investment decisions.

A priori, the coefficients of the following variables should be positively signed: **Invest**, **Size**, **Csize** and **BoSize**. **Pdebt** and **CRATIO** are expected to be negatively signed while the signs of all the other coefficients may be either positive or negative.

Probit regression analysis was used to model firms' decision to invest in bonds because this technique facilitates the estimation of the probability of a binary variable, such as the decision by firms to invest in or purchase bonds, using a range of continuous and binary regressors. Although, it has been proven that logit and probit models provide quite analogous results for univariate categorical response variables that are balanced (Hanh and Soyer, 2005 and Chen and Tsurumi, 2011), the probit model is usually preferred over the logit model when the categorical dependent variable is assumed to reflect an underlying quantitative variable, (Chen and Tsurumi, 2011, Datta et al, 2000; Fernández et al, 2008; Aguilar et al, 2008 and Pagan et al, 1998), such as the dependent variable in this study which is the decision by firms to invest in or purchase bonds. Additionally, the standard cumulative normal distribution (i.e. the probit response function) provides some distinct advantages over the logistic function, such as dealing with the unobserved heterogeneity that is present in panel data, when handling endogenous explanatory variables.

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[6] Companies that are categorized as financial include: commercial banks, mutual fund providers, investment banks, insurance companies and pension fund providers. Companies that do not belong to any of the aforementioned categories were classed as non-financial firms.

3.3 Data

The value of bonds issued by firms was obtained from firms' audited financial statements as well as from either the list of bond issues collated by the Central Bank of Trinidad and Tobago (CBTT) or the list of bonds registered at the Trinidad and Tobago Securities and Exchange Commission (TTSEC). Both the CBTT and TTSEC lists of bond issues in Trinidad and Tobago had to be consulted as neither list provides a comprehensive listing of all bonds issued in Trinidad and Tobago. This is because the TTSEC only includes on its registered corporate bonds list bonds that are issued by companies that are registered at the TTSEC as reporting issuers and bonds issued as public placements (i.e. bonds that will be issued to thirty-five or more subscribers), while the CBTT relies on voluntary responses to questionnaires sent annually to underwriters for information to include on its list of corporate bond issues. In contrast, data on whether or not firms purchased /invested in corporate bonds was obtained from one source, the audited financial statements of firms. Additionally, data used to calculate the firm specific characteristics identified in the models in the previous sections were also obtained from firms' audited financial statements. Finally data used to calculate the proxies for domestic stock market size, domestic private credit sector size and domestic corporate bond market size were obtained from the Trinidad and Tobago Stock Exchange (TTSE), the CBTT Data Centre Website, the list of bond issues form the TTSEC and the list of bond issues form the CBTT.

In Trinidad and Tobago the only firms required by the Companies Act to make their audited financial statements available to the general public are firms that are registered with the TTSEC as reporting issuers; these companies are also called public companies. As non-reporting issuers are not obliged to make their audited financial statements available to the general public, most of these firms choose not to share their financial statements with the general public. This culture of non-disclosure by firms is quite prevalent in Trinidad and Tobago and the wider Caribbean as approximately 99%[7] of business establishments registered with the Ministry of Legal of Affairs are non-reporting issuers and thus are not obliged to disclose any of their financial business. Reporting issuers also known as public companies are firms that have issued equity, bonds

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[7] Please see Table 1 in Appendices

and/or collective investment schemes to the general public, and are thus expected to make their audited annual financial statements available to the general public by submitting at least one copy of their audited financial statements to the Ministry of Legal Affairs, the TTSEC and their shareholders as well as making copies of these statements available to the general public upon request. Companies with major public sector ownership are also obligated to make their audited financial statements available to their shareholders, the general public, the TTSEC and the Ministry of Legal Affairs. However, due to the limited enforcement powers of the TTSEC before the parliamentary approval of the Securities Industry (Hearing and Settlements) Practice Rules[8] in 2008, many firms either failed to prepare these financial statements in a timely fashion and thus did not adhere to the full disclosure requirement of being a reporting issuer or prepared the audited financial statements for the benefit of their investors but failed to submit these statements to the TTSEC or the Ministry of Legal Affairs. As the analysis conducted in this paper required data from firms' audited financial statements, only firms whose audited financial statements were available at the TTSEC library and firms that provided access to their audited financial statements were included in the sample. The sample of firms did not include companies with incomplete or unavailable information during the period 1996 – 2008. The panel dataset thus consists of forty-two firms over a thirteen year period which resulted in 546 observations.

4. PROFILE OF THE SAMPLE OF FIRMS USED IN STUDY

Due to the unavailability of audited annual financial statements for most business entities operating in Trinidad and Tobago the study was forced to only analyse forty-two firms. The forty-two firms consist of firms from the various industry classifications with approximately

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[8] The Securities Industry (Hearing and Settlements) Practice Rules provides a mechanism through which the TTSEC can enter into discussion with a registrant who has breached any of the rules in the Companies Act of 1995 in an attempt to settle enforcement matters without having a hearing. Before the approval of the Hearing and Settlements Practice Rules in 2008 the TTSEC had to have a hearing for each case of contravention of the Companies Act Rules.

59.52% being in the Finance, Insurance, Real Estate and Business Services category. Most of the firms in the sample, approximately 90%, are located in the Northern part of Trinidad and are private limited, roughly 50%, or public limited companies, approximately 38%. Almost forty percent of the sample has been in operation for more than fifty years with twenty-three percent of the sample operating for eighty one and more years. Fifty percent of the companies that have been in operation for eighty one and more years are in the FIRBS Industry. Finally, the FIRBS Industry was found to be the major employer in the sample of firms with 90.91% of the 11 FIRBS' firms in the sample having an employee base of 1000+. The statistics supporting these statements can be found in Tables 2a – 2d shown on the next page.

Table 2a
Cross-tabulation Analysis of the Sample of Firms Assessed in Study Using Two CSO Business Register Variables (Industry Classification and Location of Firm)

```
                                           Borough

   InClassSamp | North&East  Central&South  Out Trini |      Total
---------------+------------------------------------------+----------
Sugar & Petrol |       0            1             0     |        1
               |     0.00        33.33          0.00    |      2.38
---------------+------------------------------------------+----------
Food Textiles Wood Ch |  8          1             0     |        9
               |    21.05        33.33          0.00    |     21.43
---------------+------------------------------------------+----------
Govt Education Person |  1          0             0     |        1
               |     2.63         0.00          0.00    |      2.38
---------------+------------------------------------------+----------
Distrib Transp Storag |  5          1             0     |        6
               |    13.16        33.33          0.00    |     14.29
---------------+------------------------------------------+----------
         FIRBS |      24            0             1     |       25
               |    63.16         0.00        100.00    |     59.52
---------------+------------------------------------------+----------
         Total |      38            3             1     |       42
               |   100.00       100.00        100.00    |    100.00
```

Table 2b

Cross-tabulation Analysis of the Sample of Firms Assessed in Study Using Two CSO Business Register Variables (Industry Classification and Location of Firm)

```
                                      NumOfEmplSamp

      InClassSamp | 49 n less    50 - 99  100 - 249  250 - 500  500 - 999       1000+ |Total
----------------------+------------------------------------------------------------------------+-----
   Sugar & Petrol |          1          0          0          0          0          0 |  1
                  |       8.33       0.00       0.00       0.00       0.00       0.00 | 2.38
----------------------+------------------------------------------------------------------------+-----
Food Textiles Wood Ch |          1          0          3          5          0          0 |  9
                  |       8.33       0.00      42.86      71.43       0.00       0.00 |21.43
----------------------+------------------------------------------------------------------------+-----
Govt Education Person |          0          0          0          1          0          0 |  1
                  |       0.00       0.00       0.00      14.29       0.00       0.00 | 2.38
----------------------+------------------------------------------------------------------------+-----
Distrib Transp Storag |          0          1          2          1          1          1 |  6
                  |       0.00      25.00      28.57      14.29     100.00       9.09 |14.29
----------------------+------------------------------------------------------------------------+-----
            FIRBS |         10          3          2          0          0         10 | 25
                  |      83.33      75.00      28.57       0.00       0.00      90.91 |59.52
----------------------+------------------------------------------------------------------------+-----
            Total |         12          4          7          7          1         11 | 42
                  |     100.00     100.00     100.00     100.00     100.00     100.00 100.00
```

Cross-tabulation Analysis of the Sample of Firms Assessed in Study Using Two CSO Business Register Variables (Industry Classification and Number of Years Business in Operation)

```
                               YrsInOpSamp

     InClassSamp |   6 - 20   21 - 50    51 - 80      81+  |     Total
---------------------+-------------------------------------------+----------
  Sugar & Petrol |        1         0          0         0  |         1
                 |    11.11      0.00       0.00      0.00  |      2.38
---------------------+-------------------------------------------+----------
Food Textiles Wood Ch |      0         4          2         3  |         9
                 |     0.00     25.00      28.57     30.00  |     21.43
---------------------+-------------------------------------------+----------
Govt Education Person |      0         0          0         1  |         1
                 |     0.00      0.00       0.00     10.00  |      2.38
---------------------+-------------------------------------------+----------
Distrib Transp Storag |      1         3          1         1  |         6
                 |    11.11     18.75      14.29     10.00  |     14.29
---------------------+-------------------------------------------+----------
           FIRBS |        7         9          4         5  |        25
                 |    77.78     56.25      57.14     50.00  |     59.52
---------------------+-------------------------------------------+----------
           Total |        9        16          7        10  |        42
                 |   100.00    100.00     100.00    100.00  |    100.00
```

Table 2d

Cross-tabulation Analysis of the Sample of Firms Assessed in Study Using Two CSO Business Register Variables (Industry Classification and Type of Business Operation)

```
                     |                 TypeOfBusSamp
     InClassSamp | Private L  Public Lt      Govt  Any Other |      Total
---------------------+-------------------------------------------+----------
   Sugar & Petrol |         1          0         0         0 |          1
                     |      4.76       0.00      0.00      0.00 |       2.38
---------------------+-------------------------------------------+----------
Food Textiles Wood Ch |         1          7         1         0 |          9
                     |      4.76      43.75     25.00      0.00 |      21.43
---------------------+-------------------------------------------+----------
Govt Education Person |         0          0         1         0 |          1
                     |      0.00       0.00     25.00      0.00 |       2.38
---------------------+-------------------------------------------+----------
Distrib Transp Storag |         3          2         1         0 |          6
                     |     14.29      12.50     25.00      0.00 |      14.29
---------------------+-------------------------------------------+----------
            FIRBS |        16          7         1         1 |         25
                     |     76.19      43.75     25.00    100.00 |      59.52
---------------------+-------------------------------------------+----------
            Total |        21         16         4         1 |         42
                     |    100.00     100.00    100.00    100.00 |     100.00
```

The forty-two firms included in this study only represent a small percentage of the approximately twenty nine thousand registered business establishments in Trinidad and Tobago, only approximately 49% of the eight-five firms registered as reporting issuers at the TTSEC and twenty-four of the forty-two firms included in this study are among the thirty-six companies listed on the Trinidad and Tobago Stock Exchange (TTSE). Since the audited financial statements for the period 1996 – 2008 was not easily attainable for the other business establishments operating in Trinidad and Tobago categorical or nominal variables from the 2009 CSO Business Register were used to compare the sample of firms used in the study with the population of business establishments that are registered with the Ministry of Legal Affairs as operating in Trinidad and Tobago. The comparison involved assessing the difference between proportions for the following non-confidential variables collected in the 2009 CSO Business Register: industry classification, borough in which firm operates, number of employees, number of years business has been in operation, type of business operation and country of ownership. Firms whose ownership type were not stated as well as firms that are unable to access the capital markets because of economies of scale, registration, flotation and other costs associated with the issuance of bonds (that is individual proprietorships and partnerships) were not included in the analysis. Therefore the population of interest was the business establishments excluding individual proprietorships, partnerships and the "Not Stated" Type of Ownership. The results of this assessment are shown in Table 3 on the next page

Table 3
Difference of Proportions Test for Sample of Firms Included in This Study and Population of Business Establishments From CSO Business Register

Variable	Population Proportion	Sample Proportion	Difference
Industry	0.2322382	0.6585366	-0.4262984 (0.0000)***
Location	0.8606932	0.902439	-0.0417458 (0.4405)
Number of Employees	0.9386463	0.952381	-0.0137347 (0.7110)
Years Business in Operation	0.5883377	0.2195122	0.3688255 (0.0000)***
Type of Business Operation	0.9479682	0.8780488	0.0699195 (0.0224)**
Country of Ownership	0.9830847	0.9756098	0.0074749 (0.7115)

N.B.
P-values are in parentheses: ***, **, * denote statistical significance at 1%, 5% and 10% respectively. The variables' categories used for the analysis are: **Industry:** 0 = Other Industries; 1 = Financial, Distribution & Petroleum. **Location:** 0 = South & Central Trinidad and Outside Trinidad; 1 = North Trinidad, Tobago. **Number of Employees:** 0 = 100 & More Employees; 1 = Less than 100 Employees. **Number of Years Business in Operation**: 0 = Less Than Twenty Years; 1 = Twenty and More Years. **Type of Business Operation:** 0 = Other; 1 = Private & Public Limited Liability Companies. **Country of Ownership:** 0 = Other Countries Own 51% and More of Company Shares; 1 = T&T, British & US Own 51% and More of Company Shares.

The results of the difference in proportion tests (Please see Table 3 above) show that the sample of firms included in the study have a larger proportion of firms in the Finance, Distribution and Petroleum Industries than the CSO Business Register Population of Firms. As the sample used in this study consisted of firms who are registered issuers of stocks and/or bonds this suggests that firms operating in Trinidad and Tobago that belong to these industries tend to issue stocks and or bonds more than firms from the other industries. The difference in proportion tests also revealed that the CSO Business Register population of firms had a larger amount of firms that have been in operation for thirty and more years than the sample of firms included in this study and that the population of firms had a larger fraction of public and private limited liability companies than the sample of firms included in this study. The CSO 2009 Business Register also shows us that the population of firms that can access the bond market consist mostly of

private limited liability companies, and the public limited companies make up only approximately 0.4% of the population of firms that can access the market (see Table A1 in Appendix). This however is in contrast to the sample of firms used in this study. Of the forty-two firms in the sample approximately 48% are private limited liability while 38% represent public limited liability companies (Please refer to Tables 2a to 2d on pages 18 to 21).

The results of the difference in proportion tests implies that the sample used in this study may be more representative of the population of reporting issuers registered at the TTSEC than the population of firms that operate in Trinidad and Tobago. The results of the difference in proportions test, shown in Table 4 on the next page, attest to this. From Table 4 the only variable for which the difference between the sample used in this study and the population of firms registered at the TTSEC was statistically significant is country of ownership. These results thus suggest that the results of the analyses to determine the factors that influence firms' decisions to issue bonds and invest in corporate bonds may only be applicable to the population of reporting issuers registered at the TTSEC than the population of firms that are registered on the Trinidad and Tobago's Business Register..

Table 4
Difference of Proportions Test for Sample of Firms Included in This Study and Population of Firms Registered at the TTSEC

Variable	Population Proportion	Sample Proportion	Difference
Industry	0.6964286	0.6585366	0.037892 (0.5757)
Location	0.875	0.902439	-0.02744 (0.6442)
Number of Employees	0.958929	0.952381	0.006548 (0.5155)
Years Business in Operation	0.2909091	0.2195122	0.071397 (0.3926)
Type of Business Operation	0.8888889	0.8780488	0.01084 (0.9036)
Country of Ownership	0.7777778	0.9756098	-0.19783 (0.0024)***

N.B. P-values are in parentheses: ***, **, * denote statistical significance at 1%, 5% and 10% respectively. The variables' categories used for the analysis are the same as those used in Table 2 above.

5. MAIN RESULTS & DISCUSSION

5.1. Summary Statistics

Summary statistics for the variables used in the analysis to identify the factors that influence the value of bonds issued by firms are shown in Tables A2a – A2c in the Appendix. While summary statistics for the variables used in the analysis to identify the factors that influence the likelihood of firms investing in bonds are shown in Tables A3a – A3c in the appendix. Tables A2a & A3a show the summary statistics for all firms, Tables A2b & A3b show the summary statistics for issuers of bonds and investors of bonds respectively while Tables A2c & A3c show the summary statistics for non-issuers and non-investors respectively. The summary statistics shown in Tables A2a to A2c and Tables A3a to A3c are the mean, mode, standard deviation, minimum and maximum values and the number of observations (Obs).

Using t-tests to test the difference between means of issuers and non-issuers for all the parameters the following parameters were all found to be statistically significantly different between issuers of bonds and non-issuers of bonds: size of firms' commercial debt, firms' profitability levels, firms' investment opportunities, the size of a firm, and the amount of equity financing used by firms. Issuers of bonds were found to have smaller commercial debt levels, which supports Cantor (1990) claim that firms with higher levels of debt would tend not to issue bonds. Of the four main categories of debt, only one, that is the amount of suppliers' credit used by firms, was found to be statistically significantly different between issuers of bonds and non issuers of bonds. This suggests that of the 42 firms assessed, bond issuers and non-bond issuers use similar amounts of bank financing and possess similar amounts of other liabilities. Issuers of bonds were also found to use less equity financing. This finding supports the pecking order theory that firms prefer internal to external financing, however if firms require external financing they will use debt before equity financing (Myers, 1993). Additionally, firms that issue bonds were found to have lower profitability levels and to have less investment opportunities. These findings support the pecking order theory that more profitable firms prefer to raise capital from retained earnings before turning to debt and the findings made by Barclay et al (1999) and Barclay and Smith (1999) that companies with lots of investment and growth opportunities issue less debt and issue debt with shorter maturities and that growth companies prefer to use private

(e.g. bank financing) over public sources of debt. Finally it was found that the size of firms as measured by the value of firms' assets was larger for issuers of bonds than non-issuers of bonds. This supports Dennis and Mihov (2003) findings that larger firms have more public debt and Datta et al (2000) findings that the size of a firm increases the likelihood of bond issuance.

The fact that there is no statistical difference between issuers and non-issuers of bonds for the amount of bank financing and other liabilities, the size of a firms' collateralized assets, and the relative change in firms' profits as a measure of growth, suggest that these variables do not affect firms' issuance or non-issuance of bonds.

T-tests were also used to test the difference between means of investors and non-investors for all the parameters. Factors that were found to be statistically different between firms who invest in corporate bonds and firms who did not invest are: the size of firms' investment portfolio, the size of a firm, the amount of investors' portfolio invested in public bonds and firms' profitability. Investors in corporate bonds were found to be larger in size as measured by the value of firms' assets and to have larger investment portfolios, which was expected as the large size of the firm's investment portfolio indicates there will be more diversification and thus the likelihood of investing in corporate bonds is higher (Aguilar et al, 2008). Investors in corporate bonds were also found to have a larger proportion of their investment portfolio invested in government bonds than non-investors. This supports the expectation that the larger investment in government bonds in the investment portfolio may be due to the firms invested in corporate bonds being close to or already reaching the ceiling investment level imposed by Trinidad and Tobago's Second Schedule of the Insurance Act of 1980 and Trinidad and Tobago's Financial Institutions Act of 2008. Finally investors in corporate bonds were found to have lower profit levels than non-investors. This finding however counters the expected finding. According to Aguilar et al (2008), the more profitable a firm is the more free cash flow the firm should have available for investment, and since firms with large investment portfolios should be seeking diversification the higher should be the probability of firms' investing in corporate bonds. This however may not have been the case with the sample of firms in this study because approximately 70% of firms that invested in bonds each year were banks and insurance

companies. Since in Trinidad and Tobago the percentage of banks' and insurance companies' investment portfolios invested in corporate bonds is limited by the Second Schedule of the Insurance Act 1980 and the Financial Institutions Act 2008 then if more profitable firms are close to or have already met the ceiling of corporate bond investments imposed by the Acts then they will not invest in corporate bonds.

5.1. Factors that Influence the Value of Bonds Issued By Firms

Before conducting the fractional probit regression analysis, the correlation coefficients for each pair of independent variables included in model (1), shown in the data and methodology section, were calculated to identify if any of the variables were linearly related. This was also done to try to determine if there was any possibility of multicollinearity in the model. The correlation coefficients and the results of the collinearity tests are shown on the next four pages in Tables 5a to 5d. The correlation matrix shows that the following pairs of variables are highly correlated: TobinsQ and ROA; Csize and SMkt; PSec and SMkt. The collinearity diagnostics also indicate that there may be some hidden collinearity in the model as the Condition Number, 88.49, is mu(ch higher than the threshold value of 10. As a result of this, collinearity tests were run excluding one from each pair of variables until the Condition Number of 14.23 was obtained. Although this number is above the benchmark of 10 it is much lower than the original number. The variables that were excluded to obtain this Condition Number were: TobinsQ, SMkt and PSec.   To verify that the exclusion of these three variables would provide a better fit model, likelihood ratio tests were performed assessing the significance of these three variables. The results of the likelihood ratio tests support the results of the collinearity tests as the model that excluded **TobinsQ** (proxy for firms' investment opportunities), **SMkt** (proxy for the size of teh local stock market) and **PSec** (proxy for the size of the private credit sector market) was found to be a better fit.

Table 5a:
First Part of Correlation Coefficients Matrix for Variables in Issuance of Bonds Model

	Equity	YrsStkE	CSize	SMkt	PSec
Equity	1.0000				
YrsStkE	-0.0127 (0.7861)	1.0000			
Csize	-0.0453 (0.331)	0.0000 (1.000)	1.0000		
Smkt	0.0411 (0.378)	0.0000 (1.000)	-0.485 (0.000)***	1.0000	
PSec	-0.0377 (0.419)	-0.000 (1.000)	0.0552 (0.236)	-0.4811 (0.000)***	1.0000

Table 5b:
Second Part of Correlation Coefficients Matrix for Variables in Issuance of Bonds Model

	Bank	ComDebt	Tang	Growth	ROA	TobinsQ	Size
Bank	1.0000						
Comdebt	0.1943 (0.000)***	1.0000					
Tang	0.3581 (0.000)***	0.4385 (0.000)***	1.0000				
Growth	-0.0536 (0.253)	-0.0527 (0.261)	-0.046 (0.400)	1.0000			
ROA	0.0144 (0.758)	0.396 (0.000)***	0.3497 (0.000)***	0.1809 (0.000)***	1.0000		
TobinsQ	0.0377 (0.419)	0.4182 (0.000)***	0.2437 (0.000)***	0.0119 (0.799)	0.5958 (0.000)***	1.0000	
Size	-0.0890 (0.056)*	-0.2302 (0.000)***	-0.3792 (0.000)***	0.0625 (0.183)	-0.1364 (0.003)**	-0.1453 (0.002)**	1.0000
Equity	-0.0251 (0.591)	0.2300 (0.000)***	0.2923 (0.000)***	-0.0121 (0.797)	0.2662 (0.000)***	0.1509 (0.001)**	-0.4144 (0.000)***
YrsStE	0.1556 (0.001)***	0.366 (0.000)***	0.2588 (0.000)***	-0.0421 (0.370)	0.1387 (0.0028)**	0.2195 (0.000)***	0.0066 (0.8888)
Csize	0.0435 (0.351)	0.0569 (0.222)	0.0258 (0.580)	-0.0237 (0.614)	-0.0228 (0.6248)	-0.0840 (0.071)*	-0.1288 (0.006)*
SMkt	-0.0790 (0.090)*	-0.093 (0.046)**	-0.0543 (0.244)	-0.0007 (0.988)	0.0075 (0.8719)	0.1381 (0.003)**	0.1890 (0.000)***
PSec	0.0815 (0.080)*	0.1087 (0.019)**	0.0632 (0.175)	0.0628 (0.180)	0.0302 (0.517)	-0.0553 (0.2353)	-0.1680 (0.000)***

Table 5c
Collinearity Diagnostics with TobinsQ, Smkt & PSecSize Variables Included

Variable	Variance Inflation Factor (VIF)	Tolerance		Eigenvalues	Condition Index
Bank	1.21	0.8292	1	8.5476	1.0000
Comdebt	1.63	0.6147	2	1.0288	2.8825
Tang	1.70	0.5895	3	0.8527	3.1660
Growth	1.08	0.9240	4	0.529	3.6183
ROA	1.98	0.5043	5	0.4461	4.3775
TobinsQ	1.82	0.5485	6	0.4200	4.5112
Size	1.46	0.6848	7	0.3592	4.8779
Equity	1.36	0.7362	8	0.2638	5.6922
YrsStkEx	1.23	0.8135	9	0.2157	6.2946
Csize	1.41	0.7110	10	0.1465	7.6392
SMkt	1.85	0.5413	11	0.0602	11.9198
PSec	1.42	0.7022	12	0.0055	39.4955
			13	0.0011	89.6779

Mean VIF   1.51

Condition Number   89.6779

Table 5d
Collinearity Diagnostics Without TobinsQ, Smkt & PSecSize Variables

Variable	Variance Inflation Factor (VIF)	Tolerance		Eigenvalues	Condition Index
Bank	1.20	0.8332	1	5.2836	1.0000
Comdebt	1.54	0.6514	2	1.0259	2.2694
Tang	1.56	0.6401	3	0.6758	2.7962
Growth	1.06	0.9409	4	0.5766	3.0272
ROA	1.39	0.7191	5	0.4261	3.5215
Size	1.18	0.8489	7	0.3479	3.8970
Equity	1.20	0.8330	8	0.2840	4.3135
YrsStkEx	1.01	0.9888	9	0.2621	4.8020
Csize	1.24	0.8072	10	0.1953	4.4901
			11	0.1181	6.6885

Mean VIF   1.26

Condition Number   6.6885

The results of the fractional probit regression analysis are shown in Table 6. Column 1 of the table presents the model estimates for the firm specific characteristics while column 3 presents the model estimates including market specific characteristics and column 5 reports the model estimates excluding the correlated variables. Columns 2, 4 and 6 report the marginal effects of the variables on the value of bonds issued by firms. Time effects and firm effects are taken into consideration in each model specification, and robust standard errors are calculated for each model.

The table shows that three of the nine firm specific characteristics and one of the four market specific characteristics were found to significantly influence the value of bonds issued by firms. These variables are: firm size (**Size**), the amount of equity financing used by firms (**Equity**), the amount of bank financing used by firms (**Bank**) and the number of years a firm has been listed on the local stock exchange (**YrsStkExc**). The amount of bank financing used by firms in the sample was found to be highly significant at the 1% level of significance and had negative coefficients. The marginal effects value suggests that as the value of bank financing increases by 10% the value of bonds issued by firms in the sample decreases by about 0.035 or 3.5 percentage points. This indicates that the value of bonds issued by reporting issuers decreases as the value of bank financing used by a firm increases. Though this finding supports Cantor (1990) statistical finding, Cantor (1990)'s explanation[9] of the negative coefficient does not apply to the sample of firms in this study. Instead the negative relationship observed in this study may be due to firms preferring bank financing over bond financing. This is mainly due to firms in Trinidad and Tobago perceiving bank financing as cheaper and more convenient than bond financing. The costs associated with issuing bonds in Trinidad and Tobago include the monetary costs such as the underwriting and arranging fees, the trustee fees, the registrar and paying agent fees, the legal fees, the TTSEC registration fees, the TTSEC market access fees and TTSEC filing fees. The non-monetary costs include: the four to six month period for the issuing process and having to provide public disclosure of the financial health and performance of the company. The long period associated with bond issuance is as a result of the due

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[9] Cantor (1990) states that the negative coefficient means that firms with high levels of debt may encounter greater difficulties obtaining funds from the bond market

diligence process which involves verifying information on the issuer, the issuer's stakeholders, the issuer's business and its environment. Unfortunately, during this process the favourable interest rate environment may change to unfavourable. Additionally, in an attempt to remain competitive and ensure that their asset-base (i.e. their loans portfolios) increases, banks in Trinidad and Tobago compress their bank spreads (Guisseppi, 2003). This thus results in loans being offered to businesses at sometimes lower interest rates than the bond market interest rate.

Another firm specific characteristic that was found to negatively influence the value of bonds issued by firms is the amount of equity financing used by firms. The amount of equity financing used by firms was found to be significant at the 5% level of significance. This finding supports the Pecking Order Theory which states that firms prefer internal to external financing and the Static Trade Theory, which states that firms' optimal debt ratio is determined by a trade-off between the losses and gains of borrowing, which results in the firm substituting debt for equity, or equity for debt until the value of the firm is maximised. The marginal effects value suggests that a 10% increase in the amount of equity financing used by firms in the sample could result in a 0.017, 1.7 percentage points, decrease in the value of bonds issued by firms and vice versa. This thus indicates that for the firms in the sample, equity and bond financing are substitutes of each other.

The size of the firm, **Size**, is the final firm specific characteristic that was found to be highly significant in influencing the value of bonds issued by firms. This variable was found to positively influence the value of bonds issued by firms. This finding supports work by Datta et al (2000) who found that large firms are able to obtain finance from issuance of bonds and bank finance, while smaller firms tend to borrow from banks and private creditors as well as work done by Blackwell and Kidwell (1988) , Krishnaswami et al (1999), Leal and Carvalhal-da-Silva (2008), Warner (1977) who show that flotation costs make bond financing unattractive to small firms that are intent on raising small amounts of funding from the market. The marginal effects value suggests that as the real assets of firms in the sample increases by 10% the value of bonds issued by these firms will increase by approximately 0.2 percentage points. This thus implies that firms with small amounts of real assets will not be issuing bonds.

Table 6

Results of Fractional Probit Regression Analysis

	(1)	(2)	(3)	(4)	(5)	(6)
	Firm Specific Characteristics	Marginal Effects df/dx	Firm & Market Specific Characteristics	Marginal Effects df/dx	Firm & Market Specific Characteristics without Correlated Variables	Marginal Effects df/dx
Tang	0.7632 (0.720)	0.0924 (0.051)	0.7837 (0.723)	0.0928 (0.049)	0.7494 (0.730)	0.0888 (0.053)
Size	0.6447 (0.110)***	0.0780 (0.022)***	0.5715 (0.100)***	0.0677 (0.019)***	0.5735 (0.103)***	0.0679 (0.024)***
Growth	-0.0261 (0.039)	-0.0032 (0.001)	-0.0281 (0.038)	-0.0034 (0.002)	-0.030 (0.038)	-0.0035 (0.001)
Tobin's Q	0.0310 (0.121)	0.0038 (0.009)	0.0444 (0.134)	0.0052 (0.009)		
ROA	0.7581 (0.864)	0.092 (0.108)	0.6340 (0.9677)	0.0750 (0.098)	0.7295 (0.931)	0.0864 (0.048)
Equity	-1.3460 (0.586)**	-0.1629 (0.0997)**	-1.4064 (0.567)**	-0.1665 (0.109)**	-1.425 (0.575)**	-0.1688 (0.117)**
Bank	-2.6480 (0.519)***	-0.3206 (0.060)***	-2.935 (0.535)***	-0.3474 (0.076)***	-2.944 (0.535)***	-0.3487 (0.0768)***
ComDebt	-0.8058 (1.361)	-0.0975 (0.0965)	-0.9029 (1.355)	-0.1069 (0.111)	-0.8478 (1.330)	-0.1004 (0.099)
Csize			-2.3615 (2.161)	-0.280 (0.062)	0.1327 (0.333)	0.0158 (0.008)
YrsStkEx			-0.0512 (0.010)***	-0.0061 (0.005)***	-0.050 (0.009)***	-0.0059 (0.004)***
SMkt			-1.5389 (2.097)	-0.1822 (0.062)		
PSecMkt			17.89228 (12.845)	21.1828 (5.221)		
Observations	546	546	546	546	546	546
Scale Factor	0.1211		0.1184		0.1184	

Notes: (i) All models contain year dummies for the period 1996 to 2008; (ii) The estimation includes time averages of the independent variables; (iii) The standard errors for the coefficients, shown in parentheses, are robust to conditional variance and serial correlation; (iv) The standard errors for the Marginal Effects were obtained using 200 bootstrap replications.

The only market-characteristic that was found to have a highly significant influence on the value of bonds issued by firms was the number of years a firm has been listed on the local stock exchange. This variable was found to negatively influence the value of bonds issued by the sample of firms. The marginal effects results indicate that the value of bonds issued slightly decreases the longer firms are listed on the local stock exchange. This may suggest that once reporting issuers in Trinidad and Tobago are listed on the stock exchange they would eventually begin to use more equity financing in place of bond financing, as found by Aguilar et al (2008).

Unlike findings made by Titman and Wessels (1988), Rajan and Zingales (1995) Pagano et al (1998), Datta et al (2000), Barclay and Smith (1999), Jensen and Meckling (1976) and Eichengreen (2006), this study found that the size of firms' collateralized assets (**Tang**), firms' growth levels (**Growth**), firms' profit levels (**ROA**) and the size of the corporate bond market (**CSize**) were not statistically significant in influencing the value of bonds issued by the sample of firms. The non significance of firms' collateralized assets (**Tang**), the growth levels of firms (**Growth**) and the profit levels of firms (**ROA**), may be due to the dominance of the banking industry in the financial sector in Trinidad and Tobago and firms in Trinidad and Tobago preference for bank financing over bond financing. According to summary statistics shown in Table 7 below, bank financing is the second highest form of financing after equity financing sought by firms in the sample. However as the sample of firms only includes firms that are registered as reporting issuers of stocks and or bonds the result of the average amount of bank financing used by firms may be understated.

Table 7:

Summary Statistics for the Different Forms of Financing Used By Firms in the Sample

Variable	Obs	Mean	Std. Dev.	Min	Max
equity	462	.3440867	.3185886	-.2165762	3.795114
bank4	462	.1092908	.1374164	0	.7817925
bond4	462	.0857525	.1985404	0	.6406725
comdebt4	462	.0795006	.0880749	.0001143	.6263312

5.2. Factors that Influence Firms' Decision to Invest in Corporate Bonds

Before performing the panel probit regression analysis on model (2) shown in the data and methodology section, the correlation among the variables in the model was calculated. Two independent variables that were found to be highly correlated with each other were: the size of the investor's portfolio, **Invest**, and the measure for firm size, **Size**. As a result of this, collinearity tests were conducted. The results of the tests for correlation and collinearity are shown on the next three pages in Tables 8a, 8b and 8c. Although the VIF and Tolerance tests did not show any collinearity among the independent variables, the condition number was found to be a much higher than the benchmark of 10. The condition number of 46 is an indication of instability of the model as a whole due to the existence of masked collinearity. As the high correlation coefficient between the variables **Size** and **Invest** was found to be statistically significant it was believed that one of these variables should be eliminated. The collinearity tests were thus run without the **Size** variable and then without the **Invest** variable. The condition number shown in Table 8b indicates that the **Size** variable should not be included in the analyses, as excluding this variable causes the condition number to decrease to 9.1324, which is below the benchmark value. Removing the **Invest** variable did not change the instability of the model as the Condition number, 37.3606, shown in Table 8c is still much higher than the benchmark value of 10.

To verify that the exclusion of the **Size** variable would provide a better fit model, likelihood ratio tests were performed assessing the significance of the **Invest** variable and then the significance of the **Size** variable. The results of the likelihood ratio tests support the results of the collinearity tests as the model that excluded the **Size** variable was found to be a better fit, while the model that excluded the **Invest** variable was found not to be a good fit model.

Table 7

Correlation Coefficients for Variables in Model assessing Firms' Investment in Corporate Bonds

	Bonp	Invest	PDebt	CRatio	ROE	Typeof Firm	CSize	BoSize	Size
Bonp	1.0000								
Invest	0.5362 (0.00)***	1.0000							
Pdebt	0.3004 (0.00)***	0.3595 (0.00)***	1.0000						
CRatio	0.0047 (0.920)	0.1298 (0.01)***	0.2114 (0.00)***	1.0000					
ROE	0.0442 (0.343)	-0.0106 (0.8209)	0.0527 (0.2795)	0.0078 (0.8668)	1.000				
Typeof Firm	0.4775 (0.00)***	0.3796 (0.00)***	0.2940 (0.00)***	0.0785 (0.09)*	0.035 (0.46)	1.0000			
Csize	-0.0368 (0.4295)	-0.0287 (0.5379)	-0.0088 (0.8574)	-0.0239 (0.6081)	-0.002 (0.97)	-0.000 (1.00)	1.000		
BoSize	-0.0164 (0.7260)	-0.0245 (0.5995)	0.0285 (0.5585)	0.0105 (0.8222)	-0.047 (0.32)	-0.000 (1.00)	-0.018 (0.699)	1.000	
Size	0.6036 (0.00)***	0.6288 (0.00)***	0.3751 (0.00)***	0.0807 (0.08)*	0.043 (0.35)	0.50 (0.00)***	-0.129 (0.006)***	-0.00 (0.99)	1.000

Table 8a

Collinearity Diagnostics with Size and Invest Variables Included

Variable	Variance Inflation Factor (VIF)	Tolerance		Eigenvalues	Condition Index
Invest	1.84	0.5434	1	5.3748	1.0000
Pdebt	1.27	0.7892	2	1.0067	2.3107
Cratio	1.06	0.9474	3	0.7405	2.6941
ROE	1.07	0.9332	4	0.6904	2.7902
TypeofFirm	1.31	0.7614	5	0.4742	3.3667
Csize	1.04	0.9657	6	0.3999	3.6663
BoSize	1.01	0.9942	7	0.2453	4.6811
Size	2.04	0.4902	8	0.0657	9.0435
				0.0025	46.4225

Mean VIF   1.33

Condition Number   46.225

Table 8b: Collinearity Diagnostics Without Size Variable

Variable	Variance Inflation Factor (VIF)	Tolerance		Eigenvalues	Condition Index
Invest	1.29	0.7752	1	4.4478	1.0000
Pdebt	1.24	0.8069	2	0.9959	2.1133
Cratio	1.05	0.9490	3	0.7362	2.4580
ROE	1.03	0.9719	4	0.6803	2.5569
TypeofFirm	1.20	0.8324	5	0.4742	3.0627
Csize	1.01	0.9933	6	0.3995	3.3367
BoSize	1.01	0.9947	7	0.2129	4.5709
			8	0.0533	9.1324

Mean VIF   1.12

Condition Number   9.1324

Table 8c: Collinearity Diagnostics Without Invest Variable

Variable	Variance Inflation Factor (VIF)	Tolerance		Eigenvalues	Condition Index
Pdebt	1.24	0.8072	1	4.5043	1.0000
Cratio	1.05	0.9516	2	1.0067	2.1133
ROE	1.02	0.9840	3	0.7263	2.4903
TypeofFirm	1.31	0.7661	4	0.6902	2.5546
Csize	1.03	0.9694	5	0.4742	3.0821
BoSize	1.00	0.9957	6	0.3997	3.3568
Size	1.43	0.6993	7	0.1953	4.8020
			8	0.0032	37.3606

Mean VIF   1.15

Condition Number   37.3606

Table 9 on the next page reports the probit regression estimation results. Column 1 presents the model estimates with the proxy for firm size, **Size**, included in the analyses, while column 2 presents the model estimates that excludes the variable, **Size** and column 3 reports the marginal effects of the variables on the probability of investing in corporate bonds for the estimates obtained from Column 2. Time effects and firm effects are taken into consideration when estimating each model specification and robust standard errors are calculated. Of the eight variables assessed in model (2) only two were found to significantly influence the likelihood of firms investing in corporate bonds. These were the size of a firms' investment portfolio, **Invest**, and the industry classification of the firm, T**ypeofFirm**, whether financial or non-financial. The size of a firm's portfolio was found to be highly significant, at the 1% level of significance, and had a positive coefficient which indicates that the probability of investing in corporate bonds, **BondPur**, increased with portfolio size. This result supports the findings of Aguilar et al (2008) as well as responses obtained from a small number of Fund Managers at institutions in Trinidad who were interviewed to obtain a better understanding of the investment and capital structure decisions made by firms in Trinidad and Tobago.

The marginal effects value for the size of a firm variable suggest that a 10% increase in the investment portfolio of reporting issuers will result in an approximate 0.004, which is 0.4% increase in the probability of the firm investing in corporate bonds. Though this percentage may seem small one must keep in mind that approximately 60% of the firms sampled are firms in the Finance, Insurance, Real Estate and Other Business Services Industry (FIRBS) (Please refer to Tables 2a to 2d on pages 30 to 33) and the investments in corporate bonds made by these firms are restricted by the Insurance Act and the Financial Institutions Act. Investments in government bonds may not be a possible reason for this small percentage increase in the probability of firms investing in corporate bonds as the proportion of the investment portfolio invested in government bonds, **Pdebt**, was found to not be statistically significant in influencing the probability of investing in corporate bonds. Although the sign of coefficient for, **Pdebt**, is the same as that found by Aguilar et al (2008), the predicted decrease in the probability of firms investing in corporate bonds when firms have a large portfolio share invested in public sector bonds was found not to be statistically significant for the forty-two firms sampled.

Table 9

Results of Probit Regression Analysis that explains Firm's Decision to Invest in Corporate Bonds

	With Size Variable Included	Without Size Variable	Marginal Effects df/dx for Without Size Model
Invest	0.4994	0.5831	0.0492
	(0.1380)***	(0.000)***	
Size	0.2416		
	(0.2652)		
Pdebt	-0.5498	-0.4894	-0.0450
	(0.7607)	(0.513)	
CRatio	-0.001	-0.001	-0.0001
	(0.175)	(0.177)	
ROA	-0.8553	-0.7643	-0.0636
	(0.194)	(0.253)	
BOSize	0.0040	0.0038	0.0008
	(0.768)	(0.781)	
TypeOfFirm	1.683	1.8475	0.2544
	(0.025)**	(0.011)**	
Csize	0.4900	0.5746	0.0092
	(0.522)	(0.448)	
Observations	546	546	546
Log Likelihood	-112.9781	-113.4023	
χ² Statistic	97.61	98.13	
	(0.000)***	(0.000)***	

Notes: The Table reports the effects of the variables listed on the probability to invest in corporate bonds by a probit model. Column 3 reports the marginal effects which is the discrete change of the dependent variable, investment in bonds, from 0 to 1. Year dummies for the period 1996 to 2008 and a constant term were included in the analyses. Robust standard errors are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels. but were not reported.

The industry classification of a firm was found to be significant at the 5% level of significance and had a positive coefficient. This suggests that the probability of investing in corporate bonds is higher for financial firms than non-financial firms which support the statistical findings made by Aguilar et al (2008). The marginal effects value for this variable suggest that as industry classification of a firm moves from non-financial to financial the probability of investing in bonds increases by 0.254 which is approximately 25%. This thus implies that financial firms are 25% more likely to invest in corporate bonds than non-financial firms. This could be due to most non-financial firms having a smaller investment portfolio than financial firms and thus not being able to diversify as much as the financial firms (Please refer to the difference of means test results shown in Table 10 below).

Table 10: Results of Difference between Means Test

```
Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |      Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
 Non-Fin |      195    14.81308   .4146331    7.145657    13.99708    15.62909
   Finan |      351    19.94883   .2358744    3.029861    19.48308    20.41457
---------+--------------------------------------------------------------------
combined |      546    16.64728   .3019403    6.489961    16.05393    17.24063
---------+--------------------------------------------------------------------
    diff |              -5.13574   .5836194                -6.282631   -3.98885
------------------------------------------------------------------------------
    diff = mean(0) - mean(1)                                     t =   -8.7998
Ho: diff = 0                                       degrees of freedom =     460

    Ha: diff < 0                 Ha: diff != 0                  Ha: diff > 0
 Pr(T < t) = 0.0000      Pr(|T| > |t|) = 0.0000          Pr(T > t) = 1.0000
```

The 25% likelihood that financial firms will invest in corporate bonds over non-financial firms could also be due to the investment practices by non-financial firms in Trinidad and Tobago. Non-financial firms in Trinidad and Tobago usually prefer to do the following with excess cash flow: reinvest into the business, pay dividends to share holders, invest in government bonds and/or shares of other companies and even purchase real estate. Another possible reason for the non-financial firms not being as highly likely as the financial firms to invest in corporate bonds is the lack of liquidity that currently exists for domestic corporate bonds. Financial firms are usually able to get these investments sold faster than a non-financial firm as financial firms usually sell these investments among themselves, however non-financial firms may encounter difficulties when trying to sell these investments. Although the probability of corporate bond investment is likely to be 25% higher by a financial firm than a non-financial firm it should be noted that the investment in the corporate bond market by firms in both industries is very low when compared to investments made in the other branches of the capital market, specifically the stock market and government bonds market.

The performance of the firm as measured by the profitability of the firm, **ROA**, and firms' liquidity position as measured by the current ratio of firm, were found not to be statistically significant in determining the probability of reporting issuers investing in corporate bonds. This implies that Aguilar et al (2008) finding, that the more profitable a firm is the more free cash flow the firm will have available for investment, and since firms with large investment portfolios should be seeking diversification the higher should be the probability of firms' investing in corporate bonds, is not applicable to the reporting issuers in Trinidad and Tobago. These results could be suggesting that the more free cash flow firms have available the more these firms will want to invest in other types of investments, such as real estate, expansion of company, or it could mean that the larger the profit level and free cash flow level of the reporting issuer the less likely the firm will want to invest in domestic corporate bonds and will thus seek out international corporate bonds.

The size of the corporate bond market, as measured by the number of corporate bonds issued and the ratio of total private sector bonds outstanding to the total of public sector bonds

outstanding in any given year, **_BoSize_** and **_Csize_** respectively, were also found not to be statistically significant in determining the probability of firms investing in corporate bonds. This implies that reporting issuers in Trinidad and Tobago decision to invest in corporate bonds is not influenced by the actual size of the corporate bond market but probably more by the ease with which they can get the corporate bonds sold when the need arises.

6. CONCLUDING REMARKS AND POLICY IMPLICATIONS

The objective of this paper was to analyse the investment and debt financing habits of firms that operate in Trinidad and Tobago. However due to data limitations the focus of the paper was narrowed to understanding the investment and debt financing decisions made by firms that are registered at the TTSEC as reporting issuers. Despite this limitation, this paper has contributed to the literature in three ways: first this paper is among the few papers that assess corporate bond market activity from a micro/firm perspective in the CARICOM Sub-Region, second this paper will be the first to look at the determinants of corporate bond market activity in Trinidad and Tobago and third this paper will be among the few pieces of work in the capital structure literature that assesses the determinants of one of the components of debt rather than the determinants of total debt.

The general results of the analyses on the factors that influence the issuance of bonds found that the more funds reporting issuers obtained from bank financing the less money was sourced from bond issuance. Also the more equity financing a firm used the less money reporting issuers attained from issuing bonds, and the longer the period of time a firm has been listed on the stock exchange the less money reporting issuers acquire from issuing bonds. Additionally, reporting issuers with more real assets were found to issue more bonds than reporting issuers with a smaller asset base. In addition to this, reporting issuers that issue bonds were found to have: smaller commercial debt levels, lower profitability levels and less investment opportunities. However these three factors were not found to statistically influence the value of bonds issued by firms. Finally a noteworthy finding is that there was no statistically significant difference between issuers and non-issuers of bonds for the amount of bank financing used.

These results show that due to the evolution and development of the financial markets in Trinidad and Tobago bank financing is the preferred form of debt financing used by firms. Additionally the results indicate that the preferred form of capital financing sought by reporting issuers in Trinidad and Tobago is equity financing. These results support the fact that there exists a cultural aversion among firms that operate in Trinidad and Tobago to use public sources of funds to avoid having to be subjected to the degree of disclosure required for bond issues in particular (Guisseppi, 2003). Further, the results demonstrate the dominance of the banking sector in mobilizing capital among reporting issuers in Trinidad and Tobago. Given reporting issuers' preference of non-disclosure and banks' dominance in debt financing, the primary bond market will benefit from having a public education drive among managers and shareholders of public and private limited liability companies to address the negative perceptions associated with public disclosure. Additionally, the dominance of the banking sector in the debt financing market can be addressed by providing incentives to investment banks that perform underwriting and arranging duties to lower their fees as well as to reward them for the quantity of bonds issued. Moreover, steps should be taken to reduce the three to six month period it takes to verify information on the issuer, the issuer's stakeholders, the issuer's business and its environment. By doing this the perceived lower cost and attractiveness of bank financing over bond financing would be reduced. Also, regulations should be enlisted to prevent, as Guisseppi (2003) asserts, commercial banks from improperly pricing loans and thus compressing bank spreads in an attempt to grow their loan portfolios. Finally the size of corporate bond market relative to the size of the public sector bond market was not found to be statistically significant in influencing the value of bonds issued by reporting issuers this suggests that the perception that the government bond market may be "crowding out" the corporate bond market may be false, as the size of the government bond market has no influence on bond issuance. These results also suggest that at this point in time the real obstacle to activity in the primary corporate bond market may be firms' preference for little to no disclosure of companies' finances which is associated with bank financing and the dominance of the banking sector in mobilizing capital in the Trinidad and Tobago financial market, rather than the presence of the government bond market and the stock market.

The general results of the analyses on the factors that influence the likelihood of reporting issuers investing in corporate bonds found that reporting issuers' with larger investment portfolios and that are in the Financial, Insurance, Real Estate and Business Services Industry were more likely to invest in corporate bonds. Additionally, reporting issuers that are investors in corporate bonds were found to have: larger asset bases, lower profit levels, and a larger proportion of their investment portfolio invested in government bonds than non-investors of corporate bonds.

These results highlight the fact that the major investors in the domestic corporate bond market are financial and insurance institutions. This indicates the need to inspire companies from other industries to invest in corporate bonds. Providing non-financial companies with incentives to invest in domestic corporate bonds may encourage more investment in corporate bonds. Additionally, the low liquidity that currently exist in the Trinidad and Tobago corporate bond market may be responsible for non-financial firms not investing as much in domestic corporate bonds. Financial firms are usually able to get their holdings of domestic corporate bonds sold faster than a non-financial firm as financial firms usually sell these investments among themselves, however non-financial firms may encounter difficulties when trying to sell these investments. This thus suggests that for more investments to occur in the primary corporate bond market improvements must be made to the domestic secondary market for corporate bonds. Improvements such as the implementation of an automated quotation system, mandating existing government securities intermediaries/dealers to be market makers for corporate bonds, employment of an effective clearing and settlement system and a central securities depositary for corporate bonds and the use of self-regulatory mechanisms to regulate trading on the Over the Counter Market. Watson et al (2005), discuss the reasons and benefits that can be enjoyed from implementing these improvements to the secondary corporate bond market.

By implementing these policies Trinidad and Tobago and countries with bond markets similar to Trinidad and Tobago's bond market will become one step closer to enjoying the benefits associated with developed bond markets.

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APPENDIX

Table A1: **Number of Business Establishments in Trinidad and Tobago by Type of Ownership 2009**

Type of Ownership	Number of Business Establishments	Percentage of Business Establishments
Individual Proprietorship	10,452	35.4%
Partnership	716	2.4%
Private Limited Liability Company	10,233	34.7%
Public Limited Liability Company	62	0.2%
Government (Major Public Sector Ownership)	47	0.2%
Co-operative	85	0.3%
Foreign Company Operating Unincorporated In Trinidad & Tobago	36	0.1%
Any Other Business Type	399	1.4%
Not Stated	7,453	25.3%
TOTAL	29,483	1.000

Source: Central Statistical Office (CSO) 2009 Business Register

Table A2a: Descriptive Statistics – All Firms

(Please refer to note below Table A2c for explanation of what variables represent)

```
    Variable |        Obs        Mean    Std. Dev.         Min         Max
-------------+------------------------------------------------------------
       bank4 |        546    .1092908    .1374164           0    .7817925
    comdebt4 |        546    .0795006    .0880749    .0001143    .6263312
        tang |        546    .2289445    .2438696     .000447    .8929502
      growth |        546    .2097721    1.264887   -8.269493    8.611521
         roa |        546    .0762943    .1058733   -.2545984     .569066
-------------+------------------------------------------------------------
     tobinsq |        546     1.28899    .9646698    .0010179    7.702926
        size |        546    20.37902    1.927033    14.76102    24.93669
      equity |        546    .3440867    .3185886   -.2165762    3.795114
-------------+------------------------------------------------------------
```

Table A2b: Descriptive Statistics – Issuers of Bonds

(Please refer to note below Table A2c for explanation of what variables represent)

```
    Variable |        Obs        Mean    Std. Dev.        Min         Max
-------------+-----------------------------------------------------------
       bank4 |        214    .1179106    .1131584          0    .5450631
    comdebt4 |        214    .0657513    .0688783   .0004887    .2964639
        tang |        214    .2217373    .2429947   .0009582     .892103
      growth |        214    .2401998    1.113629  -8.269493    5.013327
         roa |        214    .0631592    .0545273   -.072392    .3500494
-------------+-----------------------------------------------------------
     tobinsq |        214    1.160269    .4680608   .0479167    3.580595
        size |        214    21.46934    1.336759   18.63115    24.60081
      equity |        214    .2517295    .2098189  -.1668164           1
-------------+-----------------------------------------------------------
```

Table A2c: Descriptive Statistics – Non Issuers of Bonds

```
    Variable |        Obs        Mean    Std. Dev.         Min         Max
-------------+------------------------------------------------------------
       bank4 |        332    .1037385    .1509282           0    .7817925
    comdebt4 |        332    .0883569     .097575    .0001143    .6263312
        tang |        332    .2335869    .2447517     .000447    .8929502
      growth |        332    .1901802    1.354961   -7.211326    8.611521
         roa |        332    .0847551    .1279076   -.2545984     .569066
-------------+------------------------------------------------------------
     tobinsq |        332    1.371903    1.172049    .0010179    7.702926
        size |        332    19.67672    1.923993    14.76102    24.93669
      equity |        332    .4035766    .3601994   -.2165762    3.795114
-------------+------------------------------------------------------------
```

N.B.
Tang: Ratio of fixed assets to total assets. **Size:** Logarithm of total assets. **Tobin's Q**: Market value of assets divided by the book value of assets. **Growth:** Relative change in firms' profit. **ROA:** Ratio of operating income to total assets. **Equity**: Ratio of shareholders' equity to total assets. **Bank:** Ratio of firm's bank loans to total assets. **ComDebt**: Ratio of Commercial Debt to total assets. **Obs** refers to the number of observations. Currency units are TT$

Table A3a: Descriptive Statistics – All Firms

(Please refer to note below Table A3c for explanation of what variables represent)

Variable	Obs	Mean	Std. Dev.	Min	Max
invest	546	16.64728	6.489961	0	24.39546
size	546	20.37902	1.927033	14.76102	24.93669
pdebt	546	.1611176	.256755	0	1
cratio	546	66.67557	281.2372	.2685702	3343.302
roe	546	.0762943	.1058733	-.2545984	.569066

Table A3b: Descriptive Statistics – Investors/Purchasers of Bonds

(Please refer to note below Table A3c for explanation of what variables represent)

Variable	Obs	Mean	Std. Dev.	Min	Max
invest	259	20.30905	2.257405	10.43412	24.39546
size	259	21.60302	1.624423	16.75467	24.93669
pdebt	259	.2468474	.2396122	0	.9985086
cratio	259	68.05724	178.1069	.2685702	1276.718
roe	259	.0656051	.0963088	-.2545984	.4432829

Table A3c: Descriptive Statistics – Non Investors/Purchasers of Bonds

```
Variable |       Obs       Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
   invest |       287    13.34716    7.250902         0    22.99898
     size |       287    19.27591    1.455769   14.76102    23.22671
    pdebt |       287    .0918744    .2495896         0           1
   cratio |       287    65.43036    349.4168    .4320974    3343.302
      roe |       287    .0859278     .113141  -.1079564     .569066
-------------+--------------------------------------------------------
```

N.B.
Invest: Logarithm of the investor's investment portfolio. **Size**: Logarithm of total assets. **Pdebt:** Ratio of government bonds holdings to total portfolio investments. **ROA:** Ratio of operating income to total assets. **CRATIO**: Ratio of current assets to current liabilities. **Obs** refers to the number of observations. Currency units are in TT$