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Corporate bond returns and the financial crisis ☆

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ABSTRACT

We examine effects of government actions and related accounting policies on the corporate bond market implied by changes in relations between aggregate bond returns and cash flow and discount rate news. We capture the influence of risk by partitioning bonds into investment and speculative grades. We use earnings changes as a proxy for cash flow news and T-Bill rate changes as a proxy for discount rate news. As expected, during non-crisis periods, we observe a positive relation between earnings changes and bond returns and a negative relation for T-Bill rate changes. A combination of government bailouts of large financial institutions and mark-to-market accounting preserves the positive relation for earnings changes during the crisis for investment grade bonds, while absence of these factors leads to an insignificant relation for speculative grade. Intervention by the Federal Reserve to induce lower interest rates as earnings were declining, a flight to safety shifting demand from corporate bonds to T-Bills, and low cost funds invested in risk free investments explain a reversal of the relation between bond returns and T-Bill rate changes for both grades.

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1. Introduction

Much has been written about the evolution of conditions leading up to the recent financial crisis, its effects on financial markets and larger economy, and critiques of the Federal Reserve and government relief programs for ameliorating those effects (see Acharya et al., 2009). Basically, the focus has been on failures of the government in anticipating the potential crisis and inadequacies of interventions once the crisis was underway. In this study, we take a closer look at the impact of the government interventions as they pertained to corporate bond markets by examining relations between aggregate bond returns and cash flow and discount rate news as conveyed, respectively, by aggregate earnings changes of bond issuers and T-Bill rate changes. Previous studies pertaining to effects of the crisis on bond markets have documented a flight to quality in the form of AAA-rated bonds (Acharya et al., in press), widening of bond spreads in response to illiquidity and credit risk (Dick-Nielsen et al., 2012), contagion in bond prices from declines in values of asset-backed securities (Longstaff, 2010), and consequences of mark-to-market accounting rules for mortgage-backed securities on bond prices (Bhat et al., 2011). However, we are unaware of any study comparable to ours looking at the effects of government intervention and accounting policies on the relation between bond returns and proxies for cash flow and discount rate news.

Specifically, we estimate associations between aggregate corporate bond returns and aggregate earnings changes of issuers as a proxy for cash flow news and T-Bill rate changes as a proxy for discount rate news over a time frame inclusive of the crisis and ensuing recession. We partition the set of bonds into investment grade and speculative issues based on bond ratings to assess how these associations may be affected by default risk. Plausibly, actions by the Federal Reserve and other arms of government during the crisis are likely to have altered relations between bond returns and earnings or T-Bill rate changes, but not necessarily in the same ways for issuers of investment and speculative grades. As well, the timing of loss recognition in earnings under prevailing accounting standards varied based on the types of assets issuers were holding, which may have affected earnings changes as a proxy for cash flow news. We further note that because our inquiry extends over a time frame encompassing the dot-com bubble burst in 2001 as well as the 2008 crisis, we are able to provide a sense of

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how associations between bond returns and news proxies are affected by the business cycle.

Cash flow news is defined as changes in expected future cash flows (a numerator effect) while discount rate news is defined as changes in expected returns (a denominator effect).[1] The former generally implies a positive relation between bond returns and cash flow news, while the latter implies a negative relation between bond returns and discount rate news. To investigate the sensitivity of these relations to the financial crisis and following recession, we employ a log-linear specification. In this specification, expected future cash flows are assumed to capture adjustments for default risk as changes in a certainty equivalent rather than including a risk premium component to the discount rate as in a study decomposing equity returns by Kothari et al. (2006). The choice of earnings changes as a predictor of changes in expected future cash flows rather than changes in the cash flow component of earnings is based on empirical findings by Ozel (2013) that earnings changes perform better in this respect. Germane to our study, the accrual component of earnings speaks to expected future cash flows in part through anticipation of losses before settlements on portfolio assets. However, as we later describe, accounting policies with respect to timely loss recognition vary with the type of institution and classification of their assets.

Prior to the crisis, we observe that bond returns have a negative association with T-Bill rate changes and a positive association with earnings changes, irrespective of the grade. However, these associations between bond returns and earnings changes shift with the onset of the financial crisis. Regarding bond returns and T-Bill rate changes, our evidence suggests that the aforementioned flight to safety in the form of T-Bills notwithstanding lower rates and related reduction in demand for corporate bonds, the lowering of risk free interest rates induced by the Federal Reserve coincidental with declining earnings, and the government bailouts of large financial institutions played principal roles in reversing the association between bond returns and T-Bill rate changes from positive to negative.

Regarding bond returns and earnings changes, we observe that the association of earnings changes with investment grade bond returns remains positive following onset of the crisis, while that for speculative grade bonds becomes insignificant. Through repartitions of our data, we find that issuers of investment grade bonds are more likely than issuers of speculative grade bonds to be financial institutions the larger of which were recipients of government relief. The type of institution raises an accounting factor. Financial institutions were more likely than non-financial institutions to employ fair value (mark-to-market) accounting with immediate recognition of losses on toxic assets in earnings.[2] In contrast, non-financial institutions were more likely to be holding assets for which immediate loss recognition in earnings is not required, thereby diminishing the information content of earnings changes by delaying accounting recognition of losses in earnings until settlements. Consistent with these accounting differences, we depict a close graphic association between bond returns and earnings changes for financial institutions and a definitive lag in earnings relative to returns for non-financial institutions. We also note greater earnings volatility post-crisis than pre-crisis for non-financial institutions, implying a loss of persistence thereby dampening the information content of earnings changes.[3]

In assessing the effects of government relief, we observe that recipients of direct assistance were mostly composed of large financial institutions, all of which were issuers of investment grade bonds.[4] An interpretation of both the strengthening of the positive association of bond returns with earnings changes for recipients and the reversal in the association with T-Bill rate changes consistent with our evidence is that bailouts of large banks provided those institutions with funds at essentially zero cost that could then be invested in low yield treasuries implying higher earnings and bond returns.[5] As for non-recipients of direct assistance, we suggest that the weakening of the association of bond returns with earnings changes is traceable to the greater uncertainty of expected future cash flows given less assurance of future government relief than for recipients and delayed recognition of losses by certain institutions such as insurance companies for which only a small percentage recognize losses immediately. The reversal of the association between bond returns and T-Bill rates can be explained by the flight to safety increasing demand for T-Bills at the expense of demand for relatively riskier bonds for non-recipients; we also note among non-recipients were REITs for which real estate values were in decline as T-Bill rates were falling.

Our study contributes to the literature in several ways. *First*, we provide evidence of positive effects on corporate bond returns from the lowering of interest rates, government bailouts, and other elements of the stimulus plan following the onset of the recent financial crisis. In particular, the reversal of the relation between bond returns and discount rate news and strengthening of the relation between returns and cash flow news for recipients of direct government relief are consistent with large banks obtaining cheap funds that could be profitably invested in treasuries notwithstanding lower interest rates, and a flight to the safety of treasuries weakening demand for relatively riskier bonds for non-recipients. *Second*, our evidence also suggests that accounting policies affected the efficacy of earnings changes as a proxy for cash flow news; specifically, earnings changes track bond returns for financial institutions as an artifact of mark-to-market accounting and lag returns for non-financial institutions that are not as likely to have employed such accounting. Moreover, earnings volatility post-crisis suggests the market perceived less persistence. *Third*, our log-linear empirical specification decomposing bond returns into cash flow news in the form of earnings changes as a numerator effect and discount rate news in the form of T-Bill rate changes as a denominator is supported by the variation of results across investment and speculative grades, and fits with changes in default risk as a numerator effect. *Fourth*, the shift in the relations between bond returns and proxies for cash flow and discount rate news during the recession following the financial crisis and somewhat as well following the dot-com bubble burst suggests a fundamental dependency of such relations on the business cycle; albeit, as moderated by government intervention. As a consequence, we suggest that subsequent empirical inquires allow for such dependency. *Last*, we note that our study extends previous studies in equity markets employing decompositions of returns to examine effects of cash flow and discount rate news to bond markets.

[1] See Campbell's (1991) seminal work on decomposition of returns. Although Campbell's decomposition relates to equity, the insight can be extended to debt. Campbell and Ammer (1993) apply a similar approach to bonds where they consider bond returns only as a function of discount rates affected by inflation and a risk premium.

[2] As we later report, although market liquidity dropped significantly, there remained sufficient liquidity for mark-to-market accounting to have been applied for some assets. Lev and Zhou (2009) report that approximately 81% of financial firms applied fair value accounting as defined by Financial Accounting Standard 157. Laux and Leuz (2010) report that about 35–40% of assets held by financial institutions are valued by fair values.

[3] See Johnson (1999) on volatility weakening of earnings persistence.

[4] Recipients of bailouts are identified by the NASDAQ OMX Government Relief Index (GRI).

[5] As we later report, we find significance employing weighted averages for bond returns and earnings changes. However, significance is lost employing equally weighted averages consistent with mainly larger institutions receiving relief.

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