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On the determinants of expected corporate bond returns in Tunisia

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ABSTRACT

In this paper, we document that ratings in the Tunisian bond market are the most important determinant of expected corporate bond returns. When we account for this characteristic, we find that systematic risks do not explain the cross-section of expected bond returns. These findings are obtained for a wide range of systematic factors, so the omitted variables problem cannot justify the failure of asset pricing models to explain expected corporate bond returns in Tunisia. Mispricing due to pessimistic investors or their inability to hold diversifiable bond portfolios are likely to explain why characteristics fare better than betas in explaining bond returns in Tunisia.

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1. Introduction

Identifying the factors that explain the cross-sectional variation in bond returns is an important topic, as it has direct implications on portfolio management and firms' financial policies. This issue has recently received a great deal of attention from financial researchers (Elton et al., 2004; Gebhardt et al., 2005; Mahanti et al., 2008; Bessembinder et al., 2009; Friewald et al., 2012; Hasseltoft, 2012; Acharya et al., 2013; Lin et al., 2011, 2014).

According to the arbitrage pricing theory of Ross (1976) (APT) and the intertemporal capital asset pricing model of Merton (1973) (ICAPM), expected returns on assets are solely explained by their systematic risks. Gebhardt et al. (2005) document that after controlling for the default risk, there are not any residual return variations related to bond characteristics such as ratings and duration. They thus conclude that the default beta is the key determinant of U.S. corporate bond returns. On the contrary, Elton et al. (2004) find that ratings, liquidity, and maturity determine bond valuation, even after controlling for systematic risks.

Despite the importance of this topic, the financial literature has mainly focused on the U.S. corporate bond market. At the best of our knowledge, there are no studies addressing this issue in emerging markets. This paper is an attempt to fill this gap by investigating whether betas or characteristics explain expected bond returns in Tunisia.

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According to [Lagoarde-Segot \(2013\)](#), the Tunisian market is characterized by considerable institutional impediments, heavy bureaucratic regulation, and the omnipresence of the government as well as banks. Moreover, [Tissaoui and Ftiti \(2016\)](#) find compelling evidence of high asymmetric information between the different participants in the Tunisian capital market. Given these characteristics, we expect that traditional asset pricing models that are based on the efficient market hypothesis will not be able to fully account for the differences in expected corporate bond returns in Tunisia.

In order to examine this hypothesis, we take into account the systematic risks urged by [Gebhardt et al. \(2005\)](#), that is the default spread and the term spread. In addition, liquidity is expected to be an important factor in the Tunisian bond market given the features of the Tunisian context (illiquidity, asymmetric information. . .). Exploring liquidity risk in bond markets has become an important subject in the literature ([Bao et al., 2011](#); [Friedwald et al., 2012](#); [Acharya et al., 2013](#)). [Lin et al. \(2011\)](#) construct a market-wide liquidity factor constructed from the bond market using the liquidity measure of [Pastor and Stambaugh \(2003\)](#). The problem with the latter is that we need more than 15 non-zero trading days within a month to be able to construct the factor, which is impossible in the Tunisian bond market. We circumvent this condition by using directly the available data on bond trading volume to construct the liquidity factor in Tunisia.

Political, economic, and financial risks are also expected to be key determinants of corporate bond returns in Tunisia. There is a growing literature which investigates the effect of political risks on discount rates in an international context ([Henisz and Zelner, 2010](#); [Bekaert et al., 2014, 2016](#)). [Bekaert et al. \(2016\)](#) underline that the common practice to account for political risk in asset valuation is to add the sovereign spread to the traditional capital asset pricing model (CAPM). Because sovereign spreads also reflect the differences in economic and financial risks across countries, [Bekaert et al. \(2014\)](#) propose a new approach to avoid the double counting of risk. Both approaches are used in the empirical tests of our study.

In addition to systematic factors, we take into consideration two important bond characteristics: ratings and maturity. To investigate our main hypothesis, we follow two traditional empirical approaches. The first methodology is based on portfolios, which consists of forming portfolios according to a bond characteristic and testing whether multifactor models explain the differences in bond returns created by the portfolio formation. The second methodology which is based on cross-sectional regressions enables us to examine simultaneously the impact of betas and characteristics on expected returns.

Our empirical findings reveal that ratings are the most important explanatory variable in the Tunisian bond market. We notice a significant variation in average returns of rating-sorted portfolios, which is not explained by any of the asset pricing models examined here. The cross-section of expected bond returns confirms this result and shows that ratings have the most significant coefficient. Maturity is also related to expected returns, but the underlying premium is lower than that associated with ratings. These findings indicate that bonds in Tunisia are strongly mispriced, which suggests that the Tunisian bond market is inefficient.

The practical implication of such a result is that Tunisian bonds offer huge opportunities for sophisticated investors. The recent results of [Hammami et al. \(2013\)](#) and [Oueslati et al. \(2014\)](#) substantiate the strong opportunities in the Tunisian bond market. Indeed, they highlight that bond mutual funds outperform traditional benchmarks and show that bond fund managers have superior ability in selecting undervalued bonds.

The remainder of this paper is organized as follows. Section 2 presents the theoretical framework and describes the methodology of the paper. Section 3 reports the empirical results. Section 4 concludes the paper.

2. Theoretical framework

In this section, we describe the systematic risks and characteristics that have been used in the literature on asset pricing. We also describe the methodology implemented to examine whether betas or characteristics explain expected bond returns in Tunisia.

2.1. Systematic risks

In the financial literature, the [Fama and French \(1993\)](#) three-factor model has become the standard asset pricing model to adjust for systematic risks. The three-factor model is written as follows:

$$E(R_i) - r_f = b_i[E(R_m) - r_f] + s_iE(SMB) + h_iE(HML) \quad (1)$$

$E(R_i) - r_f$ is the asset's risk premium, $E(R_m) - r_f$, $E(SMB)$, and $E(HML)$ are the risk premia associated with the excess market return, the size factor and the value factor, respectively. b_i , s_i and h_i are the corresponding systematic risks, respectively. The rationale is that the size factor and the value factor capture a systematic distress risk in assets that cannot be diversifiable, so we expect bonds to be sensitive to these factors.

[Carhart \(1997\)](#) takes into consideration the momentum factor (*MOM*) and shows that this factor is related to the common variations in stock returns which are left unexplained by the three-factor model. More importantly, [Pastor and Stambaugh \(2003\)](#), [Acharya and Pedersen \(2005\)](#), and [Lam and Tam \(2011\)](#) develop asset pricing models which include the liquidity risk (*LIQ*). Thus, we consider the following five-factor model:

$$E(R_i) - r_f = b_i[E(R_m) - r_f] + s_iE(SMB) + h_iE(HML) + m_iE(MOM) + l_iE(LIQ) \quad (2)$$

In the Tunisian context, [Hammami and Jilani \(2011\)](#) show that the five-factor model does a better job in explaining expected stock returns than the three-factor model, so it is interesting to consider this model for bond returns.

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