

The Cross-Section of Credit Risk Premia and Equity Returns*

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Abstract

Structural models à la Merton (1974) imply that firms' risk premia in equity and credit markets are related. We explore this relation, using the joint cross-section of stock returns and risk premia estimated from forward credit default swap (CDS) spreads. Consistent with structural models, we find that firms' equity returns and Sharpe ratios increase with estimated credit risk premia and that the returns of buying high and selling low credit risk premium firms cannot be explained by traditional risk factors. Credit risk premia contain equity-relevant information neither captured by risk-neutral nor by actual default probabilities. This sheds new light on the distress puzzle, i.e. the lack of a positive relation between equity returns and default probabilities reported in previous studies. Our results are robust across pre-crisis and crisis sub-samples, return weighting schemes, full- and out-of-sample parameter estimations, and CDS data sources.

JEL classification: G12, G13

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1 Introduction

The relation between firms' default risk and their equity risk premia is subject of an intense debate in finance. While some studies conclude that default risk is reflected in higher equity risk premia, others identify a "distress puzzle", showing that high measures of distress risk coincide with anomalously low equity risk premia. These studies all use either real-world or risk-neutral default probabilities to sort firms into portfolios with different credit risk.

We approach this issue from a novel angle by studying the link between equity and credit markets. Structural models à la Merton (1974) imply that the market price of risk (the Sharpe ratio) must be the same for all contingent claims written on a firm's assets. Hence, risk premia in equity and credit markets must be related. We derive the relation between a firm's expected excess returns on equity and credit default swaps (CDS), revealing that equity risk premia and equity Sharpe ratios depend on both real-world *and* risk-neutral default risk information. Guided by the implications of the model, our empirical strategy is to estimate risk premia from the CDS forward curve and then relate it to subsequent equity excess returns.¹

We use the joint cross-section of CDS spreads and stock returns for U.S. firms from 2001 to 2010 and estimate a firm's credit risk premium implied by the term structure of its CDS spreads using a single-factor model in the spirit of Cochrane and Piazzesi (2005).² The risk premium estimates are then used to sort firms into portfolios. We find strong empirical support for a positive relation between credit risk premia and equity excess returns: Stock returns monotonically decrease from the portfolio of firms with the highest credit risk premia to the portfolio of firms with the lowest credit risk premia. At the same time, there are no monotonic cross-portfolio patterns related to firms' size, book-to-market ratio, and risk-neutral as well as real-world default probabilities. Buying high and selling low credit risk

¹For easier readability, we refer to risk premia estimated from the CDS forward curve as credit market-implied risk premia or simply as credit risk premia.

²Using CDS data offers several advantages as compared to corporate bond yield spreads. First, CDS contracts are standardized and comparable across reference companies. Second, issuing a CDS on a particular firm does not change the firm's capital structure and CDS maturities can be chosen independently of the firm's debt maturity structure. Third, the CDS market is more liquid than the corporate bond market and CDS spreads are generally less contaminated by non-default components; see e.g. Longstaff et al. (2005) and Ericsson et al. (2007). There is also evidence that information gets reflected in the CDS market more quickly, for instance, Blanco et al. (2005) show that the CDS market leads the bond market in determining the price of credit risk.

premium firms generates positive excess returns with CAPM-, Fama and French (1993)-, and Carhart (1997)-alphas being significantly positive while the factor loadings are generally not significantly different from zero. CDS-implied risk premia thus convey information that is priced in equity markets but neither captured by common measures of distress risk nor by traditional risk factors. To take a closer look at the relation between credit risk premia and various firm characteristics, we double sort portfolios using size, book-to-market, default probabilities, and a measure for the liquidity of the firm's CDS contracts as control variables. The high minus low credit risk premium portfolio continues to earn significant alphas in all size, book-to-market, default probability, and CDS liquidity portfolios, with excess returns being highest for small firms, value stocks, and firms with a high probability of default.

Our results are robust to splitting the full sample period (01/2001 to 04/2010) into pre-crisis (01/2001 to 06/2007) and crisis (07/2007 to 04/2010) sub-samples. The conclusions are identical for both periods, with the quantitative results being similar but more pronounced during the crisis. Our findings do not depend on whether we calculate equally-weighted or value-weighted portfolio returns and they remain unchanged when excluding financial and utility firms from the sample. Furthermore, our conclusions are not altered when estimating the parameters of the single-factor model using full-sample information or out-of-sample. Our most comprehensive robustness check is to repeat the empirical analysis with an alternative CDS data set. These results confirm and strengthen our findings on the relation between estimates of credit risk premia and subsequent equity returns and, moreover, show that our conclusions are neither driven by the choice of data source nor by the particular cross-section of firms or the particular sample period.

We also discuss insights from our results related to the mixed evidence on whether equity returns are positively, negatively, or not related to distress risk. The structural framework implies that equity risk premia are related to, both, real-world *and* risk-neutral default probabilities and, hence, sorting firms into portfolios using only either of the two may not be sufficiently informative about expected stock returns. More specifically, in the model, the distress puzzle (see, e.g., Dichev, 1998; Campbell et al., 2008) emerges if firms, in the cross-section, differ by their expected asset return and/or the volatility of assets.

Relation to Literature The empirical evidence on whether default risk is priced in stock returns is mixed. Some papers find a positive relation between default risk and equity returns. Vassalou and Xing (2004) construct a market-based measure of the default probability using the Merton (1974) model and find that distressed stocks earn higher returns. Chava and Purnanandam (2010) estimate expected returns using implied cost of capital and also find that they are positively related to default risk. However, there are numerous papers documenting a negative relation between a firm’s real-world default probability and its return on equity and the literature refers to this empirical finding as the “distress anomaly” or the “distress puzzle”. For instance, Dichev (1998) uses the Altman (1968) Z-score and the Ohlson (1980) O-score to measure default risk and reports a negative relation to stock returns. The latter measure is also used by Griffin and Lemmon (2002) who document that the distress puzzle is particularly prevalent among growth firms. More recently, Campbell et al. (2008) use a dynamic panel regression approach that incorporates accounting data and market data, such as past stock returns and standard deviations as well as returns in excess of the market. They find that firms with high distress risk deliver abnormally low returns. Related, Avramov et al. (2007) find that momentum profits are concentrated among firms with low credit ratings and Avramov et al. (2009) argue that the distress puzzle is most pronounced for worst-rated stocks around rating downgrades. Altogether, there is equivocal evidence to whether a firm’s equity returns are positively, negatively, or at all related to estimates of its real-world default probability.

Garlappi and Yan (2011) show that the apparent incompatibility of these empirical patterns can be reconciled within a model that explicitly accounts for leverage and that allows shareholders to strategically default on their debt to recover part of the residual firm value upon the resolution of financial distress.³ Ozdagli (2010) argues that the anomaly is due to firms’ heterogeneity with respect to cash flow and growth exposure to systematic risk and

³The role of shareholder recovery rates in the context of our paper was first investigated by Garlappi et al. (2008). They present a model with bargaining between shareholders and creditors in default and find that the Expected Default Frequency (EDF) measure of Moody’s KMV is in general not positively related to expected stock returns. More recently, Hackbarth et al. (2001) argue that the default risk premium is positive but has decreased and become insignificant after the bankruptcy reform act of 1978 because the reform improved the position of shareholders in distressed firms and also because this reform-based advantage partly substitutes firm-level shareholder advantage.

concludes that stock returns should increase with risk-neutral default probabilities. Anginer and Yildizhan (2010) use corporate yield spreads to measure risk-neutral default probabilities thereby allowing them to rank firms based on their exposure to systematic default risk. However, they neither find that a firm's default risk is priced in equity markets nor that firms with high distress risk earn anomalous low returns.⁴

As an increasing cross-section and time-series of CDS data have become available, a few papers have looked at (particular) relations between equity and CDS markets recently. Acharya and Johnson (2007) show that there is an information flow from CDS to equity markets: they find that under circumstances consistent with the use of non-public information by informed banks, recent increases in CDS spreads predict negative stock returns. Conversely, Hilscher et al. (2011) argue that informed traders are mainly present in the equity market and provide evidence that equity returns lead credit protection returns. The negative relation of Acharya and Johnson (2007) is also found by Ni and Pan (2010) in their study of the consequences of short sale bans in stock markets. In the presence of such bans, it takes more time for negative information in CDS markets to get incorporated into stock prices and returns become predictable. In an empirical study, Han and Zhou (2011) find that the slope of the term structure of CDS spreads negatively predicts stock returns. Similar to the aforementioned papers, they argue that this predictability emerges from slow information diffusion but that it cannot be explained by standard risk factors or default risk. In a recent working paper, Bick et al. (2011) argue that the distress puzzle should disappear when controlling for a default risk premium.⁵ However, contrary to our results, they are unable to establish a relation between stock returns and estimated default risk premia.⁶

⁴Other attempts to explain the distress anomaly build on long-run risk aspects. Avramov et al. (2010) show that the negative cross-sectional relations between expected stock returns and forecast dispersion, idiosyncratic volatility, and credit risk arises out of a long-run risk economy where the cross-section of expected returns is determined by a firm's cash flow duration. They argue that, while firms with high cash flow durations are strongly exposed to systematic shocks, low duration firms are more sensitive to firm-specific shocks. It follows that firms with high measures of idiosyncratic risk (such as high default risk) tend to have low systematic risk and, hence, low expected returns. Related, Radwanski (2010) argues that distressed firms have short expected lifetimes and consequently earn lower returns because they are not exposed to long-run risk factors.

⁵Their paper was circulated after the first version of our paper.

⁶Bick et al. (2011) define the default risk premium as the ratio of real-world to risk-neutral default intensities. The former is estimated based on the approach of Campbell et al. (2008) and the latter using CDS data. Thus, while our risk premium estimate relies solely on the use of CDS market prices their estimate also depends on accounting data. Furthermore, our empirical specification is directly derived from structural models.

All of these papers investigate the (informational) linkages between CDS and equity markets in a rather general way. In contrast, we directly exploit CDS data to estimate expected risk premia, guided by the theoretical relation between equity and CDS excess returns implied by the structural framework of Merton (1974). In analogy to the literature on bond excess returns, e.g. Fama and Bliss (1987) and Campbell and Shiller (1991), we exploit the fact that, in the absence of risk premia, forward CDS spreads should be unbiased predictors of future spot CDS spreads. We use a single-factor model similar to Cochrane and Piazzesi (2005) to estimate credit risk premia, or expected deviations of future CDS spreads from their lagged forward values.⁷ Our empirical results confirm the structural model implications by documenting a strong positive relation between estimated credit risk premia and subsequent equity excess returns. Given the link between equity returns and credit risk premia that we derive in the structural framework and empirically document in this paper, we can offer some insights on previous studies' ambiguous results on the relation between equity risk premia and default probabilities and the distress puzzle.

The remainder of the paper is organized as follows. We derive the relation between expected returns on equity and CDS spreads in the Merton (1974) framework in Section 2. Building on the structural model implications, we show in Section 3 how we extract credit risk premia from the term structure of CDS spreads. In Section 4, we describe the data, report our core empirical results, present various robustness checks, and discuss insights that our results allow related to the distress puzzle. Section 5 concludes. The Appendix describes technical details and the separate Internet Appendix reports and discusses additional empirical results.

2 Structural Framework for Risk Premia in Credit and Equity Markets

We utilize a simple Merton framework to illustrate that information incorporated in the market for a firm's credit instruments, such as credit default swaps, must be related to

⁷Recent papers interested in risk premia embedded in CDS spreads construct a measure by linking risk-neutral default probabilities implied from CDS spreads to real-world default probabilities implicit in EDFs of Moody's KMV; see e.g. Berndt et al. (2008). Thus, these measures draw on different data sources and typically require some modeling assumptions for default probabilities or intensities.

expected returns of its equity. In the model of Merton (1974), the asset value is governed by a geometric Brownian motion with drift μ and volatility σ . Denoting the constant riskless interest rate by r , the firm's expected asset excess return per unit of volatility is given by

$$\lambda \equiv \frac{\mu - r}{\sigma}. \quad (1)$$

We refer to λ as the firm's asset Sharpe ratio or the firm's market price of risk. It is easy to show that the above structural framework implies that the instantaneous expected excess return per unit of risk for any claim on a firm's assets must equal λ and that its expected excess return is thus given by the product of λ and the claim's volatility.

We are interested in the relation between two particular claims on a firm's assets: equity and CDS contracts. Consider first the equity claim in the Merton model. Since the firm's debt is a zero-coupon bond with face value D and time-to-maturity T , equity represents a European call option on the firm's assets with strike equal to D and maturity T . The instantaneous expected excess return on equity ($\mu_E - r$) and the instantaneous equity volatility (σ_E) are therefore given by⁸

$$\mu_E - r = (\mu - r) \left[\frac{V}{E} E_V \right], \quad (2)$$

$$\sigma_E = \sigma \left[\frac{V}{E} E_V \right], \quad (3)$$

where E_V denotes the partial derivative of E with respect to V , i.e. the call option delta with $E_V > 0$. Combining equations (2) and (3) shows that the equity Sharpe ratio equals the firm's market price of risk, i.e. $\lambda_E \equiv \frac{\mu_E - r}{\sigma_E} = \lambda$.

To derive the CDS return characteristics, we start by noting that a European put option on assets (also with strike D and maturity T) offers a hedge against default risk by compensating bondholders for the loss given default. Consider a T -year CDS contract that offers credit insurance in exchange for periodic premium payments, the CDS spread, S^T , which the protection buyer pays until default occurs or the contract expires. Since default can only occur at maturity in the Merton framework, a T -year CDS contract offering credit protection

⁸For ease of notation we suppress all time subscripts.

must have the same present value as the put option. Assuming continuous premium payments the CDS spread for such a contract can be computed as

$$S^T = A^T \cdot P \quad \text{with} \quad A^T \equiv \frac{r}{1 - e^{-rT}}, \quad (4)$$

where A^T denotes the annuity factor and P the value of a European put option on assets.⁹ It follows that the CDS spread dynamics are a function of the put dynamics and because the put option is inversely related to the firm value, the same is true for the CDS spread. We define the expected CDS excess return as the difference between the drift under the “real-world” default probability measure \mathbb{P} ($\mu_S^{\mathbb{P}}$) and the “risk-neutral” default probability measure \mathbb{Q} ($\mu_S^{\mathbb{Q}}$).¹⁰

This CDS excess return captures differences between real-world and risk-neutral default expectations which, in general, arise when investors do not only care about the expected loss in the event of default but additionally demand a risk premium for the uncertainty related to default. Accounting for the market convention to quote constant time-to-maturity CDS spreads, we get for the instantaneous expected CDS excess return ($\mu_S^{\mathbb{P}} - \mu_S^{\mathbb{Q}}$) and CDS spread volatility σ_S , respectively,

$$\mu_S^{\mathbb{P}} - \mu_S^{\mathbb{Q}} = (\mu - r) \left[\frac{S_V}{S^T} \right], \quad (5)$$

$$\sigma_S = \sigma \left[\frac{S_V}{S^T} \right], \quad (6)$$

where S_V refers to the partial derivative of S^T with respect to V , i.e. it is the (scaled) put option delta and $S_V < 0$.¹¹ Combining Eqs. (5) and (6) shows that the CDS Sharpe ratio equals the firm’s market price of risk, i.e. $\lambda_S \equiv \frac{\mu_S^{\mathbb{P}} - \mu_S^{\mathbb{Q}}}{\sigma_S} = \lambda$.

⁹Note that for the calculation of the CDS spread we use a European put option with payoff scaled by the firm’s asset value. At any given point in time, t , instead of using the put (embedded in the bond) with payoff $\max(D - V_{t+T}, 0)$, we consider a put option with payoff $\max(D/V_{t+T} - 1, 0)$. The price of the latter is V_t times the price of the former, and both put options have the same delta. Scaling the payoff, however, ensures that CDS spreads are comparable across firms with different size.

¹⁰Note that the risk-neutral drift of the S^T -dynamics is not exactly equal to r because the CDS spread itself is not a traded asset (whereas the CDS contract is).

¹¹Note that unlike for put options which have a fixed maturity date, quoted CDS spreads in the market refer to a constant time-to-maturity (e.g. 5-year tenor). Thus, market CDS spreads are a function of the underlying asset value V , but not explicitly of time t , i.e. $S = s(V)$.

Thus, credit-implied market prices of risk are informative for equity Sharpe ratios because

$$\lambda_E = \lambda_S. \quad (7)$$

From Eqs. (2) and (5), we see that expected excess returns in equity and CDS markets are inversely related because of the claims' converse relation to the value of assets as reflected by $E_V > 0$ and $S_V < 0$. Expressing the equity risk premium in terms of the expected CDS excess return yields

$$(\mu_E - r) = \lambda_S \cdot \sigma_E \quad (8)$$

$$= -(\mu_S^{\mathbb{P}} - \mu_S^{\mathbb{Q}}) \cdot \left[S^T \cdot \frac{V}{E} \cdot \frac{E_V}{|S_V|} \right], \quad (9)$$

where we replaced S_V by $-|S_V|$ to emphasize the inverse relation between expected equity and CDS excess returns (since the expression in $[\cdot]$ is then > 0).

Building on these insights, we formulate the following measures of the CDS-implied market price of risk and CDS-implied risk premia that we estimate in our empirical analysis at time t for a (discrete) prediction horizon τ . To test the implication of Eq. (7) we define the credit-implied market price of risk ($MPR_{t+\tau}^T$) as

$$MPR_{t+\tau}^T \equiv \frac{\log \mathbb{E}_t^{\mathbb{Q}} [S_{t+\tau}^T] - \log \mathbb{E}_t^{\mathbb{P}} [S_{t+\tau}^T]}{\sqrt{\int_t^{t+\tau} \sigma_{S,u}^2 du}}, \quad (10)$$

where $\mathbb{E}_t^{\mathbb{Q}} [S_{t+\tau}^T]$ and $\mathbb{E}_t^{\mathbb{P}} [S_{t+\tau}^T]$ denote the conditional time- t expectations of the future CDS spread under the \mathbb{Q} and \mathbb{P} -measure, respectively, and the denominator refers to the volatility of the CDS spread across the interval $[t, t + \tau]$.

To measure the implied equity risk premium ($ERP_{t+\tau}^T$) consistent with Eq. (8), we multiply the market price of risk with the equity volatility:

$$ERP_{t+\tau}^T \equiv MPR_{t+\tau}^T \cdot \sqrt{\int_t^{t+\tau} \sigma_{E,u}^2 du}. \quad (11)$$

We also explore the cross-sectional relation between equity excess returns (and Sharpe

ratios) and risk premia in CDS markets by only focusing on the elements in the numerator of $MPR_{t+\tau}$. Taking this focus, we only need to estimate expected CDS spreads but avoid having to estimate the volatility of CDS spreads and, in contrast to sorting firms on the basis of $ERP_{t+\tau}^T$ defined in equation (11), may exclusively rely on credit market information. While it is an empirical question whether disregarding information on volatility alters our findings as compared to using $MPR_{t+\tau}^T$ or $ERP_{t+\tau}^T$, an analysis of common patterns in equity and credit risk premia is certainly interesting *per se*. We define the relative risk premium ($\log.RP_{t+\tau}^T$) by the numerator of $MPR_{t+\tau}^T$ in (10), which represents the first term in Eq. (9),

$$\log.RP_{t+\tau}^T \equiv \log \mathbb{E}_t^{\mathbb{Q}} [S_{t+\tau}^T] - \log \mathbb{E}_t^{\mathbb{P}} [S_{t+\tau}^T]. \quad (12)$$

Note that $\log.RP_{t+\tau}^T$ is independent of the credit spread level since it reflects the CDS excess return measured relative to $S_{t+\tau}^T$. To analyze whether the level of credit risk matters, we take the spread level explicitly into account by defining the risk premium $RP_{t+\tau}^T$ as the absolute difference between \mathbb{Q} - and \mathbb{P} -expectations of future CDS spreads

$$RP_{t+\tau}^T \equiv \mathbb{E}_t^{\mathbb{Q}} [S_{t+\tau}^T] - \mathbb{E}_t^{\mathbb{P}} [S_{t+\tau}^T]. \quad (13)$$

We describe in Section 3 how we use CDS data to implement equations (10) to (13) empirically.

3 Using CDS Spreads to Estimate Credit Risk Premia

This section lays out how we estimate credit (market-implied) risk premia from the term structure of CDS spreads. Our usage of CDS data is motivated by previous research documenting that CDS spreads represent more timely market information and are less contaminated by tax and liquidity effects than corporate bond yield spreads.¹²

¹²Empirical evidence shows that corporate bonds earn an expected excess return even after accounting for the likelihood of default because of priced tax and liquidity effects as well as risk premia that compensate for bearing credit risk; see e.g. Elton et al. (2001), Huang and Huang (2002), Driessen (2005). Berndt et al. (2008) use CDS spreads to estimate risk premia because empirical research suggests that CDS spreads represent fresher market prices than corporate yield spreads (see e.g. Blanco et al., 2005) and are less corrupted by tax and liquidity effects (see e.g. Longstaff et al., 2005; Ericsson et al., 2007). Hence, the difference in their estimates

To estimate the CDS-implied market price of risk and CDS-implied risk premia defined in Eqs. (10) to (13), we need to estimate risk-neutral and real-world expectations of future CDS spreads. We first note that, for a given prediction horizon τ , the risk-neutral expectation of the future CDS spreads is given by the forward CDS spread contracted at time t and being effective from time $t + \tau$ for T periods,

$$\mathbb{E}_t^{\mathbb{Q}} [S_{t+\tau}^T] = F_t^{\tau \times T}, \quad (14)$$

and, hence, can be directly extracted from the term structure of CDS spreads. If credit market participants demand compensation for bearing risk, forward CDS spreads comprise the \mathbb{P} -expected future CDS spread plus the risk premium defined in Eq. (13),

$$F_t^{\tau \times T} = \mathbb{E}_t^{\mathbb{P}} [S_{t+\tau}^T] + RP_{t+\tau}^T. \quad (15)$$

The expected change in the CDS spread in excess of the risk-neutrally expected (i.e. forward-implied) change is thus given by minus the risk premium,

$$\mathbb{E}_t^{\mathbb{P}} [RX_{t+\tau}^T] \equiv \mathbb{E}_t^{\mathbb{P}} [S_{t+\tau}^T] - F_t^{\tau \times T} = -RP_{t+\tau}^T, \quad (16)$$

which reminds us of the the inverse relation between excess returns in equity and CDS markets. Analogously, the CDS excess return is inversely related to the (relative) risk premium defined in Eq. (12),

$$\mathbb{E}_t^{\mathbb{P}} [\log.RX_{t+\tau}^T] \equiv \log \mathbb{E}_t^{\mathbb{P}} [S_{t+\tau}^T] - \log F_t^{\tau \times T} = -\log.RP_{t+\tau}^T, \quad (17)$$

which also serves as the numerator for the CDS Sharpe ratio and thus for the credit-implied market price of risk defined in Eq. (10).

To estimate credit risk premia, we draw on concepts established in the fixed income

 of risk-neutral and real-world default intensities should allow to obtain a clean measure of credit risk premia. Other aspects that might potentially affect measures of credit risk premia, both using CDS spreads and yield spreads, are microstructure issues and counterparty credit risk. Arora et al. (2010) find that counterparty credit risk is priced but that its magnitude is small.

literature. In particular, our approach is motivated by Cochrane and Piazzesi (2005) who extract a single factor from the term structure of forward interest rates to estimate bond risk premia. We extract a single factor from the term structure of forward CDS spreads to estimate credit risk premia.¹³ For each firm, we start by calculating the cross-maturity average of observed CDS Sharpe ratios ($\overline{SR}_{t+\tau}$), CDS excess returns ($\overline{\log.RX}_{t+\tau}$), and excess changes ($\overline{RX}_{t+\tau}$) for contracts with maturities $T_k \in T = \{1, 3, 5, 7\}$,¹⁴

$$\overline{SR}_{t+\tau} \equiv \frac{1}{4} \sum_{T_k \in T} \frac{\log.RX_{t+\tau}^{T_k}}{SD_{t+\tau}}, \quad \overline{\log.RX}_{t+\tau} \equiv \frac{1}{4} \sum_{T_k \in T} \log.RX_{t+\tau}^{T_k}, \quad \overline{RX}_{t+\tau} \equiv \frac{1}{4} \sum_{T_k \in T} RX_{t+\tau}^{T_k}, \quad (18)$$

where $SD_{t+\tau}$ refers to the sample standard deviation of daily CDS spread returns between t and $t+\tau$. For each of these cross-maturity averages, we estimate the common factor across T_k by regressing $\overline{SR}_{t+\tau}$, $\overline{\log.RX}_{t+\tau}$, and $\overline{RX}_{t+\tau}$, on the term structure of forward CDS spreads, respectively. We define the firm's CDS term structure to be represented by the current 1-year CDS spread and forward CDS spreads of contracts starting in one year and being effective for 1, 3, 5, and 7 years and define the vector $\mathbf{F}_t = (1, S_t^1, F_t^{1 \times 1}, F_t^{1 \times 3}, F_t^{1 \times 5}, F_t^{1 \times 7})$. We denote the corresponding vector of regression parameters by $\boldsymbol{\gamma}^j = (\gamma_0^j, \gamma_1^j, \gamma_2^j, \gamma_3^j, \gamma_4^j, \gamma_5^j)$ where $j \in J = \{SR, \log.RX, RX\}$.¹⁵ Using these regressions, we obtain estimates for the CDS-implied market price of risk and risk premia as defined in Eqs. (10) to (13) which reflect

¹³Our choice of a single factor approach in the spirit of Cochrane and Piazzesi (2005) is motivated by their empirical success to extract the predictable component of bond risk premia from the term structure of yields. Of course, one could think of more sophisticated modeling approaches for (the term structure of) CDS spreads. Since the focus of this paper is to establish the relation between credit and equity markets and not the modeling of (the term structure of) CDS spreads per se, we leave this issue for future research. Furthermore, note that such sophisticated models do not necessarily enhance predictive ability. For instance, Cochrane and Piazzesi (2005) argue that the predictability they find is not spanned by standard affine term structure models.

¹⁴We choose this set of maturities for CDS excess returns and also the CDS term structure, because forward CDS spreads corresponding to these maturities can be calculated using the canonical CDS maturities of 1, 3, 5, 7, and 10 years.

¹⁵Thus, the regression specification for RX (and analogously for $\log.RX$ and SR) is given by

$$\begin{aligned} \overline{RX}_{t+\tau} &= \gamma_0^{RX} + \gamma_1^{RX} S_t^1 + \gamma_2^{RX} F_t^{1 \times 1} + \gamma_3^{RX} F_t^{3 \times 1} + \gamma_4^{RX} F_t^{5 \times 1} + \gamma_5^{RX} F_t^{7 \times 1} + \varepsilon_{t+\tau}^{RX} \\ &= (\boldsymbol{\gamma}^{RX})^\top \mathbf{F}_t + \varepsilon_{t+\tau}^{RX}, \end{aligned}$$

time- t conditional expectations. We get

$$\widehat{MPR}_{t+\tau} = -(\gamma^{SR})^\top \mathbf{F}_t, \quad (19)$$

$$\widehat{ERP}_{t+\tau} = -(\gamma^{SR})^\top \mathbf{F}_t \cdot \widehat{\sigma}_{E,t,\tau}, \quad (20)$$

$$\widehat{\log.RP}_{t+\tau} = -(\gamma^{\log.RX})^\top \mathbf{F}_t, \quad (21)$$

$$\widehat{RP}_{t+\tau} = -(\gamma^{RX})^\top \mathbf{F}_t, \quad (22)$$

where, in Eq. (20), $\widehat{\sigma}_{E,t,\tau}$ denotes the time- t conditional equity volatility which we estimated as the sample standard deviation of daily equity returns from $t - \tau$ to t .¹⁶

The estimates in Eqs. (19) to (22) are expectations conditional on CDS term structure information that is available at time t . In our empirical analysis, we first directly follow Cochrane and Piazzesi (2005) to estimate the parameters using full sample information, but we also estimate γ^j only using information up to time t . We then sort firms into portfolios based on their estimated market prices of risk and risk premia to explore whether the cross-sectional implications of the structural model are confirmed by the data.

4 Empirical Analysis

4.1 Data

We obtain daily CDS spreads for 675 USD denominated contracts of US based obligors from Markit for the period between January 2, 2001 and April 26, 2010. We use only the five canonical CDS maturities of 1, 3, 5, 7, and 10 years since these are most frequently quoted and traded. The protection payment may be triggered by several different restructuring events, ranging from no-restructuring to full-restructuring. We include contracts that adopt the modified-restructuring (MR) clause, which was the market convention before the introduction of the CDS Big Bang protocol in April 2009, and contracts that adopt the no-restructuring (NR) clause, which has been the market standard since the changes of the protocol took

¹⁶When estimating CDS and equity volatility, we also experiment with a variety of other estimation specifications (different lengths of the rolling windows, weighting schemes, etc.) and find that the choice does not have a material impact on our conclusions with respect to the link between CDS and equity markets.

place. This leaves us with 808,779 observations of the CDS term structure for 675 firms. We calculate forward CDS spreads using the survival curve fitted to the CDS term structure and discount factors computed from US Libor money market deposits and interest rate swaps obtained from Datastream (for details see Appendix A).

For our analysis of the link between stock and CDS markets, we obtain daily equity data from the Center for Research in Security Prices (CRSP) and monthly firm fundamentals and credit ratings from Compustat of Standard & Poor's.¹⁷ We exclude firms for which stock data is not available (in most cases these are privately-held firms or non-listed subsidiaries) and also apply a filter to remove stale price observations, where we define prices to be stale if we observe equal prices on at least five consecutive days. In such a case we only consider the first of these observations and classify the subsequent observations as not available. We compute the firm's market value by the product of the stock price and the number of publicly held shares. The book-to-market value is determined by Compustat data item "Common/Ordinary Equity Total" (CEQQ) divided by the product of data item "Common Shares Outstanding" (CSHOQ) and the stock's price. To compute the firm's distance-to-default (see Appendix B) we obtain book values of liabilities using the Compustat annual files. To estimate the firm's notional debt value we follow the literature (for references also see Appendix B) and assume that it consists of short-term and long-term debt: for short-term debt we use Compustat data item "Long-Term Debt Due in One Year" (DD1) which represents the current portion of long-term debt. For long-term debt we use the Compustat data item "Long-Term Debt - Total" (DLTT). As a further proxy for distress risk we rely on a firm's credit rating which we obtain from Compustat using the data item "Domestic Long Term Issuer Credit Rating" (SPLTICRM-S&P).

Merging all data sets leaves us with 805,184 joint observations of CDS spreads, stock prices, firm characteristics, and credit ratings for a total of 624 firms in the period from January 2, 2001 to April 26, 2010. The standard risk factors in our asset pricing tests, the

¹⁷We obtain the data through Wharton Research Data Services (WRDS). We merge equity data obtained from CRSP with firm characteristics from Compustat using CRSP/Compustat Merged Database (CCM). The resulting data set is then combined with the CDS data set obtained from Markit. The link between Markit's ticker symbols and CUSIPs is established using Markit's US corporate bond data which provides a time series of valid links between tickers and CUSIPs.

CAPM market factor, the three factors proposed by Fama and French (1993), and the four factors proposed by Carhart (1997), as well as the riskless return, are obtained from Kenneth French’s website.¹⁸

4.2 Descriptive Statistics and Predictability of CDS Spreads

We start by summarizing various descriptive statistics for the CDS data in Table 1. The left column summarizes results for the full sample (01/2001–04/2010), the middle for the pre-crisis period (01/2001–06/2007), and the right for the crisis period (07/2007–04/2010). The statistics are calculated based on monthly data for all firms in the sample. Forward CDS spreads are calculated as described in Appendix A.

The summary statistics show that CDS markets behave differently before and during the crisis. The mean level of CDS spreads has been approximately 120 basis points higher during the crisis as compared to before and the average standard deviation has (more than) doubled. While the term structure is almost always upward sloping before the crisis (with slope being defined as the T -year minus the 1-year CDS spread), one frequently observes inverted shapes during the crisis. This is also reflected in forward-implied CDS spread changes (i.e. $F_t^{\tau \times T} - S_t^T$). Changes in CDS spreads ($S_{t+\tau}^T - S_t^T$) are on average negative prior to July 2007 while after the start of the crisis changes have a positive mean, are larger in absolute terms, and more volatile. Excess changes in CDS spreads ($RX_{t+\tau}^T$, see Eq. (16)) tend to be negative prior to the crisis but positive during the crisis. This suggests that forward CDS spreads overestimated future CDS spreads in the first part of our sample but underestimated subsequent spreads in the latter part, which provides a first indication for the presence of time-varying risk premia. Considering the sub-sample results also reveals that risk premia are the driving force behind CDS spread changes, being the larger component in average spread changes (in the crisis up to ten times). Furthermore, the volatility of spread changes is almost entirely driven by the volatility of $RX_{t+\tau}^T$. We present analogue results for forward-implied CDS returns ($\log F_t^{\tau \times T} - \log S_t^T$), realized CDS returns ($\log S_{t+\tau}^T - \log S_t^T$), and CDS excess returns ($\log RX_{t+\tau}^T$, see Eq. (17)).

¹⁸<http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/>

Our structural framework implies that equity excess returns are related to credit market-implied risk premia. We therefore start by assessing the predictability of risk premia in CDS markets. In the absence of risk premia, forward CDS spreads should be unbiased predictors for future spot CDS spreads, see Eq. (15), and excess changes in CDS spreads should be unpredictable. In analogy to the literature on bond markets (see e.g. Fama and Bliss, 1987; Campbell and Shiller, 1991) and currency markets (see e.g. Fama, 1984), we regress, on a firm-by-firm basis, the excess changes, excess returns, and Sharpe ratios of the T -year CDS spread on the lagged T -year forward-implied CDS spread change. The results in Table 2 provide some evidence for time-variation in risk premia: the average R^2 across firms is around 0.07 for $RX_{t+\tau}^T$ (top sub-panel in Panel A), 0.04 for $\log.RX_{t+\tau}^T$ (Panel B), and 0.03 for $SR_{t+\tau}^T$ (Panel C) in the full sample, and the results suggest that predictability is somewhat higher during as compared to before the crisis.

Following the ideas of Cochrane and Piazzesi (2005), we relate CDS risk premia to the full term structure of forward CDS spreads as discussed in Section 3. We present R^2 s for an unconstrained estimation in which we regress the excess change (second sub-panel of Panel A), the excess return (Panel B), the Sharpe ratio (Panel C) of the T -year CDS spread on all forward CDS spreads (\mathbf{F}_t), as well as for regressions on the estimate of the single factor $(\gamma^{RX})^\top \mathbf{F}_t$, $(\gamma^{\log.RX})^\top \mathbf{F}_t$, and $(\gamma^{SR})^\top \mathbf{F}_t$, respectively, in the bottom sub-panels. Our findings suggest that $RX_{t+\tau}^T$ is indeed predictable in both sub-samples and in the full sample. Moreover, the single-factor, which represents the common component across CDS maturities, captures most of the variation that is explained by the unconstrained estimation. The average R^2 s for the unconstrained estimation range from 0.35 to 0.38 in the pre-crisis period and from 0.37 to 0.42 during the crisis. The single-factor model R^2 s range from 0.25 to 0.29 and from 0.31 to 0.33 before and in the crisis, respectively.¹⁹ The predictability results for $\log.RX_{t+\tau}^T$ and $SR_{t+\tau}^T$ share similar features but are somewhat less pronounced

¹⁹Other results not reported, include diagnostic checks of the residuals of the firm-by-firm estimations of the single-factor model. In particular, we test for serial correlation using the Durbin-Watson, Box-Pierce, and Ljung-Box statistics. Average (bootstrapped) p-values are around 0.40 across statistics and samples. We only detect significant auto-correlation for a few firms, typically with shorter time series when using monthly data. Furthermore, as a benchmark for the predictability results, we also estimate AR(1) models for excess changes in CDS spreads. On average, the R^2 s are somewhat lower than those of the unbiasedness regressions and substantially lower than those of the single-factor model.

which suggests that explicitly accounting for the level of CDS spreads increases the predictive ability.

Our findings thus show that the term structure of CDS spreads contains information about risk premia. Excess changes in CDS spreads are predictable and, on average, a single factor extracted from a firm’s term structure of CDS spreads captures 25% to 33% of the variation in the sub-samples and around 25% when considering the two (substantially different) periods jointly. In what follows, we show that CDS-implied risk premia are also priced in the cross-section of stock returns.

4.3 Credit Risk Premia and Equity Returns

We now explore the cross-sectional relation between firms’ stock returns and credit market-implied risk premia by conducting portfolio sorts. At the end of each month, we assign firms to quintile portfolios from high risk firms (portfolio P1) to low risk firms (portfolio P5). We compute equally- and value weighted portfolio excess returns and Sharpe ratios and also analyze how these are related to common measures of distress risk. To take a first look at whether the data confirms our predictions from the structural framework, we use all four credit market-based estimates motivated in Section 3 and defined in Eqs. (10) to (13): the firm’s CDS-implied market price of risk ($\widehat{MPR}_{t+\tau}$), its equity risk premium ($\widehat{ERP}_{t+\tau}$), its relative credit risk premium ($\widehat{\log.RP}_{t+\tau}$), and its credit risk premium ($\widehat{RP}_{t+\tau}$).

The results in Table 3 reveal that using either of the four estimates leads to qualitatively identical conclusions with two key insights. First, there is a strong positive relation of stock returns and Sharpe ratios to CDS-implied market prices of risk and CDS-implied risk premia: in accordance with our structural model, we find a monotonic decrease of equity excess returns and Sharpe ratios from the portfolio of firms with highest risk premia (P1) to the portfolio of firms with lowest risk premia (P5). Buying portfolio P1 and selling portfolio P5 results in a highly significant excess return, independent of the particular estimate used and the return weighting scheme applied. Second, we find that there is no direct relation between CDS-implied risk premium estimates and common measures of distress risk: estimates are neither monotonically related to the distance-to-default (DD) nor to the level of the 5-year CDS

spread ($S5$), which serve as proxies for a firm’s real-world and risk-neutral default probability, respectively.²⁰ Instead we find, from portfolio P1 to portfolio P5, that $S5$ exhibits a U-shape and that DD is inversely U-shaped. Similarly, there is no monotonic pattern across portfolios related to firm size (MV) and book-to-market ratios (BM), rather, portfolios P1 and P5 are dominated by small stocks and value firms. Thus, our estimates of credit risk premia convey equity-relevant information that is priced in the cross-section of stock returns but this information is different from that incorporated in common measures of distress risk.

Taking a closer look at the numerical results, we find that the high minus low risk premium portfolio earns highest equity excess returns when we sort firms using $\widehat{RP}_{t+\tau}$, yielding a monthly P1–P5 return of 2.91% and 1.96% for equally- and value-weighted portfolios, respectively, with corresponding (annualized) Sharpe ratios of 2.11 and 1.53. Sorting firms based on $\widehat{MPR}_{t+\tau}$ yields the lowest P1–P5 return differentials with 1.80% and 1.59% per month and Sharpe ratios of 2.06 and 1.54 for equally- and value-weighted portfolios. Portfolios sorted by $\widehat{ERP}_{t+\tau}$ and $\widehat{\log.RP}_{t+\tau}$ generate somewhat higher Sharpe ratios but, as compared to $\widehat{RP}_{t+\tau}$, lower return differentials. Considering the relation to measures of distress risk, we find that the cross-portfolio variation in DD , $S5$, MV , and BM is small for all credit risk premium estimates, and that the (inverse) U-shaped patterns between our estimates and the common distress risk measures are most pronounced for $\widehat{RP}_{t+\tau}$.

Overall, the results in Table 3 suggest that CDS spreads contain information about equity risk premia that is conveyed by all four market price of risk and risk premium estimates but not embedded in common measures of distress risk. The relation between equity excess returns and Sharpe ratios to credit risk premia is strong and –consistent with the structural framework– positive: the higher a firm’s credit risk premium (credit Sharpe ratio), the higher the firm’s equity returns (equity Sharpe ratio).

In the remainder of this section, we explore the relation between equity and credit risk premia in more depth by presenting pre-crisis and crisis sub-sample results, accounting for

²⁰The DD estimation procedure that we apply follows Vassalou and Xing (2004). For details see Appendix B. Using credit ratings as an alternative proxy for ranking firms based on their real-world default probability leads to the same patterns. The CDS spread is a combination of risk-neutral default probability and recovery rate. We follow the majority of the literature and assume a constant recovery rate of 40% across all firms, thus, ranking firms by their CDS spread is equivalent to ranking them by their risk-neutral default probability.

traditional risk factors, controlling for firm characteristics, and corroborating our findings in an out-of-sample analysis. Moreover, we discuss the insights that our results can provide for the distress puzzle (the empirical finding that equity risk premia are negatively related to default probabilities) and the link between CDS slope and equity returns. We present further robustness checks, including a repetition of our core empirical analysis using an alternative data set. Since all our findings are qualitatively identical when ranking firms by either of the four estimates for CDS-implied market prices of risk and risk premia, we mainly focus our presentation and discussion of results on credit risk premia to facilitate comparison with related research.

4.3.1 Portfolios Sorted by Credit Risk Premia

To take a closer look at the properties of equity excess returns of portfolios sorted by firms' CDS-implied market prices of risk ($\widehat{MPR}_{t+\tau}$) and credit risk premia ($\widehat{RP}_{t+\tau}$), we control for traditional risk factors using the CAPM, the Fama and French (1993) three-factor model, and the four-factor extension of Carhart (1997). We judge the significance of mean returns and factor-model alphas by t -statistics based on heteroskedasticity and autocorrelation consistent standard errors following Newey and West (1987) where we choose the optimal truncation lag as suggested by Andrews (1991).

We start by presenting detailed results for the $\widehat{MPR}_{t+\tau}$ -portfolios in Table 4. As indicated in the column header, the left part of the table contains results for the full sample, the middle for the pre-crisis period (01/2001–06/2007), and the right part for the crisis period (07/2007–04/2010). We summarize the portfolio's mean estimate of the CDS-implied market price of risk and show that the cross-portfolio dispersion in averages of DD , $S5$, MV , and BM is small. Panel A presents details on equally-weighted portfolios and reports significant P1–P5 returns of 1.80% per month in the full sample, 1.73% prior to the crisis, and 3.28% during the crisis with corresponding (annualized) Sharpe ratios of 2.06, 2.55, and 3.44, respectively. The results for value-weighted portfolios in Panel B exhibit the same patterns and are highly significant as well but less pronounced. The decrease in equity returns and Sharpe ratios from P1 to P5 is not monotonic in all cases, though. The factor-model alpha estimates are similar

to the mean returns, only during the crisis controlling for momentum leads to a noticeable difference in equally-weighted returns. During the crisis, the portfolios positively load on the market factor, which is also reflected in the full sample results. The factor loadings for the long-short portfolios are not significantly different from zero, with the exception of the market factor during the crisis and HML prior to the crisis but in both cases only for value-weighted returns.

The results in Table 5 reveal that the relation of equity returns to credit risk premium estimates $\widehat{RP}_{t+\tau}$ is qualitatively the same but stronger in quantitative terms. The portfolio characteristics show that there is comparably larger but still moderate cross-portfolio variation in common measures of distress risk. The relation of $\widehat{RP}_{t+\tau}$ exhibits an inverse U-shaped pattern with DD and MV and a U-shaped pattern with $S5$ and BM . In other words, firms with highest risk premia in *absolute* terms (i.e. firms in P1 and P5) have high default probabilities (i.e. lower DD and higher $S5$), are small in size, and have high book-to-market ratios. We find, both for equally- and value-weighted portfolios, that the portfolio returns and Sharpe ratios monotonically decrease from P1 to P5. The equally-weighted (value-weighted) excess returns to buying firms with highest risk premia (P1) and selling firms with lowest risk premia (P5) amount to 2.91% (1.96%) per month in the full sample, to 2.70% (2.49%) prior to the crisis, and 5.85% (4.65%) during the crisis with corresponding (annualized) Sharpe ratios being 2.11 (1.53), 2.40 (2.25), and 3.28 (2.67), respectively. The alpha-estimates show that P1–P5 returns remain highly significant after controlling for traditional risk factors. Furthermore, there are no monotonic cross-sectional patterns for factor loadings and the factor loadings for the long-short portfolios are not significantly different from zero; the single exception is the HML loading for the equally-weighted portfolio, driven by the pre-crisis period. For the market factor, the relation of beta estimates to credit risk premia is U-shaped with highest beta estimates for P1 and P5 and lowest estimates in P3. The credit risk premia that we estimate from the term structure of CDS spreads, thus, appear to convey additional information relevant for equity risk premia that is not captured by traditional risk factors.

Our findings suggest that the strong link between equity and credit markets is particularly pronounced during the crisis and we, thus, because a sizeable fraction of our sample covers

the recent financial crisis, verify that our results are robust to excluding financial firms (SIC codes 6000–6999) and utility firms (SIC codes 4900–4999) from the sample. Table 6 shows that the results in the pre-crisis period are basically unchanged. In the crisis period, we find that the high minus low risk premium return drops from 5.85% to 4.68% per month for equally-weighted portfolios and from 4.65% to 3.56% for value-weighted portfolios. Thus, the relation between credit risk premia and stock returns appears to have been particularly strong for financial firms during the crisis but also exists for non-financial firms since returns and factor model alphas remain highly significant.²¹

Overall, our findings document a strong link between credit and equity markets that is driven by (joint) risk premia: stocks of firms with higher credit risk premia earn higher equity excess returns and have higher Sharpe ratios. Moreover, we find that credit risk premia embedded in the term structure of CDS spreads contain information beyond that conveyed by traditional risk factors and common measures of distress risk. We investigate the interaction of credit risk premia with other variables in more detail below.

4.3.2 Controlling for Firm Characteristics

To gain deeper insights into the relation between firm characteristics and the pricing of credit risk premia in equity returns, we conduct a sequential portfolio sort analysis. We first sort firms into tercile portfolios based on the common measures for distress risk used above as well as a proxy for CDS market liquidity. In the second step, we form three sub-portfolios using firms' credit risk premium estimates.

Controlling for Size and Book-to-Market Table 7 reports results when we sort firms first into tercile portfolios based on their size (P1.*, P2.*, P3.*) and subsequently into three sub-portfolios based on credit risk premia (P*.1, P*.2, P*.3). We find that credit risk premia are priced in all size portfolios, i.e. the P*.1–P*.3 returns are highly significant for small, medium, and big firms. The effect is most pronounced in the small firm portfolio and excess returns of the long-short portfolios decrease with increasing firm size from around 3% per

²¹ Again, the results are very similar when sorting firms using estimates of their CDS-implied market price of risk.

month for small firms to around 1% for big firms. The factor model alphas are significant as well but factor loadings are not with the exception of a negative market beta in the small firm portfolio.

Second, we control for book-to-market ratios and present results in Table 8. Similar to the results for firm size, we find that the pricing effect is significant in all book-to-market portfolios but that the equally-weighted (value-weighted) $P^*.1-P^*.3$ return decreases from 3.1% (2.4%) per month for value firms to 1.9% (0.9%) for growth firms. Furthermore, the differential return for growth firms positively loads on the market factor.

Our findings that the price of credit risk in equity returns decreases with size and increases with book-to-market is consistent with the non-monotonic relation of MV and BM to credit market-implied risk premia reported above. Furthermore, they are in line with the general notion that small firms and value firms earn comparably higher stock returns (because these firms are exposed to higher distress risk) than bigger firms or firms with lower BM . Nevertheless, finding that credit risk premia are significantly priced in all size and book-to-market portfolios strengthens our argument that credit risk premia estimated from CDS spreads contain information not captured by size and book-to-market.

Controlling for Default Probability and CDS Liquidity Next, we take a closer look at the relation between equity returns and credit risk premia when we control for the probability of default. We use ratings and the 5-year CDS spread as proxies for the real-world and risk-neutral default probabilities, respectively.²² Tables 9 and 10 remind us that firms with higher default probabilities also have higher absolute credit risk premia. As a result, we find that the magnitude of credit risk premia priced in equity returns decreases with the default probability from more than 3% per month to less than 1% when controlling for ratings and to less than 0.5% when controlling for the CDS spread level. For both proxies the return differentials are significant in all default probability portfolios for both weighting-schemes, with the single exception being the value-weighted differential in the portfolio with lowest CDS spread firms.

Finally, we control for liquidity in CDS markets using the number of contributors reported by Markit, i.e. the number of market participants that provide a quote for the firm's 5-year

²²Results are very similar when using the distance-to-default (DD) instead of credit ratings.

CDS contract.²³ The results in Table 11 suggest that credit risk premia are significantly priced in all liquidity portfolios and that the magnitude increases with the number of contributors. Finding that the risk premium effect increases with liquidity suggests that credit risk premia estimated from CDS excess changes do not reflect liquidity premia in CDS markets, on the contrary, it appears that the link between equity and CDS markets is stronger when the firm's contract is more liquid. In our robustness analysis using an alternative data set (see Section 4.3.4 and Internet Appendix CC), we present results using CDS bid-ask spreads and report a very similar finding. We find that the pricing effect of credit risk premia is inversely related to bid-ask spreads which implies that credit risk premia increase with liquidity and decrease with transaction costs.

Sub-Sample Results We summarize the sub-sample results of our sequential-sort analysis of risk premium effects controlled for firm characteristics in Table 12. For size, book-to-market, ratings and CDS spread level, we find the same patterns as described for the full sample with results being more pronounced during the crisis. When we control for CDS market liquidity, the results are significant across all liquidity portfolios as well, however, the pattern appears to reverse when comparing the pre-crisis to the crisis period. Prior to the crisis, we find highest excess returns on the high minus low risk premium strategy for firms with lowest liquidity; the cross-sectional patterns for the alpha estimates are not monotonic, though. During the crisis we find highest excess returns for firms with the largest number of quote contributors (similar to the full sample). These results suggest that while credit risk premia are priced in equity returns in both sub-samples, their interaction with CDS market liquidity may have changed. We thus leave it for future research to investigate the role of illiquidity and arbitrage cost considerations in more detail.

4.3.3 Out-of-Sample Parameter Estimation

So far, to generate time- t conditional credit risk premia we only use the CDS term structure information available at t but estimation of the parameters γ is based on full sample informa-

²³For a discussion of the number of contributors as a measure of liquidity in CDS markets and other proxies see, e.g., Qiu and Yu (2011).

tion; in doing so we exactly follow Cochrane and Piazzesi (2005). Now, we also estimate the parameters conditional on the time- t information set only. The out-of-sample results reinforce our findings and also alleviate potential concerns that look-ahead bias could have an impact on our conclusions.

To generate out-of-sample forecasts, we estimate predictive regressions using the single-factor model described in Section 3 with monthly and also with weekly data. We apply different sampling schemes (rolling and expanding windows) to estimate the conditional mean or conditional quantiles of the risk premium distribution (using ordinary least squares (OLS) or quantile regressions (QR), respectively).²⁴ Furthermore, we account for potential changes in the data generating process using standard intercept corrections.²⁵ Using the risk premium forecasts, we sort firms in either quintile or decile portfolios.

We plot the cumulative excess returns of buying high and selling low risk premium firms in Figures 1 and 2 using an expanding window with initial length of one year and a rolling one-year window for the forecast estimation, respectively. Since data is available from January 2001, the out-of-sample period thus covers January 2002 to April 2010. Panels A and B report results for quintile and decile portfolios with left columns plotting the cumulative excess returns (CER) and right columns plotting CER scaled by the standard deviation of the excess returns; the scaled CER can be interpreted as ‘cumulative’ Sharpe ratios.²⁶ The solid line represents the high minus low risk premium strategy and the dashed lines in black (grey) plot the performance of buying small (value) and selling big (growth) firms.

²⁴Our motivation to use quantile regressions is based on the observation that the distribution of credit risk premia is asymmetric. Typically, when we sort portfolios by credit risk premia, the difference between the average credit risk premium in the lowest risk premium portfolio and the sample average risk premium is larger (in absolute terms) than the corresponding difference for the high risk premium portfolio; see the row labeled “Sort Variable” in Tables using the credit risk premium to sort firms into portfolios. Accordingly, we set the quantile to be estimated in the regression to 20% when we use quintile portfolios and to 10% when we use decile portfolios.

²⁵We implement the intercept correction as follows. Using the single-factor model $\overline{RX}_{t+\tau} = (\gamma^{RX})^\top \mathbf{F}_t + \varepsilon_{t+\tau}^{RX}$, we have that $\mathbb{E}_t^\mathbb{P}[\overline{RX}_{t+\tau}] = (\gamma^{RX})^\top \mathbf{F}_t$ and we define the forecast error $\nu_{t+\tau} \equiv \overline{RX}_{t+\tau} - \mathbb{E}_t^\mathbb{P}[\overline{RX}_{t+\tau}]$. We rewrite the conditional expectation of the next period’s excess return as

$$\mathbb{E}_{t+\tau}^\mathbb{P}[\overline{RX}_{t+2\tau}] = (\gamma^{RX})^\top \mathbf{F}_{t+\tau} = \mathbb{E}_t^\mathbb{P}[\overline{RX}_{t+\tau}] + (\gamma^{RX})^\top (\mathbf{F}_{t+\tau} - \mathbf{F}_t). \quad (23)$$

To compute the forecast for the excess return from $t + \tau$ to $t + 2\tau$, we replace last periods expectation, $\mathbb{E}_t^\mathbb{P}[\overline{RX}_{t+\tau}]$, by the observed realized excess return, $\overline{RX}_{t+\tau}$, in Eq. (23), hence correcting the intercept by the forecast error. For discussions on such uses of intercept corrections in forecasting see e.g. the survey of Clements and Hendry (2006) and other chapters in Elliot et al. (2006).

²⁶Dividing the terminal value of the scaled CER by the number of observations and multiplying by $\sqrt{1/\tau}$ gives the annualized Sharpe ratio.

The plots reveal that buying high and selling low risk premium firms is profitable, independent of the forecast specification and irrespective of the number of portfolios used. As can be seen from all graphs, the strategy appears to perform best when the size and book-to-market portfolios perform worst (i.e. during the crisis), whereas the opposite is not necessarily the case. Over the full out-of-sample period, the performance of the credit risk premium strategy is generally better than that of the size and book-to-market portfolios. This out-performance is more pronounced when accounting for the volatility of equity excess returns which reflects the comparably low standard deviation of the high minus low credit risk premium returns.

We report detailed results in Table 13, for monthly data in Panel A and for weekly data in Panel B. At the monthly frequency, the annualized four-factor alphas range from 5.44% to 7.37% when using the OLS forecasts (mostly not significant) and from 8.28% to 13.31% using the QR forecasts (highly significant). At the weekly frequency, the corresponding annualized alpha estimates range from 6.96% to 14.27% (mostly not significant) when using the OLS forecasts and from 8.53% to 18.57% when using the QR forecasts (highly significant, except for the quintile portfolios sorted by expanding window estimates). All long-short risk premium portfolio returns exhibit a negative correlation with the respective long-short *MV* and *BM* portfolio returns. These results once more suggest that risk premia estimated from CDS data convey information for equity risk premia that is not captured by traditional risk factors like size and book-to-market.

The out-of-sample results thus confirm our conclusion that there is a strong positive relation between credit risk premia and equity returns. The facts that our results get stronger when using decile instead of quintile portfolios and weekly instead of monthly frequency further corroborate our findings. We leave it for future research to further exploit the link between equity and credit markets using more sophisticated econometric techniques for out-of-sample forecasting.

4.3.4 Additional Results and Robustness Checks

In this subsection, we summarize insights that our findings offer related to the distress puzzle and related to the link between CDS slope and equity returns. We provide further evidence

for the robustness of our results with our most comprehensive check being to a repetition of the core empirical analysis using an alternative data set. To save space, we delegate a detailed discussion and presentation of these additional results to the separate Internet Appendix.

Equity Risk Premia and Default Probabilities In light of the recent debate on whether default risk is positively, negatively, or at all priced in stock returns, we take a closer look at the relation between the firm’s return on equity and its probability of default. The model of Merton (1974), similar to other structural models, implies a specific relation between a firm’s risk-neutral default probability ($PD^{\mathbb{Q}}$) and its real-world default probability ($PD^{\mathbb{P}}$) which can be used to express λ as

$$\lambda = \left(\Phi^{-1}(PD^{\mathbb{Q}}) - \Phi^{-1}(PD^{\mathbb{P}}) \right) \frac{1}{\sqrt{T}}, \quad (24)$$

where Φ is the standard normal cumulative distribution function and Φ^{-1} is the inverse of Φ . The relation in Eq. (24) shows that the firm’s market price of risk is associated with, both, the firm’s risk-neutral *and* the firm’s real-world default probability and that λ increases with the difference in (the Φ^{-1} of) $PD^{\mathbb{Q}}$ and $PD^{\mathbb{P}}$. As mentioned above, such differences account for risk premia that investors demand beyond the expected loss given default. The model thus implies that, in the cross-section, λ must be related to firms’ differences in $PD^{\mathbb{Q}}$ and $PD^{\mathbb{P}}$. Because the dynamics of claims on assets are related to λ , equity risk premia must be related to, both, $PD^{\mathbb{Q}}$ *and* $PD^{\mathbb{P}}$ as well. While the credit-implied risk premium measures that we propose above incorporate \mathbb{P} - and \mathbb{Q} -expectations about future credit spreads –thereby inferring information about the relation between real-world and risk-neutral default probabilities– ranking firms based on only either $PD^{\mathbb{P}}$ or $PD^{\mathbb{Q}}$ may not be sufficiently informative.

As we show in Internet Appendix AA in more detail, the empirical patterns found in previous research can be consistent with the structural model used in this paper. In the cross-section of firms, equity risk premia increase with μ and decrease with σ . At the same time, $PD^{\mathbb{P}}$ decreases in μ and increases in σ . Thus, if firms (mainly) differ by μ and/or σ , the Merton model implies a negative relation between equity returns and $PD^{\mathbb{P}}$ as documented by, e.g., Dichev (1998) and Campbell et al. (2008). Furthermore, because the equity Sharpe

ratio (λ_E) increases with μ and decreases with σ , it follows that, in the cross-section, firms with higher PD^P have lower equity excess returns per unit of risk. The empirical results in Campbell et al. (2008) suggest that equity Sharpe ratios indeed decrease with distress risk. Similarly, as we also show in the Internet Appendix, the model-implied relation between equity risk premia and PD^Q is consistent with the results reported by previous empirical studies.

We also present empirical evidence that sorting firms into portfolios using their default probabilities is not as informative about their equity risk premia as compared to using the credit risk premium estimates proposed in this paper. We find that there is no pronounced relation of proxies for real-world and risk-neutral default probabilities to equity returns in the full sample period. The main reason is, as the sub-sample plots reveal, that default probabilities exhibit a different relation to firms' stock returns prior to the crisis as compared to during the crisis. We report detailed results (returns, Sharpe ratios, alphas, and factor loadings for equally- and value-weighted portfolios) in Internet Appendix Tables AA.1 to AA.3.

Equity Returns and the Slope of the CDS Term Structure In an empirical paper, Han and Zhou (2011) find that the slope of the term structure of CDS spreads positively predicts CDS spread changes and negatively predicts stock returns. The authors argue that the slope has predictive ability for equity returns because of slow information diffusion and they stress that their findings cannot be explained by default risk and are hence “distinct from the literature on the cross-sectional relationship between expected stock returns and default or distress risk” (see Han and Zhou, 2011, p. 5). In our framework their findings are consistent with implications from structural credit risk models and can be related to credit risk premia. In particular, we show that the slope is a weighted average of forward-implied CDS spread changes (thus containing risk-neutral but not convey real-world default risk information) and that its predictive ability for stock returns depends on its correlation with credit risk premia. We discuss the relation between CDS slope, risk premia, and equity returns and provide empirical evidence supporting our arguments in Internet Appendix BB.

Alternative Data Set We repeat the empirical analysis using an alternative data set that comprises CDS data provided by Credit Market Analytics (CMA) and equity as well as firm data from Datastream for the period from 01/2004 to 06/2010. We find the same robust relation between credit risk premia estimated from CDS spreads and equity excess returns as documented in the paper. We present the most important results in Internet Appendix CC and Tables CC.1 to CC.5, respectively. Overall, these results suggest that our findings are not driven by the choice of data source, in particular, potential differences in CDS prices across providers (see, e.g., Mayordomo et al., 2011) do not alter our conclusions. Additional implications are that our conclusions do not depend on the particular cross-section of firms used in the analysis and that we have further evidence for robustness across sub-samples.

Other Checks As a further robustness check, we also conduct the empirical analysis in section 4.3.1 using decile instead of quintile portfolios. The results are qualitatively the same as those reported and quantitatively somewhat more pronounced when calculating high minus low returns of the decile portfolios. Furthermore, we also repeat the analysis when excluding firms with stock prices being less than one dollar to account for potential liquidity issues. Doing so virtually has no effect on our results on the link between credit risk premia and equity returns.

5 Conclusion

In a Merton (1974) framework the market price of risk is the same for all contingent claims written on a firm's assets. We exploit this result by estimating risk premia from firms' CDS forward curves and test whether these are related to equity excess returns. Our empirical results strongly support this hypothesis. We find that equity returns and equity Sharpe ratios decrease from the high to the low credit risk premium portfolio and that this pattern cannot be explained by common measures of distress risk. Buying high and selling low credit risk premium firms generates positive alpha after controlling for standard risk factors, at the same time, loadings on these risk factors are not significant. Credit risk premia are priced in all size, book-to-market, and default probability portfolios with equity excess returns being

highest for small firms, value stocks, and firms with high probability of default. The term structure of CDS spreads, thus, contains risk premium information that is relevant for pricing stocks but not captured by traditional risk factors. Our results are robust across sub-samples (pre-crisis period until July 2007 and crisis period from July 2007), return weighting schemes (equally- and value-weighted), information sets for parameter estimation (full sample and out-of-sample), sampling frequency (monthly and weekly), and choice of CDS data source (Markit and CMA).

Our analysis also generates insights for the distress puzzle –the finding that firms with high distress risk earn anomalously low equity risk premia (see, e.g., Campbell et al., 2008). We show that the “distress puzzle” may be perfectly consistent with structural models, depending on the source of firm heterogeneity. Empirically we find that neither real-world nor risk-neutral default probabilities predict equity risk premia. By contrast, sorting firms by credit risk premia, which depend on both real-world *and* risk-neutral default risk has significant explanatory power for subsequent equity returns.

There are various dimensions along which our work could be extended. Providing an economic interpretation for the CDS risk factor that we identify seems an important next step. From a methodological perspective, it would also be interesting to explore whether using more sophisticated econometric techniques for modeling CDS spreads would enhance predictability in CDS markets, thereby possibly strengthening the link between credit and equity markets. More generally, understanding common risk premia in equity and credit markets is important, for instance, when analyzing the interplay between institutional and regulatory features of both markets or when specifying models that jointly price equity and credit instruments.

Appendix

A CDS Valuation and Forward CDS Spreads

A CDS contract with time-to-maturity T comprises two legs: a protection leg which corresponds to a contingent payment following a credit event and a premium leg which refers to a stream of risky premium payments. The value of the protection leg (V_t^{prot}) at time t is given as

$$V_t^{prot} = (1 - R) \int_t^{t+T} Z(t, u)(-dQ(t, u)), \quad (\text{A.1})$$

where R denotes the recovery rate of the defaulted obligation, $Z(t, u)$ the price of a risk-free zero coupon bond at time t maturing at time u , and the expression $-dQ(t, u)$ refers to the (risk-neutral) instantaneous default probability at time u , conditional on surviving up to time u .

The premium leg (V_t^{prem}) is given by the product of the annual contract premium, i.e. the CDS spread S_t^T , and the time t present value of a credit risky dollar annuity RPV01_t^T starting at t with time-to-maturity T , i.e.

$$V_t^{prem} = S_t^T \cdot \text{RPV01}_t^T \quad (\text{A.2})$$

where RPV01_t^T is given by

$$\begin{aligned} \text{RPV01}_t^T &= \sum_{n=1}^N \delta(t_{n-1}, t_n) Z(t, t_n) Q(t, t_n) \\ &+ \sum_{n=1}^N \int_{t_{n-1}}^{t_n} \delta(t_{n-1}, u) Z(t, u) Q(t, u) (-dQ(t, u)). \end{aligned} \quad (\text{A.3})$$

Here we use the notation that $t_0 = t$ and $t_N = t + T$ with N referring to the number of premium payments during the life of the contract. The term $\delta(t_{n-1}, t_n)$ refers to the day count fraction between the two consecutive premium payment dates t_{n-1} and t_n .²⁷ The first part of Eq. (A.3) refers to the expected present value of the risky premium payments made

²⁷The day count convention that usually applies for CDS contracts is *actual/360*.

conditional on surviving up to the payment dates and the second part corresponds to the effect of premium accrued at default.

Since the price of a CDS contract has to be zero at inception the difference between both legs must be zero. Hence, the premium of a newly issued CDS contract with time-to-maturity T is determined by

$$S_t^T = \frac{(1 - R) \int_t^{t+T} Z(t, u)(-dQ(t, u))}{\text{RPV01}_t^T}. \quad (\text{A.4})$$

Using the spreads of on-the-run CDS contracts, we obtain the survival curve $Q(t, t_i)$ for various maturities t_i by bootstrapping, assuming a recovery rate R of 0.40. To compute discount factors, we obtain US Libor rates for maturities of 1 week, 1, 2, 3, 6, 9, and 12 months and swap rates for 2, 3, 4, 5, 7, and 10 years from Datastream. The bootstrap procedure follows standard industry practice; Feldhütter and Lando (2008) show that swap rates are the best parsimonious proxy for riskless rates.

A *forward CDS* is a contract that provides protection against default of a reference obligation for a future time period of length T starting at a forward date $t + \tau$, $\tau > 0$. The forward premium is fixed today at contract inception. From a today's perspective, market participants should be indifferent between trading a $\tau + T$ -period spot contract or a combination of spot and forward contracts covering the same period of time. Hence, we get

$$S_t^{\tau+T} \text{RPV01}_t^{\tau+T} = S_t^\tau \text{RPV01}_t^\tau + F_t^{\tau \times T} \text{RPV01}_t^{\tau \times T} \quad (\text{A.5})$$

In other words, the time t value of a credit risky stream of forward spreads of length T starting at $t + \tau$ is equal to the difference of the annuity $\text{RPV01}_t^{\tau+T}$ that starts today with time-to-maturity of $\tau + T$ and the annuity RPV01_t^τ that lasts from today to $t + \tau$, each weighted by their corresponding spot spreads.

B Distance-to-Default Estimation

We compute a firm's distance-to-default (DD) as a proxy for distress risk in analogy to Crosbie and Bohn (2003) and Vassalou and Xing (2004) where

$$DD \equiv \frac{\ln V_t/D + (\mu - 0.5\sigma^2)T}{\sigma\sqrt{T}}. \quad (\text{B.1})$$

In doing so, we need to estimate the asset value V_t , the \mathbb{P} -drift of the asset process μ , and the volatility of assets σ . To estimate these parameters, we follow the iterative scheme presented in Vassalou and Xing (2004). by valuing equity using the Black Scholes formula. Similarly to Vassalou and Xing (2004), we use daily data and set the maturity T of the call option to one year. To determine the strike price which equals the face value of debt, we assume, similar to Crosbie and Bohn (2003), that the firm's notional value of debt is given by the sum of the short-term debt plus half of long-term debt to account for the fact that short-term debt requires early redemption of the notional plus coupon whereas long-term debt only requires repayment of coupon payments. As in Vassalou and Xing (2004) we do not use the book values of debt of the new fiscal year until month of May of the current year to avoid the issue of reporting delays.

Using the daily time-series of n market values of equity for the past 12 months, $E_{t_0}, E_{t_1}, \dots, E_{t_n}$, and an initial guess of the firm's asset volatility $\sigma^{(i)}$, we start with iteration step $i = 0$. We calculate a daily time series of asset value estimates $V_{t_0}(\sigma^{(i)}), \dots, V_{t_n}(\sigma^{(i)})$ by inverting the Black Scholes formula. We then obtain a new estimate of the asset volatility $\sigma^{(i+1)}$. The updated asset volatility is used in the next iteration. We repeat these steps until the values of σ converge. Following Vassalou and Xing (2004) we use $10\text{E} - 4$ as our tolerance level. Once the algorithm converges we obtain an estimate for the asset volatility and the latest asset value serves as an estimate for today's asset value. An estimate of the drift μ is obtained from the time series of log asset returns.

We repeat this procedure to obtain daily parameter estimates using a 12-month rolling window which we then use to compute DD . Note, that in practice this distance-to-default estimate may be biased when estimating default probabilities, however, DD nevertheless serves well to rank firms in classes of risk (see e.g. Lando, 2004, p. 49) and thus DD can be meaningfully used to sort firms into portfolios for the purpose of a cross-sectional asset pricing analysis.

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Table 1: Descriptives Statistics for CDS Spreads

This table presents summary statistics for CDS spreads for the sample periods and spread maturities T given in the column headers. Data is sampled at a monthly frequency corresponding to the prediction horizon τ of one month. We summarize descriptive statistics for levels of CDS spreads (S_t^T), slopes of the CDS term structure defined as the T -year CDS spread minus the 1-year CDS spread ($S_t^T - S_t^1$), forward-implied CDS spread changes ($F_t^{\tau \times T} - S_t^T$), realized changes in CDS spreads ($S_{t+\tau}^T - S_t^T$), excess changes in CDS spreads ($RX_{t+\tau}^T$), forward-implied returns in CDS spreads ($\log F_t^{\tau \times T} - \log S_t^T$), realized returns in CDS spreads ($\log S_{t+\tau}^T - \log S_t^T$), and CDS excess returns ($\log RX_{t+\tau}^T$). We report, across firms, the means, standard deviations, and 5% and 95% quantiles.

	Full Sample: 01/2001 - 04/2010				Prior to Crisis: 01/2001 - 06/2007				During Crisis: 07/2007 - 04/2010			
	$T = 1$	$T = 3$	$T = 5$	$T = 7$	$T = 1$	$T = 3$	$T = 5$	$T = 7$	$T = 1$	$T = 3$	$T = 5$	$T = 7$
<i>CDS Spreads (S_t^T) in basis points</i>												
mean	107.27	128.61	145.65	150.94	68.02	86.10	102.57	110.19	183.79	210.75	228.62	227.89
sd	276.41	257.99	246.49	233.33	165.50	165.41	163.38	159.59	402.50	362.89	340.40	316.73
q05	4.32	9.91	16.34	21.59	3.71	8.63	14.21	19.23	7.54	17.32	27.53	33.93
q95	457.56	501.13	532.41	531.02	297.18	331.13	365.66	373.86	735.29	778.65	812.50	776.21
<i>CDS Slopes ($S_t^T - S_t^1$) in basis points</i>												
mean		21.31	38.38	44.01		18.32	34.55	43.44		26.65	44.82	43.81
sd		70.21	98.77	113.65		37.83	57.48	64.23		107.47	148.13	171.23
q05		-2.04	-2.83	-7.06		0.25	2.06	3.77		-20.42	-38.88	-68.57
q95		98.73	166.63	183.90		69.67	126.94	149.66		151.50	224.52	231.56
<i>Forward-Implied Changes in CDS Spreads ($F_t^{\tau \times T} - S_t^T$) in basis points</i>												
mean	2.49	1.82	1.04	0.90	2.19	1.71	1.21	1.08	3.04	1.97	0.68	0.52
sd	10.28	6.32	5.04	4.46	4.97	3.19	2.23	2.00	16.13	9.83	8.01	7.04
q05	-0.27	-0.24	-0.55	-0.41	0.01	0.06	0.00	0.08	-2.45	-2.26	-2.77	-2.42
q95	11.90	8.20	4.86	4.02	8.38	6.41	4.17	3.49	18.30	11.02	6.05	4.97
<i>Changes in CDS Spreads ($S_{t+\tau}^T - S_t^T$) in basis points</i>												
mean	2.69	2.56	2.72	2.59	-0.81	-0.87	-0.58	-0.30	8.51	7.84	7.49	6.46
sd	137.65	104.35	89.73	83.63	75.19	62.45	47.65	47.43	210.07	154.61	136.78	124.37
q05	-52.30	-49.26	-48.34	-48.29	-33.92	-32.27	-31.83	-32.43	-89.15	-86.59	-84.12	-82.33
q95	51.61	54.59	56.63	55.34	23.79	24.24	27.50	29.51	112.60	108.34	102.67	95.40
<i>Excess Changes in CDS Spreads ($RX_{t+\tau}^T$) in basis points</i>												
mean	0.20	0.74	1.68	1.68	-2.99	-2.59	-1.79	-1.39	5.47	5.87	6.81	5.94
sd	136.29	103.89	89.45	83.48	74.56	62.21	47.49	47.27	207.97	153.94	136.40	124.21
q05	-56.64	-52.41	-49.80	-49.60	-38.86	-35.32	-34.34	-33.79	-95.75	-90.70	-85.08	-82.35
q95	46.26	50.45	54.55	53.56	19.68	21.44	25.59	27.50	106.24	105.10	101.99	95.03
<i>Forward-Implied Returns in CDS Spreads ($\log F_t^{\tau \times T} - \log S_t^T$) in percentage points</i>												
mean	8.63	3.68	1.81	1.34	9.57	4.09	2.10	1.56	6.65	2.81	1.22	0.90
sd	7.49	2.56	1.36	0.93	7.75	2.58	1.30	0.83	6.54	2.25	1.25	0.95
q05	-0.18	-0.11	-0.23	-0.17	0.00	0.03	0.00	0.06	-0.83	-0.62	-0.72	-0.66
q95	21.45	7.77	4.03	2.64	22.31	8.00	4.18	2.71	18.80	6.70	3.33	2.31
<i>CDS Returns ($\log S_{t+\tau}^T - \log S_t^T$) in percentage points</i>												
mean	0.24	0.44	0.57	0.53	-2.90	-1.78	-1.13	-0.76	4.52	3.13	2.44	1.81
sd	34.64	24.45	21.04	19.86	30.77	20.36	17.37	16.33	39.31	29.06	25.17	24.08
q05	-53.27	-35.41	-29.71	-28.94	-51.90	-31.40	-25.84	-24.38	-56.43	-43.97	-38.10	-38.17
q95	58.15	42.09	36.49	33.68	45.38	30.99	26.44	25.70	72.90	52.67	45.71	41.58
<i>CDS Excess Returns ($\log RX_{t+\tau}^T$) in percentage points</i>												
mean	-8.39	-3.24	-1.24	-0.81	-12.48	-5.87	-3.22	-2.32	-2.13	0.32	1.23	0.90
sd	33.60	24.21	20.94	19.79	29.76	20.18	17.29	16.27	37.94	28.69	25.03	23.99
q05	-60.24	-38.19	-31.16	-29.79	-59.98	-35.04	-27.47	-25.65	-61.50	-45.95	-39.19	-38.63
q95	47.10	38.15	34.72	32.32	33.51	26.72	24.34	24.02	62.79	49.34	44.02	40.53

Table 2: Predictability of CDS Spreads

This table presents predictability results for CDS spreads for the sample periods and spread maturities T given in the column headers. Data is sampled at a monthly frequency corresponding to the prediction horizon τ of one month. Panel A reports R^2 s for regressing excess changes in T -year CDS spreads $RX_{t+\tau}^T$ on the lagged forward-implied change in the CDS spread, $(F_t^{\tau \times T} - S_t^T)$, the term structure of forward CDS spreads, \mathbf{F}_t , and the common factor, $(\gamma^{RX})^\top \mathbf{F}_t$. We report, across firms, the means, standard deviations, and 5% and 95% quantiles. Panels B and C report analogue results for CDS excess returns ($\log.RX_{t+\tau}^T$) and CDS Sharpe ratios ($SR_{t+\tau}^T$), respectively.

	Full Sample: 01/2001 - 04/2010				Prior to Crisis: 01/2001 - 06/2007				During Crisis: 07/2007 - 04/2010			
	$T = 1$	$T = 3$	$T = 5$	$T = 7$	$T = 1$	$T = 3$	$T = 5$	$T = 7$	$T = 1$	$T = 3$	$T = 5$	$T = 7$
Panel A: Predictability of Excess Changes in CDS Spreads ($RX_{t+\tau}^T$)												
<i>R² for Regressions on Forward-Implied Changes in CDS Spreads ($F_t^{\tau \times T} - S_t^T$)</i>												
mean	0.09	0.07	0.06	0.06	0.08	0.08	0.06	0.06	0.13	0.09	0.08	0.09
sd	0.11	0.12	0.10	0.10	0.10	0.11	0.09	0.09	0.14	0.13	0.12	0.12
q05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
q95	0.35	0.40	0.32	0.34	0.31	0.36	0.28	0.30	0.45	0.37	0.33	0.37
<i>R² for Regressions on the Term Structure of Forward CDS Spreads (\mathbf{F}_t)</i>												
mean	0.33	0.30	0.28	0.29	0.38	0.38	0.35	0.36	0.42	0.39	0.37	0.38
sd	0.22	0.22	0.21	0.21	0.23	0.23	0.23	0.22	0.23	0.22	0.22	0.22
q05	0.08	0.07	0.06	0.07	0.10	0.10	0.10	0.11	0.14	0.13	0.12	0.13
q95	0.84	0.83	0.78	0.78	0.93	0.92	0.92	0.90	0.93	0.93	0.91	0.91
<i>R² for Regressions on the Common Factor $((\gamma^{RX})^\top \mathbf{F}_t)$</i>												
mean	0.25	0.25	0.23	0.23	0.25	0.29	0.27	0.28	0.32	0.33	0.31	0.31
sd	0.20	0.20	0.18	0.18	0.20	0.20	0.20	0.19	0.21	0.20	0.19	0.19
q05	0.02	0.04	0.04	0.03	0.01	0.04	0.03	0.06	0.05	0.08	0.07	0.06
q95	0.73	0.74	0.67	0.64	0.71	0.75	0.73	0.71	0.77	0.78	0.76	0.73
Panel B: Predictability of CDS Excess Returns ($\log.RX_{t+\tau}^T$)												
<i>R² for Regressions on Forward-Implied Changes in CDS Spreads ($F_t^{\tau \times T} - S_t^T$)</i>												
mean	0.04	0.04	0.04	0.03	0.05	0.05	0.05	0.05	0.09	0.08	0.06	0.06
sd	0.07	0.07	0.07	0.05	0.09	0.09	0.08	0.07	0.11	0.10	0.07	0.07
q05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
q95	0.17	0.21	0.20	0.15	0.28	0.28	0.24	0.22	0.34	0.27	0.21	0.24
<i>R² for Regressions on the Term Structure of Forward CDS Spreads (\mathbf{F}_t)</i>												
mean	0.19	0.19	0.19	0.20	0.24	0.28	0.28	0.30	0.33	0.32	0.31	0.33
sd	0.19	0.19	0.18	0.18	0.23	0.23	0.23	0.22	0.22	0.22	0.21	0.21
q05	0.03	0.03	0.03	0.04	0.03	0.05	0.05	0.07	0.08	0.09	0.10	0.11
q95	0.67	0.66	0.67	0.67	0.86	0.90	0.89	0.86	0.87	0.86	0.83	0.87
<i>R² for Regressions on the Common Factor $((\gamma^{\log.RX})^\top \mathbf{F}_t)$</i>												
mean	0.14	0.15	0.13	0.14	0.17	0.20	0.18	0.20	0.26	0.26	0.24	0.24
sd	0.15	0.15	0.14	0.13	0.19	0.19	0.17	0.16	0.18	0.18	0.16	0.16
q05	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.04	0.06	0.03	0.04
q95	0.55	0.53	0.49	0.48	0.65	0.69	0.55	0.57	0.67	0.70	0.65	0.64
Panel C: Predictability of CDS Sharpe Ratios ($SR_{t+\tau}^T$)												
<i>R² for Regressions on Forward-Implied Changes in CDS Spreads ($F_t^{\tau \times T} - S_t^T$)</i>												
mean	0.03	0.03	0.03	0.03	0.05	0.04	0.04	0.04	0.08	0.07	0.06	0.06
sd	0.05	0.05	0.06	0.04	0.08	0.06	0.06	0.06	0.09	0.07	0.06	0.06
q05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
q95	0.17	0.16	0.16	0.13	0.24	0.18	0.18	0.18	0.29	0.23	0.20	0.21
<i>R² for Regressions on the Term Structure of Forward CDS Spreads (\mathbf{F}_t)</i>												
mean	0.14	0.14	0.13	0.14	0.21	0.21	0.21	0.22	0.28	0.27	0.28	0.29
sd	0.17	0.17	0.16	0.15	0.22	0.22	0.22	0.21	0.21	0.20	0.20	0.20
q05	0.02	0.01	0.01	0.02	0.03	0.03	0.03	0.03	0.07	0.07	0.08	0.08
q95	0.56	0.53	0.49	0.47	0.79	0.86	0.85	0.78	0.81	0.82	0.89	0.83
<i>R² for Regressions on the Common Factor $((\gamma^{SR})^\top \mathbf{F}_t)$</i>												
mean	0.11	0.12	0.10	0.10	0.16	0.16	0.15	0.15	0.22	0.23	0.22	0.23
sd	0.15	0.16	0.13	0.13	0.18	0.18	0.16	0.16	0.17	0.16	0.15	0.15
q05	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.04	0.05	0.04	0.04
q95	0.47	0.47	0.38	0.40	0.63	0.67	0.52	0.51	0.64	0.62	0.56	0.57

Table 3: Returns on Stock Portfolios sorted by Credit Market-Implied Risk Premium Estimates

We sort stocks based on a firms' estimates of four different credit market-based measures into quintile portfolios and calculate equally and value-weighted excess returns. P1 contains firms with the highest CDS-implied market price of risk ($\widehat{MRP}_{t+\tau}$) in *Panel A*, CDS-implied equity risk premium ($\widehat{ERP}_{t+\tau}$) in *Panel B*, relative risk premium ($\widehat{\log.RP}_{t+\tau}$) in *Panel C* and credit risk premium ($\widehat{RP}_{t+\tau}$) in *Panel D*, and P5 with the lowest, respectively. P1–P5 presents results for going long P1 and short P5. Sub-panel *Portfolio Characteristics* summarizes portfolio means of *DD*, *S5*, *MV* (market value), and *BM* (book-to-market). *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

Portfolios	Sample Period: 01/2001 – 04/2010					P1–P5
	P1	P2	P3	P4	P5	
Panel A: CDS-Implied Market Price of Risk ($\widehat{MRP}_{t+\tau}$)						
<i>Portfolio Characteristics</i>						
<i>DD</i>	8.72	9.02	9.3	9.44	8.85	
<i>S5</i>	163.16	125.81	128.11	128.86	197.71	
<i>MV</i>	12.53	19.81	26.83	28.58	18.11	
<i>BM</i>	0.63	0.66	0.64	0.63	0.7	
<i>Equally-Weighted Portfolio Returns</i>						
mean	0.44 (0.57)	0.24 (0.33)	-0.23 (-0.33)	-0.47 (-0.55)	-1.35 (-1.51)	1.8 (5.18)
sd	6.31	5.93	5.97	6.22	7.52	3.02
SR	0.24	0.14	-0.13	-0.26	-0.62	2.06
<i>Value-Weighted Portfolio Returns</i>						
mean	0.09 (0.16)	-0.07 (-0.1)	-0.64 (-1.24)	-0.64 (-0.92)	-1.5 (-2.15)	1.59 (4.56)
sd	4.98	5.27	5.2	4.72	5.94	3.58
SR	0.07	-0.04	-0.43	-0.46	-0.87	1.54
Panel B: CDS-Implied Equity Risk Premium ($\widehat{ERP}_{t+\tau}$)						
<i>Portfolio Characteristics</i>						
<i>DD</i>	7.83	8.78	9.65	10.13	8.85	
<i>S5</i>	202.71	126.66	111	100.43	204.18	
<i>MV</i>	11.03	19.28	24.75	30.83	18.78	
<i>BM</i>	0.69	0.65	0.62	0.59	0.71	
<i>Equally-Weighted Portfolio Returns</i>						
mean	0.56 (0.62)	-0.01 (-0.01)	-0.08 (-0.13)	-0.39 (-0.5)	-1.47 (-1.58)	2.02 (5.01)
sd	7.25	6.16	5.78	5.31	7.7	3.11
SR	0.27	0	-0.05	-0.25	-0.66	2.25
<i>Value-Weighted Portfolio Returns</i>						
mean	0.21 (0.27)	-0.3 (-0.44)	-0.47 (-0.93)	-0.61 (-0.99)	-1.66 (-2.28)	1.87 (4.59)
sd	5.88	5.66	5.13	4.38	6.19	3.72
SR	0.12	-0.19	-0.32	-0.48	-0.93	1.74
Panel C: Relative Risk Premium ($\widehat{\log.RP}_{t+\tau}$)						
<i>Portfolio Characteristics</i>						
<i>DD</i>	8.92	9.16	9.38	9.17	8.67	
<i>S5</i>	170.71	134.6	119.96	127.68	192.32	
<i>MV</i>	17.1	18.56	21.43	25.68	22.28	
<i>BM</i>	0.65	0.63	0.62	0.63	0.73	
<i>Equally-Weighted Portfolio Returns</i>						
mean	1.05 (1.43)	-0.01 (-0.02)	-0.15 (-0.19)	-0.39 (-0.52)	-1.82 (-1.88)	2.87 (5.31)
sd	6.26	6.15	5.91	6.05	7.77	3.83
SR	0.58	-0.01	-0.09	-0.22	-0.81	2.60
<i>Value-Weighted Portfolio Returns</i>						
mean	0.14 (0.25)	-0.32 (-0.6)	-0.37 (-0.64)	-0.64 (-0.98)	-1.51 (-2.03)	1.66 (3.68)
sd	5.03	5.33	4.64	4.77	6.01	3.67
SR	0.1	-0.21	-0.27	-0.46	-0.87	1.56
Panel D: Credit Risk Premium ($\widehat{RP}_{t+\tau}$)						
<i>Portfolio Characteristics</i>						
<i>DD</i>	7.12	9.87	10.66	9.61	7.52	
<i>S5</i>	268.18	99.66	70.02	77.48	222.58	
<i>MV</i>	12.36	19.21	26.66	26.98	19.85	
<i>BM</i>	0.79	0.59	0.54	0.55	0.78	
<i>Equally-Weighted Portfolio Returns</i>						
mean	0.76 (0.83)	0.33 (0.5)	0.03 (0.05)	-0.2 (-0.3)	-2.14 (-1.77)	2.91 (4.09)
sd	7.78	5.31	5.06	5.24	8.86	4.77
SR	0.34	0.22	0.02	-0.14	-0.84	2.11
<i>Value-Weighted Portfolio Returns</i>						
mean	0.11 (0.13)	0.06 (0.09)	-0.38 (-0.82)	-0.51 (-0.88)	-1.85 (-1.77)	1.96 (3.3)
sd	6.62	4.88	4.23	4.55	7.08	4.42
SR	0.06	0.04	-0.31	-0.39	-0.9	1.53

Table 4: Returns on Stock Portfolios sorted by CDS-Implied Market Price of Risk

We sort stocks based on firms' estimates of their CDS-implied market price of risk ($\widehat{MRP}_{t+\tau}$) into quintile portfolios and calculate equally-weighted and value-weighted excess returns in *Panel A (B)*. P1 contains firms with highest $\widehat{MRP}_{t+\tau}$, P5 the ones with lowest $\widehat{MRP}_{t+\tau}$. P1-P5 presents results for going long P1 and short P5. Sub-panel *Portfolio Characteristics* summarizes portfolio means of *DD*, *S5*, *MV* (market value), and *BM* (book-to-market). *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

		Full Sample: 01/2001 – 04/2010					Prior to Crisis: 01/2001 – 06/2007					During Crisis: 07/2007 – 04/2010							
		P1	P2	P3	P4	P5	P1-P5	P1	P2	P3	P4	P5	P1-P5	P1	P2	P3	P4	P5	P1-P5
<i>Sort Variable: CDS-Implied Market Price of Risk ($\widehat{MRP}_{t+\tau}$)</i>																			
mean		24.66	0.87	0.52	0.18	-14.17		19.38	1.21	0.79	0.37	-5.17		30.87	0.59	0.04	-0.48	-30.79	
<i>Portfolio Characteristics</i>																			
<i>DD</i>		8.72	9.02	9.3	9.44	8.85		9.51	9.86	10.05	10.31	9.91		6.6	7.24	7.32	7.04	7.19	
<i>S5</i>		163.16	125.81	128.11	128.86	197.71		123.55	98.12	105.42	97.48	147.21		256.72	231.52	212.24	211.71	256.46	
<i>MV</i>		12.53	19.81	26.83	28.58	18.11		15.75	21.83	29.09	26.67	18.12		10.89	19.06	21.9	22.91	17.55	
<i>BM</i>		0.63	0.66	0.64	0.63	0.7		0.63	0.63	0.62	0.58	0.64		0.72	0.68	0.73	0.72	0.81	
<i>Portfolio Returns</i>																			
mean		0.44	0.24	-0.23	-0.47	-1.35	1.8	0.85	1.05	0.01	0.41	-0.88	1.73	-0.08	-0.2	-1.13	-2.57	-3.36	3.28
sd		(0.57)	(0.33)	(-0.33)	(-0.55)	(-1.51)	(5.18)	(1.54)	(1.95)	(0.01)	(0.72)	(-1.23)	(6.73)	(-0.03)	(-0.09)	(-0.47)	(-1.03)	(-1.19)	(3.97)
SR		6.31	5.93	5.97	6.22	7.52	3.02	4.34	3.94	4.96	4.46	5.37	2.35	9.21	8.37	8.93	9.37	11.02	3.31
		0.24	0.14	-0.13	-0.26	-0.62	2.06	0.68	0.92	0.01	0.32	-0.57	2.55	-0.03	-0.08	-0.44	-0.95	-1.06	3.44
<i>Asset Pricing</i>																			
CAPM α		0.45	0.25	-0.22	-0.47	-1.34	1.79	0.76	1	-0.12	0.37	-1	1.76	0.34	0.21	-0.7	-2.2	-2.87	3.21
3-fac α		(0.84)	(0.41)	(-0.47)	(-0.82)	(-2.37)	(4.96)	(1.79)	(2.13)	(-0.28)	(0.63)	(-1.82)	(5.39)	(0.25)	(0.16)	(-0.52)	(-1.43)	(-1.82)	(4.85)
4-fac α		0.7	0.37	0.08	-0.37	-1.17	1.87	1.23	1.25	0.68	0.58	-0.43	1.65	0.6	0.42	-0.56	-1.96	-2.5	3.1
MKT		(1.44)	(0.71)	(0.16)	(-0.62)	(-1.94)	(5.02)	(2.54)	(2.55)	(1.28)	(0.92)	(-0.71)	(5.57)	(0.43)	(0.33)	(-0.47)	(-1.39)	(-1.61)	(5.6)
SMB		0.7	0.37	0.08	-0.37	-1.17	1.87	1.2	1.24	0.66	0.66	-0.43	1.63	0.41	0.19	-0.62	-1.94	-2.37	2.77
HML		(0.7)	(0.73)	(0.17)	(-0.66)	(-2.05)	(5.48)	(2.43)	(2.52)	(1.12)	(0.97)	(-0.72)	(5.78)	(0.33)	(0.17)	(-0.49)	(-1.41)	(-1.52)	(5.99)
		0.53	0.4	0.47	0.45	0.61	-0.08	0.18	0.09	0.19	0.08	0.24	-0.06	0.73	0.72	0.73	0.69	0.84	-0.11
		(3.46)	(2.99)	(3.28)	(3.2)	(3.86)	(-1.42)	(1.02)	(0.77)	(1.03)	(0.47)	(1.76)	(-1.41)	(3.06)	(3.24)	(3.21)	(2.42)	(2.84)	(-1.31)
		-0.3	-0.2	-0.14	-0.27	-0.3	0	-0.13	0	-0.09	0.01	-0.14	0.01	-0.75	-0.62	-0.42	-0.7	-1.03	0.29
		(-1.78)	(-1.1)	(-0.79)	(-1.55)	(-1.34)	(-0.04)	(-0.83)	(-0.01)	(-0.54)	(0.06)	(-1.05)	(0.07)	(-1.78)	(-1.46)	(-1.13)	(-1.21)	(-1.72)	(0.93)
		-0.22	-0.06	-0.45	0.05	-0.08	-0.14	-0.42	-0.26	-0.8	-0.23	-0.53	0.11	-0.17	-0.21	-0.28	-0.27	-0.04	-0.13
		(-1.46)	(-0.36)	(-2.9)	(0.32)	(-0.36)	(-1.11)	(-2.47)	(-1.65)	(-5.46)	(-1.02)	(-3.2)	(1.3)	(-0.39)	(-0.57)	(-0.92)	(-0.53)	(-0.07)	(-0.35)
<i>Panel B: Value-Weighted Portfolios</i>																			
<i>Portfolio Returns</i>																			
mean		0.09	-0.07	-0.64	-0.63	-1.5	1.59	0.42	0.57	-0.33	-0.3	-1.21	1.63	-0.76	-0.4	-1.07	-2.39	-2.55	1.79
sd		(0.16)	(-0.1)	(-1.24)	(-0.92)	(-2.15)	(4.56)	(0.83)	(1.24)	(-0.59)	(-0.6)	(-2.26)	(7.08)	(-0.41)	(-0.3)	(-0.65)	(-1.25)	(-1.24)	(2.34)
SR		4.98	5.27	5.2	4.72	5.94	3.58	3.97	3.6	4.69	4.25	4.26	2.3	7.42	5.91	6.39	6.98	8.36	4.41
		0.07	-0.04	-0.43	-0.46	-0.87	1.54	0.37	0.55	-0.24	-0.24	-0.98	2.45	-0.36	-0.23	-0.58	-1.19	-1.05	1.4
<i>Asset Pricing</i>																			
CAPM α		0.1	-0.06	-0.64	-0.63	-1.49	1.59	0.39	0.57	-0.43	-0.3	-1.26	1.65	-0.48	-0.14	-0.79	-2.15	-2.38	1.9
3-fac α		(0.22)	(-0.12)	(-1.19)	(-1.19)	(-2.57)	(4.43)	(0.8)	(1.19)	(-1.06)	(-0.56)	(-2.55)	(7.53)	(-0.42)	(-0.15)	(-0.85)	(-1.98)	(-1.45)	(1.92)
4-fac α		0.29	0.06	-0.34	-0.56	-1.33	1.61	0.71	0.77	0.44	-0.15	-0.72	1.44	-0.25	0	-0.66	-1.9	-1.99	1.74
MKT		(0.72)	(0.14)	(-0.74)	(-1.11)	(-2.16)	(4.4)	(1.53)	(1.66)	(0.87)	(-0.25)	(-1.4)	(5.47)	(-0.28)	(0)	(-0.86)	(-1.69)	(-1.57)	(3.1)
SMB		0.29	0.06	-0.34	-0.56	-1.33	1.62	0.7	0.77	0.41	-0.15	-0.73	1.43	-0.3	-0.31	-0.7	-1.9	-1.91	1.62
HML		(0.7)	(0.13)	(-0.69)	(-1.17)	(-2.33)	(4.51)	(1.57)	(1.6)	(0.78)	(-0.15)	(-1.51)	(5.34)	(-0.32)	(-0.45)	(-0.85)	(-1.73)	(-1.55)	(2.99)
		0.32	0.29	0.27	0.25	0.3	0.03	0.05	-0.08	0.12	-0.13	0.03	0.02	0.55	0.48	0.54	0.45	0.32	0.23
		(2.71)	(1.95)	(2.17)	(1.65)	(2.75)	(0.4)	(0.29)	(-0.58)	(0.73)	(-0.79)	(0.2)	(0.36)	(3.02)	(3.56)	(2.83)	(2.79)	(1.02)	(2.89)
		-0.21	-0.23	-0.08	-0.21	-0.2	-0.01	-0.72	0.07	-0.2	0.19	-0.07	-0.05	-0.67	-0.44	-0.42	-0.71	-1.08	0.41
		(-1.26)	(-1.4)	(-0.49)	(-1.42)	(-1.03)	(-0.07)	(-0.72)	(0.53)	(-1.08)	(1.45)	(-0.56)	(-0.44)	(-3.09)	(-1.22)	(-1.52)	(-2.34)	(-1.38)	(1)
		-0.18	-0.03	-0.5	0.07	-0.14	-0.04	-0.28	-0.14	-0.82	-0.25	-0.53	0.25	-0.24	-0.26	-0.34	-0.27	-0.03	-0.46
		(-1.3)	(-0.18)	(-2.99)	(0.5)	(-0.79)	(-0.3)	(-1.72)	(-1.44)	(-6.18)	(-1.22)	(-4.39)	(4.1)	(-0.72)	(-0.9)	(-1.41)	(-0.16)	(0.32)	(-1.49)

Table 5: Returns on Stock Portfolios sorted by Credit Risk Premia

We sort stocks based on firms' credit risk premia ($\overline{RP}_{t+\tau}$) into quintile portfolios and calculate equally-weighted and value-weighted excess returns in *Panel A (B)*. P1 contains firms with highest credit risk premia, P5 the ones with lowest credit risk premia. P1–P5 presents results for going long P1 and short P5. Sub-panel *Portfolio Characteristics* summarizes portfolio means of *DD*, *S5*, *MV* (market value), and *BM* (book-to-market). *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

		Full Sample: 01/2001 – 04/2010					Prior to Crisis: 01/2001 – 06/2007					During Crisis: 07/2007 – 04/2010							
		P1	P2	P3	P4	P5	P1–P5	P1	P2	P3	P4	P5	P1–P5	P1	P2	P3	P4	P5	P1–P5
<i>Sort Variable: Credit Risk Premia ($\overline{RP}_{t+\tau}$)</i>		33.69	5.1	1.22	-2.26	-39.23		24.98	4.25	1.63	-0.21	-19.43		56.71	7.68	0.45	-6.64	-83.07	
<i>Portfolio Characteristics</i>																			
<i>DD</i>		7.12	9.87	10.66	9.61	7.52		7.55	9.97	11.42	11.45	8.97		5.96	7.89	8.18	7.25	5.18	
<i>S5</i>		268.18	99.66	70.02	77.48	222.58		236.69	79.62	49.68	49.54	147.85		398.68	151.73	113.36	127.01	378.46	
<i>MV</i>		12.36	19.21	26.66	26.98	19.85		8.36	17.03	34.33	36.78	15.59		11.73	19.64	25.31	20.74	14.14	
<i>BM</i>		0.79	0.59	0.54	0.55	13.14		0.76	0.64	0.52	0.51	18.23		0.91	0.6	0.56	0.59	1.02	
<i>Portfolio Returns</i>																			
mean		0.76	0.33	0.03	-0.2	-2.14	2.91	1.45	0.8	0.48	0.22	-1.25	2.7	0.55	-0.33	-0.57	-1.67	-5.3	5.85
sd		(0.83)	(0.5)	(0.05)	(-0.3)	(-1.77)	(4.09)	(2.38)	(1.53)	(1.08)	(0.43)	(-1.33)	(4.93)	(0.19)	(-0.17)	(-0.3)	(-0.76)	(-1.52)	(3.59)
SR		0.34	0.22	0.02	-0.14	-0.84	2.11	0.95	0.71	0.46	0.2	-0.68	2.4	0.17	-0.14	-0.28	-0.71	-1.4	3.28
<i>Asset Pricing</i>																			
CAPM α		0.77	0.34	0.03	-0.2	-2.13	2.9	1.33	0.73	0.44	0.18	-1.38	2.71	1.05	0.05	-0.26	-1.32	-4.72	5.77
3-fac α		(1.1)	(0.84)	(0.08)	(-0.42)	(-2.43)	(4.22)	(2.9)	(1.68)	(1.11)	(0.38)	(-1.77)	(3.94)	(0.51)	(0.05)	(-0.26)	(-1.02)	(-2.56)	(3.08)
4-fac α		1.04	0.54	0.17	-0.08	-1.96	3.01	2.1	0.99	0.75	0.41	-0.9	3	1.24	0.3	-0.04	-1.1	-4.38	5.62
MKT		(1.61)	(1.4)	(0.38)	(-0.16)	(-2.62)	(4.27)	(3.8)	(2.06)	(1.66)	(0.8)	(-1.03)	(4.24)	(0.58)	(0.27)	(-0.04)	(-1.05)	(-2.74)	(3.29)
SMB		1.05	0.54	0.16	-0.08	-1.97	3.01	2.06	0.99	0.75	0.41	-0.9	2.96	0.89	0.23	-0.06	-1.12	-4.24	5.13
HML		(1.62)	(1.41)	(0.42)	(-0.16)	(-2.52)	(5.12)	(3.82)	(2.15)	(1.69)	(0.81)	(-1.12)	(5.03)	(0.49)	(0.22)	(-0.06)	(-0.97)	(-2.42)	(4.86)
mean		0.61	0.43	0.34	0.33	0.71	-0.1	0.19	0.15	0.02	0.06	0.31	-0.13	0.83	0.69	0.55	0.27	0.97	-0.14
sd		(3.4)	(3.89)	(2.49)	(2.62)	(3)	(-0.84)	(0.91)	(1.23)	(0.13)	(0.45)	(1.66)	(-1.91)	(3.25)	(2.76)	(3.25)	(2.04)	(6.24)	(-0.92)
SR		-0.24	-0.19	-0.21	-0.28	-0.29	0.04	-0.13	-0.06	0	0.01	-0.15	0.02	-0.57	-0.71	-0.64	-0.66	-0.97	0.4
mean		(-1.19)	(-1.33)	(-1.43)	(-1.61)	(-1.21)	(0.4)	(-0.74)	(-0.48)	(0.02)	(0.05)	(-0.94)	(0.16)	(-0.77)	(-1.49)	(-1.6)	(-3.39)	(-7.48)	(1.42)
sd		(0.31)	(0.22)	(0.06)	(0.01)	(-0.07)	(-0.24)	(-0.75)	(-0.25)	(-0.33)	(-0.25)	(-0.43)	(-0.32)	(-0.21)	(-0.21)	(-0.12)	(-0.34)	(-0.11)	(-0.1)
SR		(-1.71)	(-1.67)	(-0.48)	(0.1)	(-0.26)	(-1.96)	(-3.8)	(-1.45)	(-1.85)	(-1.47)	(-2.48)	(-1.99)	(-0.32)	(-0.47)	(-0.31)	(-0.97)	(-0.58)	(-0.67)
<i>Portfolio Returns</i>																			
mean		0.11	0.06	-0.38	-0.51	-1.85	1.96	1.16	0.75	-0.05	-0.33	-1.34	2.49	-0.65	-0.64	-0.45	-1.53	-5.29	4.65
sd		(0.13)	(0.09)	(-0.82)	(-0.88)	(-1.77)	(3.3)	(1.92)	(1.6)	(-0.12)	(-0.67)	(-1.51)	(4.41)	(-0.27)	(-0.39)	(-0.31)	(-1.06)	(-1.64)	(3.05)
SR		0.06	0.04	-0.31	-0.39	-0.9	1.53	0.81	0.67	-0.05	-0.31	-0.79	2.25	-0.25	-0.35	-0.28	-0.83	-1.68	2.67
<i>Asset Pricing</i>																			
CAPM α		0.12	0.06	-0.38	-0.51	-1.84	1.96	1.09	0.73	-0.07	-0.35	-1.42	2.5	-0.3	-0.36	-0.25	-1.32	-4.95	4.66
3-fac α		(0.18)	(0.13)	(-1.06)	(-1.14)	(-2.24)	(4.05)	(1.98)	(1.64)	(-0.15)	(-0.71)	(-1.87)	(3.47)	(-0.19)	(-0.38)	(-0.24)	(-1.31)	(-2.74)	(2.83)
4-fac α		0.27	0.3	-0.27	-0.4	-1.64	1.91	1.6	1.07	0.27	-0.13	-1.01	2.61	-0.21	-0.12	-0.04	-1.09	-4.56	4.35
MKT		(0.49)	(0.72)	(-0.7)	(-0.87)	(-2.24)	(3.92)	(2.54)	(2.23)	(0.49)	(-0.27)	(-1.22)	(3.92)	(-0.15)	(-0.12)	(-0.05)	(-1.3)	(-2.22)	(3.16)
SMB		0.27	0.3	-0.27	-0.4	-1.65	1.92	1.57	1.06	0.26	-0.13	-1.02	2.58	-0.57	-0.25	-0.15	-1.07	-4.42	3.85
HML		(0.5)	(0.73)	(-0.67)	(-0.9)	(-2.13)	(3.5)	(2.78)	(2.57)	(0.51)	(-0.26)	(-1.16)	(4.06)	(-0.43)	(-0.28)	(-0.2)	(-1.35)	(-2.65)	(2.94)
mean		0.38	0.3	0.19	0.22	0.38	-0.01	0.08	-0.06	-0.07	0.02	0.14	-0.07	0.65	0.54	0.37	0.43	0.67	-0.02
sd		(2.06)	(2.39)	(1.72)	(2.2)	(1.66)	(-0.04)	(0.37)	(-0.4)	(-0.58)	(0.11)	(0.64)	(-0.73)	(2.18)	(2.67)	(2.3)	(2.66)	(2.81)	(-0.09)
SR		-0.15	-0.21	-0.11	-0.19	-0.32	0.16	-0.04	-0.03	0.03	-0.08	-0.01	-0.03	-0.29	-0.71	-0.6	-0.66	-1.12	0.83
mean		(-0.7)	(-1.47)	(-0.94)	(-1.18)	(-1.22)	(1.53)	(-0.33)	(-0.17)	(0.31)	(-0.59)	(-0.06)	(-0.14)	(-0.51)	(-1.78)	(-1.3)	(-2.81)	(-2.12)	(1.97)
sd		(0.15)	(0.27)	(0.11)	(-0.03)	(-0.1)	(-0.06)	(-0.34)	(-0.37)	(-0.37)	(-0.42)	(-0.42)	(-0.1)	(-0.44)	(-0.37)	(-0.05)	(-0.12)	(-0.12)	(-0.12)
SR		(-0.69)	(-2.63)	(-0.95)	(-0.17)	(-0.39)	(-0.35)	(-2.28)	(-2.4)	(-2.11)	(-1.25)	(-2.3)	(-0.55)	(-0.78)	(-0.37)	(-0.18)	(-0.47)	(-0.41)	(-0.88)

Table 6: Returns on Stock Portfolios sorted by Credit Risk Premia excluding Financials and Utilities

We sort stocks based on firms' credit risk premia ($\widehat{RP}_{t+\tau}$) into quintile portfolios and calculate equally-weighted and value-weighted excess returns in *Panel A (B)* excluding Financials and Utilities. P1 contains firms with highest credit risk premia, P5 the ones with lowest credit risk premia. P1-P5 presents results for going long P1 and short P5. Sub-panel *Portfolio Characteristics* summarizes portfolio means of *DD*, *S5*, *MV* (market value), and *BM* (book-to-market). *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

		Full Sample: 01/2001 - 04/2010					Prior to Crisis: 01/2001 - 06/2007					During Crisis: 07/2007 - 04/2010							
		P1	P2	P3	P4	P5	P1-P5	P1	P2	P3	P4	P5	P1-P5	P1	P2	P3	P4	P5	P1-P5
<i>Sort Variable: Credit Risk Premia ($\widehat{RP}_{t+\tau}$)</i>		31.34	5.07	1.36	-1.88	-32.97		24.41	4.33	1.66	-0.2	-17.13		53.5	7.88	0.77	-5.85	-70.56	
<i>Portfolio Characteristics</i>																			
<i>DD</i>		7.09	10.01	11.09	9.98	7.55		7.29	9.97	11.92	11.82	9.02		5.95	8.22	8.77	7.6	5.36	
<i>S5</i>		277.78	102.07	68.75	77.86	220.76		248.89	83.56	52.64	51.51	147.24		403.85	148.21	110.63	127.22	360.71	
<i>MV</i>		9.35	19.39	28.75	27.27	17.07		8.19	16.02	32.06	35.18	14.81		10.36	20.68	28.41	23.46	11.71	
<i>BM</i>		0.72	0.53	0.47	0.5	0.68		0.74	0.55	0.47	0.45	0.63		0.76	0.54	0.5	0.54	0.76	
<i>Portfolio Returns</i>																			
mean		0.81	0.35	0.12	-0.11	-1.88	2.69	1.51	0.9	0.51	0.15	-1.29	2.81	0.48	-0.18	-0.32	-1.67	-4.2	4.68
sd		(0.85)	(0.55)	(0.19)	(-0.18)	(-1.6)	(4.74)	(2.26)	(1.58)	(1.09)	(0.3)	(-1.47)	(5.72)	(0.17)	(-0.09)	(-0.17)	(-0.76)	(-1.21)	(3.14)
SR		0.34	0.22	0.08	-0.08	-0.77	2.06	0.92	0.74	0.46	0.13	-0.69	4.02	11.67	8.17	7.24	7.89	12.5	5.77
													2.42	0.14	-0.08	-0.15	-0.73	-1.16	2.81
<i>Asset Pricing</i>																			
GAPM α		0.82	0.36	0.12	-0.11	-1.87	2.69	1.38	0.82	0.48	0.11	-1.41	2.8	0.96	0.17	-0.01	-1.32	-3.58	4.54
3-fac α		(1.21)	(0.81)	(0.28)	(-0.24)	(-2.31)	(5.52)	(2.79)	(1.75)	(1.08)	(0.24)	(-1.98)	(4.58)	(0.48)	(0.24)	(-0.01)	(-1.03)	(-2.2)	(2.86)
4-fac α		1.16	0.55	0.28	0	-1.65	2.81	2.21	1.05	0.78	0.36	-0.85	3.06	1.21	0.39	0.22	-1.09	-3.3	4.51
MKT		(1.76)	(1.32)	(0.59)	(-0.01)	(-2.23)	(5.41)	(3.5)	(2.07)	(1.41)	(0.74)	(-1.04)	(4.42)	(0.63)	(0.32)	(0.27)	(-0.99)	(-1.96)	(2.56)
SMB		1.16	0.55	0.27	0	-1.65	2.82	2.16	1.04	0.78	0.36	-0.85	3.02	0.93	0.28	0.24	-1.14	-3.13	4.06
HML		(1.72)	(1.34)	(0.56)	(-0.01)	(-2.28)	(5.56)	(1.72)	(2.05)	(1.44)	(0.73)	(-1.05)	(5.4)	(0.49)	(0.23)	(0.24)	(-0.97)	(-1.96)	(3.79)
GAPM α		0.64	0.42	0.32	0.34	0.67	-0.03	0.18	0.22	0.01	0.04	0.22	-0.04	0.85	0.65	0.53	0.64	1.11	-0.26
3-fac α		(3.37)	(3.39)	(2.26)	(2.85)	(2.51)	(-0.2)	(0.89)	(1.83)	(0.09)	(0.31)	(1.14)	(-0.54)	(1.99)	(2.59)	(3.72)	(2.38)	(2.42)	(-2.41)
4-fac α		-0.28	-0.17	-0.2	-0.28	-0.2	-0.07	-0.06	-0.1	-0.03	0.05	-0.02	-0.04	-0.75	-0.67	-0.65	-0.69	-0.86	0.1
MKT		(-1.31)	(-1.08)	(-1.77)	(-1.77)	(-0.63)	(-0.66)	(-0.54)	(-0.73)	(-0.21)	(0.4)	(-0.13)	(-0.21)	(-1.07)	(-1.25)	(-3.14)	(-2.29)	(-1.57)	(0.4)
SMB		-0.41	-0.22	-0.11	0.05	-0.25	-0.17	-0.85	-0.19	-0.31	-0.29	-0.59	-0.26	-0.3	-0.28	-0.03	-0.23	-0.3	0.2
HML		(-2.14)	(-1.67)	(-0.77)	(0.29)	(-0.92)	(-1.2)	(-3.54)	(-1.14)	(-1.43)	(-1.9)	(-2.9)	(-1.45)	(-0.43)	(-0.53)	(-0.2)	(-0.52)	(-0.72)	(1.13)
<i>Portfolio Returns</i>																			
mean		0.39	0.1	-0.26	-0.5	-1.64	2.02	1.09	0.82	-0.01	-0.44	-1.37	2.46	0.03	-0.47	-0.28	-1.27	-3.53	3.56
sd		(0.54)	(0.17)	(-0.59)	(-0.88)	(-1.73)	(3.83)	(1.86)	(1.54)	(-0.02)	(-0.91)	(-1.67)	(4.98)	(0.02)	(-0.33)	(-0.23)	(-0.91)	(-1.42)	(3.02)
SR		0.21	0.07	-0.21	-0.39	-0.87	1.53	0.72	0.72	-0.01	-0.41	-0.8	2.04	0.01	-0.27	-0.18	-0.74	-1.4	2.58
<i>Asset Pricing</i>																			
GAPM α		0.39	0.1	-0.26	-0.5	-1.63	2.02	1.02	0.77	-0.01	-0.45	-1.44	2.46	0.27	-0.27	-0.09	-1.07	-3.14	3.41
3-fac α		(0.67)	(0.2)	(-0.66)	(-1.1)	(-2.54)	(4.12)	(1.82)	(1.55)	(-0.03)	(-0.88)	(-1.93)	(3.76)	(0.17)	(-0.26)	(-0.09)	(-1.12)	(-2.64)	(3.45)
4-fac α		0.6	0.33	-0.13	-0.39	-1.42	2.02	1.55	0.98	0.34	-0.24	-0.97	2.53	0.45	-0.02	0.1	-0.84	-2.91	3.36
MKT		(1.27)	(0.75)	(-0.33)	(-0.87)	(-2.03)	(4.2)	(2.34)	(1.9)	(0.55)	(-0.51)	(-1.19)	(4.03)	(0.29)	(-0.02)	(0.14)	(-1.16)	(-2.43)	(3.2)
SMB		0.6	0.33	-0.13	-0.39	-1.42	2.03	1.52	0.97	0.33	-0.23	-0.98	2.51	0.19	-0.17	0	-0.97	-2.88	3.06
HML		(1.26)	(0.74)	(-0.35)	(-0.89)	(-2.35)	(3.88)	(2.67)	(1.86)	(0.51)	(-0.5)	(-1.21)	(4.17)	(0.14)	(-0.18)	(-0.01)	(-1.15)	(-2.61)	(3.86)
GAPM α		0.38	0.22	0.12	0.21	0.42	-0.03	0.04	0.09	-0.13	-0.01	0.04	0	0.49	0.44	0.35	0.43	0.77	-0.28
3-fac α		(2.32)	(1.83)	(1.24)	(2.36)	(2.04)	(-0.21)	(0.19)	(0.89)	(-0.08)	(-0.08)	(0.17)	(0.03)	(1.58)	(2.01)	(3.39)	(2.89)	(2.12)	(-1.94)
4-fac α		-0.16	-0.16	-0.12	-0.19	-0.21	0.04	0.06	-0.02	0.08	-0.08	0.12	-0.06	-0.56	-0.74	-0.52	-0.66	-0.7	0.14
MKT		(-0.78)	(-0.95)	(-0.92)	(-1.33)	(-1.03)	(0.38)	(0.41)	(-0.12)	(0.59)	(-0.58)	(0.68)	(-0.29)	(-0.96)	(-1.97)	(-1.76)	(-3.53)	(-1.81)	(0.5)
SMB		-0.26	-0.3	-0.14	-0.03	-0.22	-0.04	-0.6	-0.21	-0.41	-0.18	-0.56	-0.04	-0.3	-0.19	-0.05	-0.46	-0.46	0.17
HML		(-1.24)	(-2.57)	(-1.11)	(-0.17)	(-1.29)	(-0.29)	(-2.32)	(-1.44)	(-2.02)	(-1.3)	(-2.85)	(-0.2)	(-0.47)	(-0.44)	(-0.7)	(-0.96)	(-0.91)	(0.86)

Table 7: Returns on Stock Portfolios sorted by Credit Risk Premia: Controlling for Size

We double-sort stocks first into three size (MV) portfolios, then each of them into tercile portfolios based on firms' credit risk premia ($\widehat{RP}_{t+\tau}$) and calculate equally-weighted and value-weighted excess returns in *Panel A (B)*. P1.* contains small, P2.* medium, P3.* big firms. P*.1 contains for the respective size portfolio the firms with highest credit risk premia, P*.3 with lowest credit risk premia. P*.1-P*.3 presents results for going long P*.1 and short P*.3. Sub-panel *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are t -statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

		Full Sample: 01/2001 - 04/2010											
		P1.1	P1.2	P1.3	P1.1-P1.3	P2.1	P2.2	P2.3	P2.1-P2.3	P3.1	3.2	3.3	P3.1-P3.3
<i>Sort Variables</i>													
MV mean		2.44	2.99	2.73		9.02	9.52	9.24		43.66	53.27	56.65	
Credit Risk Premia mean		38.41	2.9	-46.95		18.13	1.31	-16.68		10.27	0.6	-10.03	
Panel A: Equally-Weighted Portfolios													
<i>Portfolio Returns</i>													
mean		1.43	0.32	-1.83	3.26	0.48	0.21	-1.15	1.62	-0.12	-0.07	-1.22	1.1
sd		(1.31)	(0.41)	(-1.4)	(3.92)	(0.65)	(0.32)	(-1.29)	(4.56)	(-0.17)	(-0.14)	(-1.64)	(3.5)
SR		8.75	7.09	10.37	5.17	5.87	5.3	6.69	3.65	5.32	4.37	5.54	2.55
		0.57	0.15	-0.61	2.19	0.28	0.14	-0.59	1.54	-0.08	-0.06	-0.76	1.49
<i>Asset Pricing</i>													
CAPM α		1.38	0.27	-1.9	3.29	0.45	0.18	-1.18	1.63	-0.15	-0.09	-1.24	1.1
		(1.77)	(0.45)	(-2.07)	(4.43)	(0.87)	(0.39)	(-1.71)	(5.18)	(-0.29)	(-0.23)	(-2.3)	(3.34)
3-fac α		1.6	0.45	-1.65	3.25	0.59	0.39	-0.97	1.56	0.03	0.05	-1.09	1.12
		(2.12)	(0.86)	(-1.81)	(4.42)	(1.23)	(1.04)	(-1.5)	(4.11)	(0.07)	(0.11)	(-1.8)	(3.57)
4-fac α		1.6	0.45	-1.65	3.25	0.59	0.39	-0.97	1.56	0.03	0.05	-1.09	1.12
		(2.13)	(0.78)	(-1.97)	(5.73)	(1.22)	(0.91)	(-1.39)	(4.43)	(0.07)	(0.11)	(-2.12)	(3.24)
MKT		0.7	0.59	1.01	-0.3	0.38	0.42	0.48	-0.1	0.36	0.25	0.35	0.01
		(3.8)	(3.66)	(3.95)	(-2.31)	(3.27)	(2.47)	(2.66)	(-1.23)	(2.52)	(2)	(2.69)	(0.23)
SMB		-0.24	-0.33	-0.39	0.15	-0.22	-0.26	-0.27	0.05	-0.14	-0.12	-0.19	0.06
		(-1.23)	(-2.07)	(-1.55)	(0.95)	(-1.15)	(-1.61)	(-1.32)	(0.46)	(-0.77)	(-0.92)	(-0.95)	(0.64)
HML		-0.28	-0.05	-0.19	-0.09	-0.1	-0.21	-0.23	0.13	-0.3	-0.2	-0.18	-0.13
		(-1.36)	(-0.23)	(-0.74)	(-0.86)	(-0.62)	(-0.94)	(-0.98)	(1.41)	(-1.91)	(-1.39)	(-0.73)	(-0.98)
Panel B: Value-Weighted Portfolios													
<i>Portfolio Returns</i>													
mean		1.11	0.36	-1.95	3.06	0.43	0.27	-1.12	1.55	-0.22	-0.43	-1.11	0.9
sd		(1.21)	(0.51)	(-1.55)	(3.75)	(0.61)	(0.46)	(-1.25)	(4.32)	(-0.33)	(-0.89)	(-1.59)	(2.67)
SR		7.78	6.41	9.36	4.99	5.8	5.19	6.67	3.76	5.22	4.13	5.23	2.8
		0.49	0.19	-0.72	2.13	0.26	0.18	-0.58	1.43	-0.14	-0.36	-0.74	1.11
<i>Asset Pricing</i>													
CAPM α		1.07	0.32	-2.02	3.09	0.41	0.24	-1.15	1.56	-0.24	-0.44	-1.13	0.89
		(1.6)	(0.67)	(-2.45)	(5.42)	(0.78)	(0.54)	(-1.63)	(4.81)	(-0.45)	(-1.12)	(-2.14)	(2.63)
3-fac α		1.33	0.51	-1.76	3.09	0.56	0.45	-0.91	1.47	-0.1	-0.31	-0.98	0.88
		(2.01)	(1.02)	(-2.46)	(5.37)	(1.15)	(1.17)	(-1.42)	(4.23)	(-0.21)	(-0.76)	(-1.65)	(2.68)
4-fac α		1.33	0.51	-1.76	3.09	0.56	0.45	-0.91	1.47	-0.1	-0.31	-0.98	0.88
		(1.88)	(0.98)	(-2.37)	(5.43)	(1.15)	(1.11)	(-1.3)	(4.2)	(-0.21)	(-0.84)	(-1.84)	(2.64)
MKT		0.53	0.5	0.95	-0.42	0.37	0.41	0.48	-0.11	0.27	0.17	0.26	0.01
		(3.13)	(3.28)	(3.09)	(-2.4)	(3.4)	(2.44)	(2.59)	(-0.98)	(1.72)	(1.32)	(2.3)	(0.07)
SMB		-0.26	-0.32	-0.4	0.14	-0.24	-0.26	-0.26	0.06	-0.13	-0.1	-0.25	0.11
		(-1.42)	(-2.01)	(-1.56)	(1.09)	(-1.26)	(-1.65)	(-1.45)	(0.48)	(-0.75)	(-0.79)	(-1.49)	(1.67)
HML		-0.36	-0.1	-0.19	-0.17	-0.1	-0.22	-0.26	0.16	-0.2	-0.21	-0.1	-0.1
		(-1.72)	(-0.49)	(-0.57)	(-0.93)	(-0.66)	(-1.04)	(-1.16)	(1.33)	(-1.24)	(-1.54)	(-0.42)	(-0.63)

Table 8: Returns on Stock Portfolios sorted by Credit Risk Premia: Controlling for Book-to-Market

We double-sort stocks first into three book-to-market (*BM*) portfolios, then each of them into tercile portfolios based on firms' credit risk premia (\widehat{RP}_{t+7}) and calculate equally-weighted and value-weighted excess returns in *Panel A (B)*. P1.* contains value (high *BM*), P2.* neutral, P3.* growth stocks. P*.1 contains for the respective book-to-market portfolio the firms with highest credit risk premia, P*.3 with lowest credit risk premia. P*.1-P*.3 presents results for going long P*.1 and short P*.3. Sub-panel *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

	Full Sample: 01/2001 – 04/2010											
	P1.1	P1.2	P1.3	P1.1-P1.3	P2.1	P2.2	P2.3	P2.1-P2.3	P3.1	P3.2	P3.3	P3.1-P3.3
<i>Sort Variables</i>												
<i>BM</i> mean	1.26	1.09	23.56		0.52	0.52	0.53		0.24	0.23	0.24	
Credit Risk Premia mean	31.73	1.63	-44.35		20.61	1.32	-14.69		15.39	0.98	-14.7	
Panel A: Equally-Weighted Portfolios												
<i>Portfolio Returns</i>												
mean	1.12	0.46	-1.96	3.07	0.54	0.1	-0.71	1.25	0.29	-0.19	-1.59	1.87
sd	(1.13)	(0.65)	(-1.39)	(3.58)	(0.74)	(0.15)	(-0.99)	(3.76)	(0.38)	(-0.36)	(-1.9)	(5.03)
SR	8.21	6.09	10.53	5.42	6.51	5.5	6.19	3.09	6.06	4.31	5.91	3.44
	0.47	0.26	-0.64	1.96	0.29	0.06	-0.4	1.4	0.16	-0.15	-0.93	1.89
<i>Asset Pricing</i>												
CAPM α	1.06	0.43	-2.03	3.09	0.51	0.07	-0.74	1.25	0.26	-0.21	-1.61	1.87
3-fac α	(1.42)	(0.78)	(-2.03)	(3.53)	(0.95)	(0.14)	(-1.25)	(3.79)	(0.44)	(-0.53)	(-2.8)	(5.32)
4-fac α	1.29	0.63	-1.9	3.19	0.67	0.15	-0.57	1.24	0.42	-0.05	-1.33	1.74
	(1.76)	(1.26)	(-2.16)	(3.41)	(1.41)	(0.53)	(-1.03)	(3.99)	(0.79)	(-0.12)	(-2.09)	(4.37)
MKT	1.29	0.63	-1.9	3.19	0.67	0.25	-0.57	1.24	0.42	-0.05	-1.33	1.74
	(1.77)	(1.19)	(-1.98)	(4.9)	(1.4)	(0.54)	(-1.06)	(3.85)	(0.81)	(-0.13)	(-2.36)	(4.35)
SMB	0.72	0.51	0.92	-0.2	0.4	0.42	0.44	-0.05	0.41	0.29	0.44	-0.03
	(4.08)	(2.75)	(3.36)	(-2.26)	(2.86)	(3.61)	(3.2)	(-0.58)	(3.09)	(2.24)	(2.55)	(-0.4)
HML	-0.31	-0.26	-0.17	-0.15	-0.19	-0.23	-0.28	0.1	-0.19	-0.16	-0.37	0.18
	(-1.83)	(-1.59)	(-0.58)	(-0.75)	(-0.95)	(-1.5)	(-1.61)	(0.89)	(-0.99)	(-1.28)	(-1.74)	(2.02)
	-0.21	-0.2	-0.15	-0.06	-0.19	-0.19	-0.11	-0.08	-0.19	-0.22	-0.3	0.12
	(-1.09)	(-1.02)	(-0.37)	(-0.36)	(-0.83)	(-0.86)	(-0.56)	(-0.95)	(-1.26)	(-1.39)	(-1.76)	(0.98)
Panel B: Value-Weighted Portfolios												
<i>Portfolio Returns</i>												
mean	0.43	0.35	-1.99	2.42	0.25	0.03	-0.69	0.94	-0.28	-0.51	-1.2	0.92
sd	(0.45)	(0.44)	(-1.42)	(2.51)	(0.45)	(0.06)	(-0.99)	(2.61)	(-0.46)	(-1.14)	(-1.88)	(3.02)
SR	7.61	5.56	10.19	6.49	5.92	4.87	5.86	3.62	5.2	3.99	4.85	3.26
	0.2	0.22	-0.68	1.29	0.15	0.02	-0.41	0.9	-0.19	-0.45	-0.86	0.97
<i>Asset Pricing</i>												
CAPM α	0.39	0.32	-2.03	2.42	0.23	0.01	-0.71	0.94	-0.29	-0.52	-1.22	0.92
3-fac α	(0.53)	(0.59)	(-1.74)	(2.82)	(0.48)	(0.02)	(-1.29)	(2.66)	(-0.54)	(-1.26)	(-2.47)	(2.93)
4-fac α	0.65	0.45	-1.98	2.63	0.38	0.17	-0.63	1.01	-0.18	-0.35	-0.96	0.78
	(0.91)	(0.84)	(-1.8)	(2.54)	(0.94)	(0.42)	(-1.16)	(2.85)	(-0.37)	(-0.81)	(-1.84)	(3.19)
MKT	0.65	0.45	-1.98	2.64	0.38	0.17	-0.63	1.01	-0.18	-0.35	-0.96	0.78
	(0.88)	(0.77)	(-1.73)	(2.86)	(0.97)	(0.44)	(-1.28)	(2.61)	(-0.37)	(-0.81)	(-1.92)	(2.77)
SMB	0.61	0.46	0.58	0.03	0.27	0.35	0.31	-0.04	0.19	0.15	0.28	-0.09
	(3.29)	(1.67)	(2.71)	(0.21)	(2.2)	(4.71)	(1.86)	(-0.5)	(1.38)	(1.32)	(2.42)	(-1.7)
HML	-0.33	-0.12	-0.14	-0.2	-0.14	-0.17	-0.13	0	-0.12	-0.15	-0.35	0.23
	(-1.65)	(-0.69)	(-0.38)	(-0.96)	(-0.84)	(-1.12)	(-0.64)	(-0.02)	(-1.24)	(-1.24)	(-2.26)	(3.09)
	-0.27	-0.19	0.03	-0.3	-0.23	-0.21	-0.05	-0.18	-0.15	-0.28	-0.23	0.08
	(-1.23)	(-1.19)	(0.08)	(-0.76)	(-0.94)	(-1.19)	(-0.18)	(-1.65)	(-1.16)	(-2.42)	(-1.24)	(0.61)

Table 9: Returns on Stock Portfolios sorted by Credit Risk Premia: Controlling for Credit Rating

We double-sort stocks first into three portfolios based on their real-world default probability measured by credit ratings, then each of them into tercile portfolios based on firms' credit risk premia ($\widehat{RP}_{t+\tau}$) and calculate equally-weighted and value-weighted excess returns in *Panel A (B)*. We assign integer numbers to the credit ratings, i.e. AAA=1, AA+=2, etc. P1.* contains stocks of firms with highest 5-year CDS spreads, P2.* with medium, P3.* with lowest. P*.1 contains for the respective 5-year CDS spread portfolio the firms with highest credit risk premia, P*.3 with lowest credit risk premia. P*.1-P*.3 presents results for going long P*.1 and short P*.3. Sub-panel *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

	Full Sample: 01/2001 - 04/2010											
	P1.1	P1.2	P1.3	P1.1-P1.3	P2.1	P2.2	P2.3	P2.1-P2.3	P3.1	P3.2	P3.3	P3.1-P3.3
Panel A: Equally-Weighted Portfolios												
<i>Sort Variables</i>												
Credit Rating mean	12.19	11.43	12.05		8.82	8.69	8.82		5.76	5.46	5.65	
Credit Risk Premia mean	47.98	3.92	-57.39		15.46	1.45	-14.43		11.45	0.6	-14.45	
<i>Portfolio Returns</i>												
mean	1.56	0.1	-2.38	3.94	0.58	0.22	-1.11	1.69	0.27	-0.15	-1.12	1.39
sd	(1.45)	(0.1)	(-1.51)	(4.29)	(0.72)	(0.35)	(-1.27)	(3.54)	(0.45)	(-0.28)	(-1.35)	(3.86)
SR	0.58	0.05	-0.73	1.97	0.3	0.14	-0.59	1.6	0.18	-0.11	-0.6	1.59
<i>Asset Pricing</i>												
CAPM α	1.5	0.05	-2.46	3.96	0.55	0.19	-1.15	1.69	0.25	-0.17	-1.15	1.4
3-fac α	(1.94)	(0.08)	(-2.34)	(4.37)	(1)	(0.4)	(-1.62)	(3.86)	(0.51)	(-0.43)	(-1.83)	(4.43)
4-fac α	1.85	0.24	-2.2	4.05	0.73	0.34	-0.83	1.55	0.35	0.01	-1.05	1.4
MKT	(2.44)	(0.41)	(-2)	(3.84)	(1.36)	(0.74)	(-1.64)	(3.8)	(0.75)	(0.03)	(-1.57)	(4.2)
SMB	1.85	0.23	-2.2	4.05	0.73	0.34	-0.83	1.55	0.35	0.01	-1.05	1.4
HML	(2.46)	(0.42)	(-2.28)	(4.36)	(1.38)	(0.74)	(-1.3)	(3.56)	(0.73)	(0.03)	(-1.55)	(4.1)
	0.85	0.71	0.98	-0.13	0.47	0.4	0.6	0.29	0.26	0.29	0.39	-0.13
	(4.28)	(3.04)	(3.12)	(-1.16)	(3.32)	(3.1)	(4.03)	(-1.63)	(2.01)	(2.64)	(2.36)	(-1.84)
	-0.47	-0.29	-0.24	-0.23	-0.24	-0.28	-0.47	0.23	-0.03	-0.23	-0.07	0.04
	(-1.91)	(-1.21)	(-0.74)	(-0.59)	(-1.34)	(-1.93)	(-2.59)	(2.27)	(-0.16)	(-1.82)	(-0.32)	(0.49)
	-0.35	-0.14	-0.38	0.04	-0.18	-0.04	-0.27	0.09	-0.24	-0.19	-0.17	-0.07
	(-1.45)	(-0.72)	(-1.32)	(0.3)	(-0.93)	(-0.19)	(-1.02)	(1.05)	(-1.76)	(-1.25)	(-0.74)	(-0.48)
Panel B: Value-Weighted Portfolios												
<i>Portfolio Returns</i>												
mean	0.88	-0.06	-2.46	3.34	0.11	0.2	-1.53	1.64	-0.05	-0.6	-1	0.94
sd	(0.95)	(-0.06)	(-1.6)	(3.56)	(0.15)	(0.33)	(-1.68)	(3.74)	(-0.08)	(-1.33)	(-1.38)	(2.88)
SR	8.03	7.46	10.5	7.26	6.14	4.87	6.05	3.79	5.18	3.99	5.48	2.88
	0.38	-0.03	-0.81	1.6	0.06	0.14	-0.88	1.5	-0.04	-0.52	-0.63	1.13
<i>Asset Pricing</i>												
CAPM α	0.84	-0.11	-2.52	3.36	0.08	0.17	-1.57	1.64	-0.07	-0.61	-1.02	0.95
3-fac α	(1.16)	(-0.14)	(-2.42)	(4.31)	(0.14)	(0.4)	(-2.04)	(3.91)	(-0.14)	(-1.7)	(-1.75)	(3.02)
4-fac α	1.25	0.08	-2.16	3.42	0.28	0.31	-1.27	1.55	0.01	-0.46	-0.86	0.87
MKT	(2.08)	(0.11)	(-2.25)	(3.46)	(0.56)	(0.69)	(-2.31)	(3.83)	(0.02)	(-1.2)	(-1.41)	(2.59)
SMB	1.25	0.07	-2.16	3.42	0.28	0.31	-1.27	1.55	0.01	-0.46	-0.86	0.87
HML	(2.12)	(0.11)	(-1.97)	(3.43)	(0.56)	(0.71)	(-1.84)	(3.5)	(0.02)	(-1.33)	(-1.44)	(2.68)
	0.65	0.63	0.83	-0.17	0.41	0.38	0.51	-0.09	0.2	0.19	0.27	-0.07
	(3.7)	(2.38)	(2.34)	(-0.89)	(2.66)	(3.08)	(4.3)	(-1.04)	(1.27)	(1.77)	(1.94)	(-1.11)
	-0.54	-0.21	-0.34	-0.2	-0.23	-0.24	-0.48	0.25	-0.02	-0.18	-0.21	0.19
	(-2.06)	(-0.75)	(-0.95)	(-0.52)	(-1.29)	(-1.69)	(-2.37)	(1.93)	(-0.08)	(-1.64)	(-1.17)	(3.2)
	-0.42	-0.22	-0.51	0.1	-0.24	-0.06	-0.17	-0.04	-0.19	-0.18	-0.17	-0.02
	(-1.78)	(-0.99)	(-1.49)	(0.51)	(-1.28)	(-0.39)	(-0.76)	(-0.33)	(-1.25)	(-1.25)	(-0.74)	(-0.14)

Table 10: Returns on Stock Portfolios sorted by Credit Risk Premia: Controlling for 5-Year CDS Spread

We double-sort stocks first into three portfolios based on their risk-neutral default probability measured by the 5-year CDS spread (S_5), then each of them into tercile portfolios based on firms' credit risk premia ($\widehat{RP}_{t+\tau}$) and calculate equally-weighted and value-weighted excess returns in *Panel A (B)*. P1.* contains stocks of firms with highest 5-year CDS spreads, P2.* with medium, P3.* with lowest. P*1 contains the respective 5-year CDS spread portfolio the firms with highest credit risk premia, P*3 with lowest credit risk premia. P*1–P*3 presents results for going long P*1 and short P*3. Sub-panel *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are t -statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

	Full Sample: 01/2001 – 04/2010											
	P1.1	P1.2	P1.3	P1.1–P1.3	P2.1	P2.2	P2.3	P2.1–P2.3	P3.1	3.2	3.3	P3.1–P3.3
Panel A: Equally-Weighted Portfolios												
<i>Sort Variables</i>												
S5 mean	398.06	230.66	363.88		82.18	74.48	79.14		37.62	33.81	35.21	
Credit Risk Premia mean	47.22	4.07	-56.26		10.98	1.43	-10.95		6.32	0.5	-5.34	
<i>Portfolio Returns</i>												
mean	1.21	0.09	-2.59	3.8	0.22	0.04	-0.74	0.96	0.26	-0.23	-0.23	0.49
sd	(1.01)	(0.08)	(-1.77)	(4.17)	(0.32)	(0.07)	(-0.97)	(2.9)	(0.5)	(-0.46)	(-0.41)	(2.24)
SIR	9.14	8.27	11.45	5.77	5.75	5.44	5.96	2.89	4.36	4.24	4.57	2.02
	0.46	0.04	-0.78	2.28	0.13	0.03	-0.43	1.15	0.21	-0.19	-0.17	0.84
<i>Asset Pricing</i>												
CAPM α	1.15	0.03	-2.67	3.82	0.2	0.01	-0.77	0.97	0.24	-0.25	-0.25	0.49
3-fac α	(1.35)	(0.05)	(-2.51)	(3.98)	(0.38)	(0.03)	(-1.26)	(3.35)	(0.62)	(-0.69)	(-0.59)	(2.21)
4-fac α	1.37	0.25	-2.44	3.81	0.35	0.25	-0.61	0.97	0.35	-0.1	-0.02	0.37
	(1.76)	(0.37)	(-2.82)	(4.64)	(0.76)	(0.56)	(-1.11)	(2.82)	(0.76)	(-0.26)	(-0.05)	(2.19)
MKT	1.37	0.25	-2.44	3.82	0.35	0.25	-0.61	0.97	0.35	-0.1	-0.02	0.37
	(1.8)	(0.4)	(-2.41)	(5.76)	(0.79)	(0.5)	(-1.13)	(3.14)	(0.83)	(-0.27)	(-0.06)	(2.21)
SMB	0.75	0.78	1.05	-0.3	0.33	0.4	0.39	-0.06	0.26	0.27	0.3	-0.04
	(3.76)	(3.18)	(3.24)	(-6.38)	(2.98)	(2.49)	(2.87)	(-0.73)	(2.53)	(2.01)	(2.43)	(-0.76)
HML	-0.23	-0.35	-0.35	0.12	-0.28	-0.25	-0.22	-0.07	-0.05	-0.18	-0.26	0.21
	(-1.01)	(-1.65)	(-1.13)	(0.57)	(-1.51)	(-1.38)	(-1.13)	(-0.9)	(-0.35)	(-1.27)	(-1.71)	(3.06)
	-0.3	-0.14	-0.18	-0.13	-0.06	-0.3	-0.15	0.09	-0.2	-0.16	-0.26	0.06
	(-1.34)	(-0.62)	(-0.39)	(-0.68)	(-0.33)	(-1.39)	(-0.55)	(0.72)	(-1.5)	(-1.12)	(-1.57)	(1.21)
Panel B: Value-Weighted Portfolios												
<i>Portfolio Returns</i>												
mean	0.32	-0.46	-2.92	3.24	0.15	-0.14	-1.23	1.38	-0.05	-0.67	-0.44	0.39
sd	(0.27)	(-0.41)	(-2.02)	(4.45)	(0.23)	(-0.21)	(-1.61)	(3.28)	(-0.11)	(-1.57)	(-0.85)	(1.66)
SIR	9.21	8.02	10.3	6.5	5.74	5.54	6.33	4.02	4.38	3.9	4.38	2.45
	0.12	-0.2	-0.98	1.73	0.09	-0.09	-0.68	1.19	-0.04	-0.59	-0.35	0.55
<i>Asset Pricing</i>												
CAPM α	0.28	-0.5	-2.98	3.26	0.13	-0.17	-1.26	1.39	-0.06	-0.68	-0.46	0.39
3-fac α	(0.29)	(-0.6)	(-2.6)	(4.21)	(0.22)	(-0.37)	(-2.14)	(3.35)	(-0.15)	(-1.91)	(-1.1)	(1.76)
4-fac α	0.63	-0.3	-2.74	3.37	0.23	0	-1.19	1.43	0.06	-0.56	-0.24	0.3
	(0.78)	(-0.4)	(-2.78)	(4.23)	(0.48)	(-0.01)	(-1.82)	(3.4)	(0.15)	(-1.46)	(-0.56)	(1.43)
MKT	0.62	-0.31	-2.74	3.37	0.23	-0.01	-1.19	1.43	0.06	-0.56	-0.24	0.3
	(0.8)	(-0.41)	(-2.51)	(5.05)	(0.48)	(-0.2)	(-1.94)	(3.29)	(0.14)	(-1.46)	(-0.61)	(1.42)
SMB	0.62	0.61	0.8	-0.18	0.26	0.43	0.31	-0.05	0.18	0.15	0.24	-0.06
	(3.38)	(2.37)	(3.39)	(-1.9)	(1.69)	(2.27)	(2.79)	(-0.42)	(1.6)	(1.2)	(2.04)	(-0.97)
HML	-0.36	-0.23	-0.33	-0.03	-0.15	-0.15	-0.08	-0.07	-0.15	-0.11	-0.27	0.12
	(-1.1)	(-0.81)	(-1.13)	(-0.19)	(-0.81)	(-0.8)	(-0.44)	(-0.45)	(-1.09)	(-0.75)	(-2.01)	(1.45)
	-0.47	-0.23	-0.22	-0.25	-0.09	-0.26	-0.06	-0.05	-0.15	-0.17	-0.22	0.08
	(-1.7)	(-1.14)	(-0.59)	(-0.89)	(-0.4)	(-2.3)	(-0.21)	(-0.12)	(-1.08)	(-1.12)	(-1.27)	(1.04)

Table 11: Returns on Stock Portfolios sorted by Credit Risk Premia: Controlling for Liquidity

We double-sort stocks first into three portfolios based on their liquidity measured by the number of contributors by Markt, then each of them into tercile portfolios based on firms' credit risk premia ($\widehat{RP}_{t+\tau}$) and calculate equally-weighted and value-weighted excess returns in *Panel A (B)*. P1.* contains stocks of firms with lowest number of contributors, P2.* with medium, P3.* with highest. P*.* contains the firms with highest credit risk premia, P*.* with lowest credit risk premia. P*.*-P*.* presents results for going long P*.* and short P*.*. Sub-panel *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

		Full Sample: 01/2001 – 04/2010											
		P1.1	P1.2	P1.3	P1.1-P1.3	P2.1	P2.2	P2.3	P2.1-P2.3	P3.1	3.2	3.3	P3.1-P3.3
<i>Sort Variables</i>													
Number of Contributors		3.9	3.96	4.04		8.01	8.2	8.23		12.86	12.47	12.86	
Credit Risk Premium mean		27.39	1.64	-27.03		18.98	1.17	-23.35		19.7	0.97	-23.37	
<i>Panel A: Equally-Weighted Portfolios</i>													
<i>Portfolio Returns</i>													
mean		0.69	-0.04	-1.14	1.83	0.78	-0.03	-1.35	2.13	0.42	0.27	-2.15	2.57
sd		(0.8)	(-0.07)	(-1.15)	(6.46)	(0.93)	(-0.04)	(-1.22)	(2.92)	(0.52)	(0.45)	(-1.91)	(3.81)
SR		6.99	5.08	6.85	3.25	6.4	4.73	8.13	4.87	7.13	5.51	8.42	4.41
		0.34	-0.03	-0.58	1.95	0.42	-0.02	-0.58	1.52	0.21	0.17	-0.88	2.02
<i>Asset Pricing</i>													
CAPM α		0.61	-0.1	-1.23	1.83	0.71	-0.08	-1.45	2.15	0.35	0.23	-2.24	2.59
		(1.11)	(-0.24)	(-1.89)	(6.54)	(1.19)	(-0.19)	(-1.85)	(2.44)	(0.53)	(0.49)	(-2.63)	(4.48)
3-fac α		0.86	0.1	-1.01	1.87	0.91	0.1	-1.23	2.14	0.49	0.39	-2.05	2.54
		(1.65)	(0.26)	(-1.48)	(5.99)	(1.58)	(0.24)	(-1.65)	(2.64)	(0.81)	(0.91)	(-2.55)	(4.5)
4-fac α		0.86	0.1	-1.01	1.87	0.91	0.1	-1.23	2.14	0.49	0.39	-2.05	2.54
		(1.64)	(0.26)	(-1.4)	(5.11)	(1.72)	(0.26)	(-1.64)	(3.38)	(0.79)	(0.86)	(-2.76)	(4.77)
MKT		0.62	0.45	0.62	0.01	0.54	0.38	0.7	-0.16	0.51	0.34	0.69	-0.18
		(4.46)	(3.11)	(3.16)	(0.05)	(3.06)	(3.15)	(3.32)	(-3.1)	(3.89)	(2.7)	(2.45)	(-1.15)
SMB		-0.39	-0.27	-0.32	-0.07	-0.14	-0.21	-0.29	0.15	-0.13	-0.15	-0.27	0.14
		(-2.34)	(-1.9)	(-1.54)	(-0.58)	(-0.75)	(-1.23)	(-1.22)	(1.23)	(-0.62)	(-1.04)	(-0.89)	(0.98)
HML		-0.24	-0.27	-0.21	-0.02	-0.43	-0.25	-0.27	-0.16	-0.26	-0.31	-0.22	-0.04
		(-1.08)	(-1.39)	(-1.03)	(-0.14)	(-2.28)	(-1.84)	(-0.82)	(-1.74)	(-1.1)	(-1.41)	(-0.57)	(-0.27)
<i>Panel B: Value-Weighted Portfolios</i>													
<i>Portfolio Returns</i>													
mean		0.33	-0.54	-1.07	1.4	0.21	-0.53	-1.2	1.41	0.13	0.11	-1.62	1.75
sd		(0.5)	(-1.06)	(-1.34)	(3.52)	(0.27)	(-1.02)	(-1.41)	(2.48)	(0.18)	(0.22)	(-1.7)	(3.45)
SR		5.7	4.29	5.52	3.91	5.65	4.18	6.12	4.59	6.51	4.95	6.91	4.7
		0.2	-0.43	-0.67	1.24	0.13	-0.44	-0.68	1.07	0.07	0.08	-0.81	1.29
<i>Asset Pricing</i>													
CAPM α		0.28	-0.57	-1.11	1.39	0.15	-0.56	-1.26	1.41	0.08	0.09	-1.66	1.73
		(0.56)	(-1.37)	(-1.86)	(2.57)	(0.28)	(-1.49)	(-1.99)	(2.89)	(0.12)	(0.21)	(-1.9)	(3.55)
3-fac α		0.43	-0.4	-0.9	1.33	0.4	-0.41	-1.13	1.54	0.23	0.16	-1.41	1.65
		(0.94)	(-1.01)	(-1.52)	(2.85)	(0.84)	(-1)	(-1.67)	(2.56)	(0.47)	(0.4)	(-1.97)	(3.24)
4-fac α		0.43	-0.4	-0.9	1.33	0.4	-0.41	-1.13	1.54	0.23	0.16	-1.41	1.65
		(0.93)	(-1)	(-1.54)	(3.52)	(0.9)	(-0.97)	(-1.71)	(2.81)	(0.47)	(0.42)	(-2.05)	(2.82)
MKT		0.37	0.27	0.27	-0.02	0.39	0.42	0.4	0.02	0.42	0.17	0.34	0.08
		(2.27)	(2.55)	(2.51)	(-0.05)	(2.86)	(2.44)	(2.73)	(0.27)	(3.05)	(1.34)	(1.5)	(0.5)
SMB		-0.17	-0.11	-0.37	0.2	-0.17	-0.18	-0.22	0.04	-0.21	0.02	-0.25	0.04
		(-0.8)	(-0.85)	(-1.82)	(2.69)	(-0.92)	(-1.21)	(-0.96)	(0.3)	(-1.14)	(0.19)	(-0.88)	(0.27)
HML		-0.23	-0.36	-0.15	-0.08	-0.54	-0.22	-0.09	-0.44	-0.2	-0.26	-0.41	0.21
		(-1.23)	(-2.01)	(-0.87)	(-0.58)	(-2.52)	(-1.69)	(-0.34)	(-1.58)	(-0.77)	(-1.5)	(-1.39)	(-1.2)

Table 12: Returns on Stock Portfolios sorted by Credit Risk Premia: Controlling for Firm Characteristics, Sub-Sample Results

We double-sort stocks first into three portfolios based on the same firm characteristics as in Tables 7 to 11, then each of them into tercile portfolios based on firms' credit risk premia ($\widehat{RP}_{t+\tau}$) and calculate value-weighted excess returns. P1.* contains stocks of firms with highest risk as judged by the firm characteristic (i.e. smallest size (MV), highest book-to-market (BM), worst credit rating, highest 5-year CDS spread ($S5$), lowest liquidity), P2.* with medium, and P3.* contains firms with lowest risk. The sub-portfolios P*.1 then contain the firms with highest credit risk premia and P*.3 with lowest credit risk premia. P*.1–P*.3 presents results for going long P*.1 and short P*.3. Results reported are monthly means and standard deviations of excess returns along with annualized Sharpe ratios and alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are t -statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

	Full Sample: 01/2001 – 04/2010			Prior to Crisis: 01/2001 – 06/2007			During Crisis: 07/2007 – 04/2010		
	P1.1–P1.3	P2.1–P2.3	P3.1–P3.3	P1.1–P1.3	P2.1–P2.3	P3.1–P3.3	P1.1–P1.3	P2.1–P2.3	P3.1–P3.3
Panel A: Controlling for Size									
mean	3.06 (3.75)	1.55 (4.32)	0.9 (2.67)	2.55 (3.98)	1.78 (4.43)	1.13 (3.34)	5.83 (3.14)	3.49 (2.96)	1.66 (2.65)
sd	4.99	3.76	2.8	3.53	4.09	2.3	7.03	5.38	3.68
SR	2.13	1.43	1.11	2.51	1.5	1.71	2.87	2.25	1.57
CAPM α	3.09 (5.42)	1.56 (4.81)	0.89 (2.63)	2.66 (5.13)	1.83 (4.97)	1.2 (3.9)	5.6 (3.42)	3.39 (3.14)	1.78 (2.34)
3-fac α	3.09 (5.37)	1.47 (4.23)	0.88 (2.68)	2.64 (3.39)	1.58 (3.56)	1.34 (3.75)	5.61 (3.15)	3.41 (2.77)	1.63 (2.84)
4-fac α	3.09 (5.43)	1.47 (4.2)	0.88 (2.64)	2.62 (4.86)	1.58 (4.02)	1.33 (3.69)	5.29 (3.75)	3.2 (2.83)	1.38 (2.29)
Panel B: Controlling for Book-to-Market									
mean	2.44 (2.54)	0.94 (2.6)	0.92 (3.02)	1.83 (3.33)	1.67 (3.94)	1.48 (4.78)	6.56 (2.04)	2.21 (1.62)	1.38 (2.04)
sd	6.47	3.62	3.26	4.87	3.25	2.94	12.79	5.26	2.94
SR	1.31	0.89	0.97	1.3	1.78	1.75	1.78	1.45	1.62
CAPM α	2.44 (2.85)	0.94 (2.65)	0.92 (2.93)	1.84 (3.08)	1.76 (4.43)	1.53 (4.67)	6.69 (2.35)	2.17 (1.58)	1.41 (2.41)
3-fac α	2.65 (2.57)	1.01 (2.84)	0.78 (3.19)	1.72 (2.48)	1.91 (4.16)	1.4 (5.11)	6.2 (2.8)	2.04 (1.45)	1.47 (2.37)
4-fac α	2.66 (2.89)	1.01 (2.6)	0.78 (2.77)	1.72 (2.84)	1.89 (4.05)	1.38 (5.12)	5.27 (2.56)	1.73 (1.2)	1.51 (2.13)
Panel C: Controlling for Credit Rating									
mean	3.34 (3.56)	1.64 (3.74)	0.94 (2.88)	2.71 (4.06)	2.07 (3.88)	0.94 (3.06)	5.39 (3.92)	2.3 (3.69)	2.18 (2.45)
sd	7.26	3.79	2.88	6.47	4.15	2.77	7.01	3.56	4.31
SR	1.6	1.5	1.13	1.45	1.73	1.17	2.66	2.23	1.75
CAPM α	3.36 (4.31)	1.64 (3.91)	0.95 (3.02)	2.72 (3.76)	2.12 (4.54)	0.97 (3.04)	5.16 (4.57)	2.36 (3.17)	2.22 (2.14)
3-fac α	3.42 (3.46)	1.55 (3.83)	0.87 (2.59)	2.84 (3.33)	2 (3.25)	1.15 (5.08)	5.11 (4.99)	2.29 (2.91)	2.06 (2.64)
4-fac α	3.42 (3.43)	1.55 (3.5)	0.87 (2.68)	2.81 (3.13)	2.01 (3.16)	1.14 (4.01)	4.78 (6.11)	2.22 (2.8)	1.64 (2.73)
Panel D: Controlling for 5-year CDS Spread									
mean	3.24 (4.45)	1.38 (3.28)	0.39 (1.66)	2.42 (3.75)	1.9 (3.77)	0.49 (1.49)	5.28 (2.56)	2.61 (2.3)	0.53 (1.26)
sd	6.5	4.02	2.45	4.5	3.94	3.07	9.16	5.71	1.91
SR	1.73	1.19	0.55	1.86	1.67	0.55	2	1.58	0.95
CAPM α	3.26 (4.21)	1.39 (3.35)	0.39 (1.76)	2.5 (4.2)	2.04 (4.95)	0.5 (1.43)	5.09 (3.05)	2.73 (2.09)	0.56 (1.32)
3-fac α	3.37 (4.23)	1.43 (3.4)	0.3 (1.43)	2.24 (3.54)	1.87 (3.65)	0.6 (1.76)	4.88 (3.82)	2.49 (2.12)	0.52 (1.72)
4-fac α	3.37 (5.05)	1.43 (3.29)	0.3 (1.42)	2.24 (3.37)	1.87 (3.87)	0.58 (1.76)	4.46 (3.45)	2.1 (1.96)	0.34 (0.99)
Panel E: Controlling for Liquidity									
mean	1.4 (3.52)	1.41 (2.48)	1.75 (3.45)	2.48 (5.34)	1.41 (4.49)	1.38 (3.02)	2.3 (3.45)	3.11 (2.29)	4.04 (3.16)
sd	3.91	4.59	4.7	3.37	3.36	3.11	4.36	5.97	7.36
SR	1.24	1.07	1.29	2.55	1.45	1.54	1.83	1.8	1.9
CAPM α	1.39 (2.57)	1.41 (2.89)	1.73 (3.55)	2.42 (4.5)	1.37 (3.66)	1.55 (3.35)	2.28 (3.93)	3 (2.16)	4.17 (2.87)
3-fac α	1.33 (2.85)	1.54 (2.56)	1.65 (3.24)	2.48 (4.96)	1.29 (3.99)	1.62 (3.49)	2.29 (4.3)	2.83 (2.4)	3.89 (3.05)
4-fac α	1.33 (3.52)	1.54 (2.81)	1.65 (2.82)	2.45 (5.17)	1.28 (4.03)	1.6 (3.54)	2.14 (2.76)	2.4 (3.46)	3.6 (2.36)

Table 13: Out-of-Sample Results

We sort stocks based on firms' credit risk premia ($\widehat{RP}_{t+\tau}$) into quintile and decile portfolios and calculate equally-weighted excess returns. Credit risk premia are estimated as described in section 4.3.3 using monthly data in Panel A and weekly data in Panel B. We estimate the conditional mean or conditional quantiles of credit risk premia using expanding windows (with initial length of one year) and rolling windows (with length of one year) using ordinary least squares (OLS) or quantile regressions (QR). P1 contains firms with highest credit risk premia and, for quintile (decile) portfolios, P5 (P10) firms with lowest credit risk premia. P1–P5 (P1–P10) presents results for quintile (decile) portfolios going long P1 and short P5 (P10). *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991). *Correlations* reports the correlations of the respective strategy's returns with returns on size and book-to-market sorted portfolios.

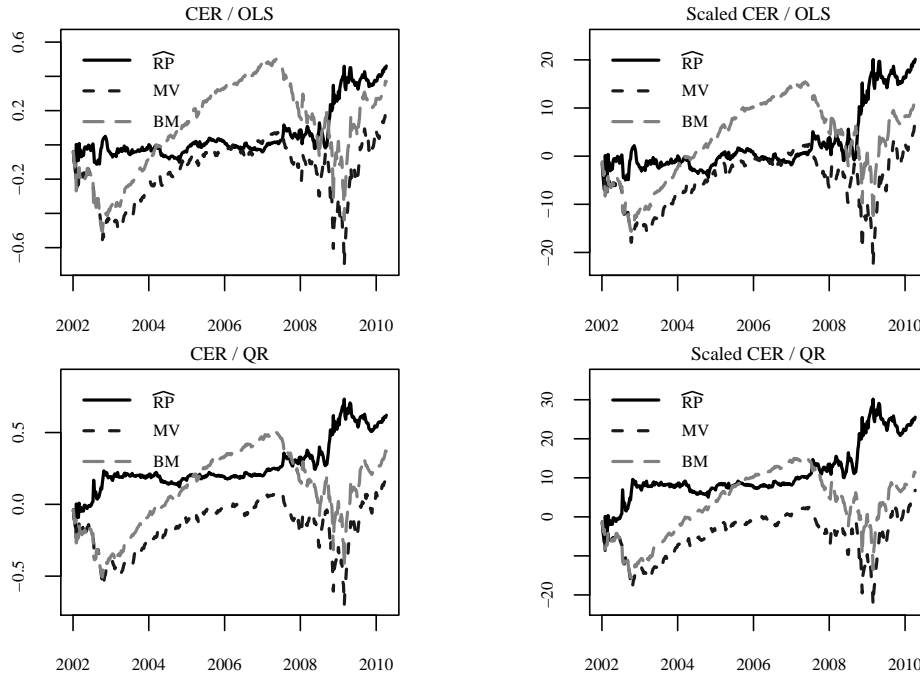
Panel A: Monthly Results

	Quintile Portfolios				Decile Portfolios			
	Expanding OLS P1–P5	Rolling OLS P1–P5	Expanding QR P1–P5	Rolling QR P1–P5	Expanding OLS P1–P10	Rolling OLS P1–P10	Expanding QR P1–P10	Rolling QR P1–P10
<i>Portfolio Returns</i>								
mean	5.44 (1.26)	7.69 (2.36)	8.54 (2.24)	7.50 (2.55)	4.47 (0.65)	6.02 (1.24)	11.87 (2.22)	8.00 (1.62)
sd	14.94	12.24	14.28	11.62	17.93	16.31	16.35	13.76
SR	0.36	0.63	0.6	0.65	0.25	0.37	0.73	0.58
<i>Asset Pricing</i>								
CAPM α	6.01 (1.7)	7.92 (2.62)	9.04 (3.03)	7.72 (2.95)	5.22 (1.09)	6.28 (1.37)	12.48 (2.67)	8.45 (2.02)
3-fac α	5.52 (1.49)	7.37 (2.39)	9.24 (3.02)	8.28 (3.1)	5.84 (1.07)	7.12 (1.34)	13.21 (2.84)	9.85 (2.23)
4-fac α	5.54 (1.64)	7.37 (2.39)	9.26 (2.76)	8.28 (2.9)	5.84 (0.95)	7.09 (1.41)	13.31 (2.83)	9.86 (2.25)
<i>Correlations</i>								
<i>MV</i>	-0.37	-0.2	-0.22	-0.02	-0.35	-0.26	-0.12	-0.16
<i>BM</i>	-0.38	-0.24	-0.31	-0.07	-0.41	-0.34	-0.27	-0.23

Panel: Weekly Results

	Quintile Portfolios				Decile Portfolios			
	Expanding OLS P1–P5	Rolling OLS P1–P5	Expanding QR P1–P5	Rolling QR P1–P5	Expanding OLS P1–P10	Rolling OLS P1–P10	Expanding QR P1–P10	Rolling QR P1–P10
<i>Portfolio Returns</i>								
mean	7.05 (1.52)	8.95 (1.91)	9.08 (1.91)	10.8 (2.31)	14.02 (1.93)	11.49 (1.56)	19.22 (3.01)	17.6 (2.93)
sd	15.13	14.54	16.26	15.47	20.03	19.66	22.11	20.36
SR	0.47	0.62	0.56	0.7	0.7	0.58	0.87	0.86
<i>Asset Pricing</i>								
CAPM α	6.9 (1.56)	8.83 (1.83)	9.07 (2.02)	10.88 (2.25)	14.02 (1.91)	11.33 (1.54)	19.31 (3.28)	17.83 (2.68)
3-fac α	6.98 (1.43)	9.03 (1.65)	8.36 (1.76)	10.3 (1.95)	14.29 (1.71)	11.42 (1.49)	18.31 (2.8)	17.09 (2.69)
4-fac α	6.96 (1.3)	8.99 (1.62)	8.53 (1.58)	10.5 (2.01)	14.27 (1.72)	11.38 (1.37)	18.57 (2.73)	17.26 (2.5)
<i>Correlations</i>								
<i>MV</i>	-0.24	-0.24	-0.25	-0.2	-0.29	-0.27	-0.23	-0.15
<i>BM</i>	-0.29	-0.28	-0.36	-0.34	-0.32	-0.27	-0.4	-0.32

Panel A: Quintile Portfolios



Panel B: Decile Portfolios

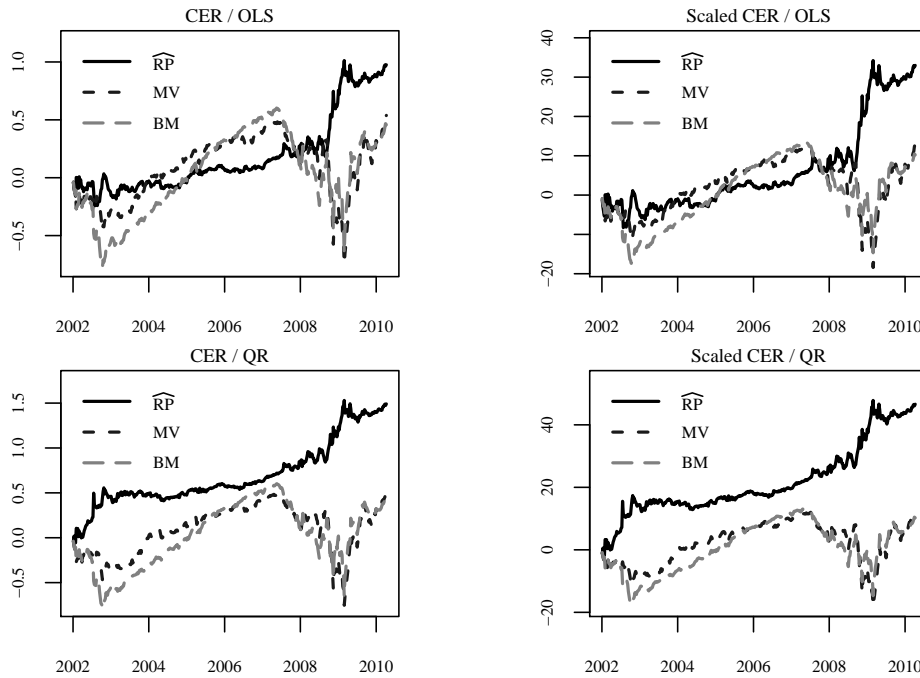
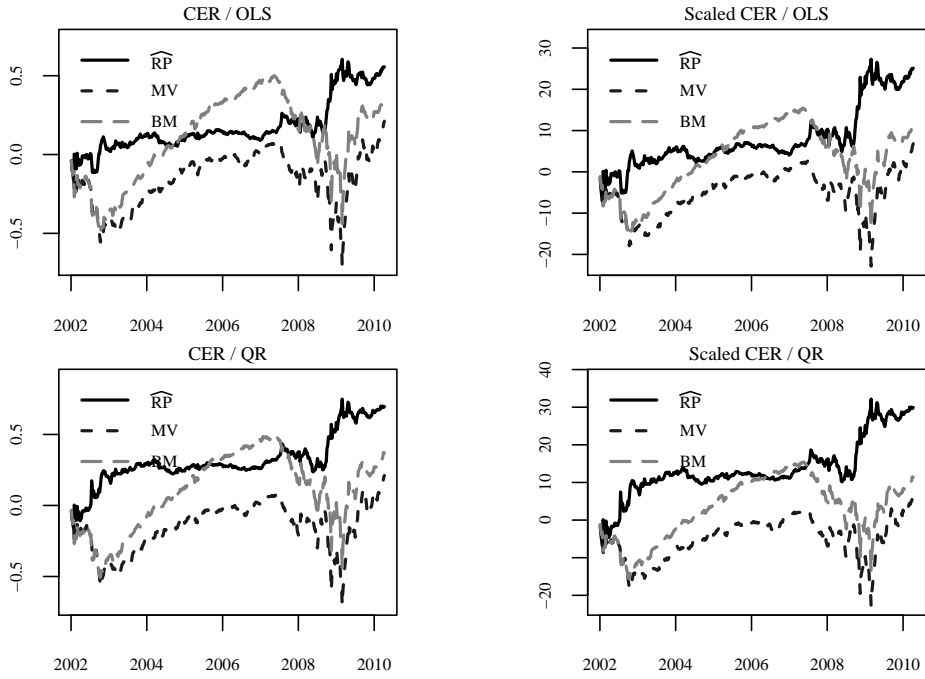


Figure 1: Cumulative excess returns using expanding window forecasts. We plot cumulative excess returns based on weekly data of the high minus low credit risk premium strategy represented by the solid black line and the performance of buying small (value) and selling big (growth) firms represented by the dashed lines in black (grey). For the forecast estimation we use an expanding one-year window as the sampling scheme. Given that our data starts in January 2001, the out-of-sample period is thus January 2002 to April 2010. Panels A and B report results for quintile and decile portfolios, respectively. We plot cumulative excess returns (CER) in the left column and cumulative excess returns scaled by the standard deviation of the excess returns (Scaled CER) in the right column. The top row of each panel shows estimates of the conditional mean using ordinary least squares (OLS), the bottom row conditional quantiles using quantile regressions (QR).

Panel A: Quintile Portfolios



Panel B: Decile Portfolios

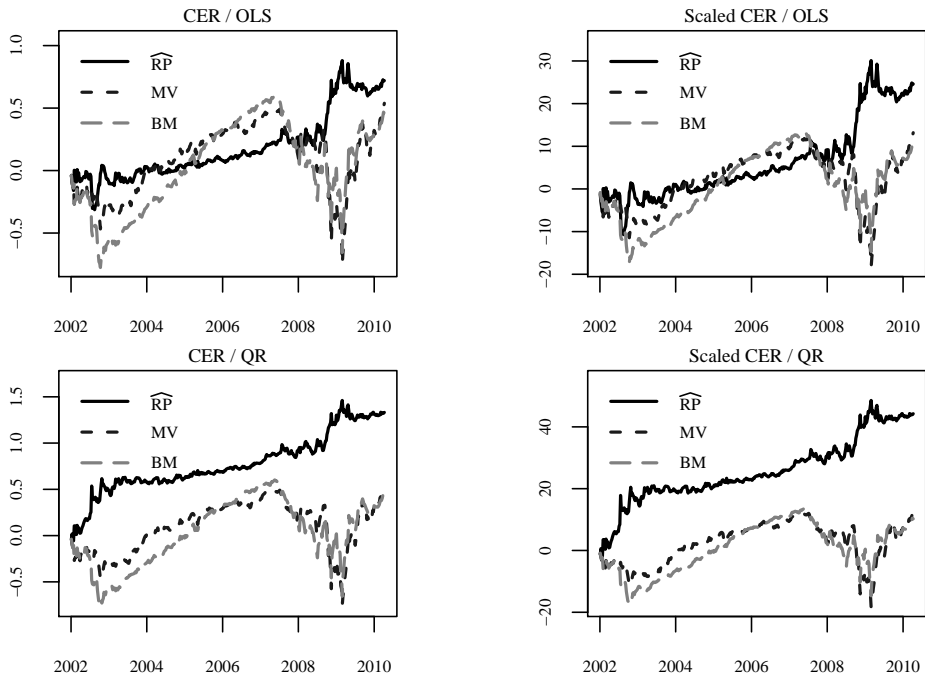


Figure 2: Cumulative excess returns using rolling window forecasts. We plot cumulative excess returns based on weekly data of the high minus low credit risk premium strategy represented by the solid black line and the performance of buying small (value) and selling big (growth) firms represented by the dashed lines in black (grey). For the forecast estimation we use a rolling window as the sampling scheme. Given that our data starts in January 2001, the out-of-sample period is thus January 2002 to April 2010. Panels A and B report results for quintile and decile portfolios, respectively. We plot cumulative excess returns (CER) in the left column and cumulative excess returns scaled by the standard deviation of the excess returns (Scaled CER) in the right column. The top row of each panel shows estimates of the conditional mean using ordinary least squares (OLS), the bottom row conditional quantiles using quantile regressions (QR).

Internet Appendix for
“The Cross-Section of
Credit Risk Premia and Equity Returns”
(not for publication)

This separate Internet Appendix presents additional empirical results that supplement those in the paper. We discuss insights that our findings offer for the distress puzzle (Section AA) and for the link between CDS slope and stock returns (Section BB). Moreover, we report results for repeating the core empirical analysis of our paper using an alternative CDS dataset (Section CC).

AA Equity Dynamics and Default Probabilities: A Distress Puzzle?

In the model of Merton (1974), the asset process follows a Geometric Brownian Motion (GBM). The dynamics of the asset value (V) under the real-world measure (\mathbb{P}) and the risk-neutral measure (\mathbb{Q}) are given by

$$dV_t = \mu V_t dt + \sigma V_t dW_t^{\mathbb{P}} \quad \text{and} \quad dV_t = r V_t dt + \sigma V_t dW_t^{\mathbb{Q}}, \quad (\text{AA.1})$$

respectively, where μ denotes the real-world drift and r is the constant riskless rate that defines the drift under \mathbb{Q} . We denote the volatility of assets by σ and $W^{\mathbb{P}}$ and $W^{\mathbb{Q}}$ are standard Brownian motions under the respective measures. Recalling that debt is a zero-coupon bond with face value D and time-to-maturity T , the default probabilities (i.e. the probability that $V_{t+T} < D$) under the \mathbb{P} - and \mathbb{Q} -measure are given by

$$PD_t^{\mathbb{P}} = \Phi \left(- \frac{\log(V_t/D) + (\mu - \frac{1}{2}\sigma^2)T}{\sigma\sqrt{T}} \right), \quad (\text{AA.2})$$

$$PD_t^{\mathbb{Q}} = \Phi \left(- \frac{\log(V_t/D) + (r - \frac{1}{2}\sigma^2)T}{\sigma\sqrt{T}} \right), \quad (\text{AA.3})$$

where Φ is the standard normal cumulative distribution function. When we combine Eqs. (AA.2) and (AA.3) we get the relation in Eq. (24) that expresses the firm’s market price of

risk in terms of its $PD_t^{\mathbb{P}}$ and $PD_t^{\mathbb{Q}}$ (see e.g. Duffie and Singleton, 2003, p. 119f), i.e.

$$\lambda = \left(\Phi^{-1}(PD_t^{\mathbb{Q}}) - \Phi^{-1}(PD_t^{\mathbb{P}}) \right) \frac{1}{\sqrt{T}}.$$

where Φ^{-1} denotes the inverse of Φ . This relation shows that the compensation per unit of risk is related to the firm's real-world *and* its risk-neutral default probability and that λ increases with the difference in (the Φ^{-1} of) $PD_t^{\mathbb{Q}}$ and $PD_t^{\mathbb{P}}$. Cross-sectional differences in λ hence must be related to cross-firm differences in $PD_t^{\mathbb{Q}}$ *and* $PD_t^{\mathbb{P}}$ because these probabilities reflect cross-firm differences in μ and σ . It is worth noting that leverage ($L \equiv D/V$) has no impact on λ .²⁸ Since equity excess returns can be computed by $(\mu_E - r) = \lambda \cdot \sigma_E$ (see Eqs. (2) and (3)) they must be related to $PD_t^{\mathbb{Q}}$ *and* $PD_t^{\mathbb{P}}$ as well.

We first note that the expected equity return increases in μ , decreases in σ , and increases in L , i.e. we have $\frac{\partial(\mu_E - r)}{\partial\mu} > 0$, $\frac{\partial(\mu_E - r)}{\partial\sigma} < 0$, and $\frac{\partial(\mu_E - r)}{\partial L} > 0$. From Eq. (AA.2) we see that $PD_t^{\mathbb{P}}$ decreases in μ , increases in σ , and increases in L , i.e. $\frac{\partial PD_t^{\mathbb{P}}}{\partial\mu} < 0$, $\frac{\partial PD_t^{\mathbb{P}}}{\partial\sigma} > 0$, and $\frac{\partial PD_t^{\mathbb{P}}}{\partial L} > 0$. As a consequence, the cross-sectional relation between firms' $PD_t^{\mathbb{P}}$ and stock returns depends on the force driving differences across firms. If firms, other things equal, differ by their μ , firms with higher $PD_t^{\mathbb{P}}$ have lower equity returns. The same is true when firms differ by σ . Only when L defines cross-sectional differences, the relation between stock returns and $PD_t^{\mathbb{P}}$ is positive. Analogous implications can be formulated for $PD_t^{\mathbb{Q}}$ which is insensitive to μ ($\frac{\partial PD_t^{\mathbb{Q}}}{\partial\mu} = 0$) and increases in σ ($\frac{\partial PD_t^{\mathbb{Q}}}{\partial\sigma} > 0$) as well as in L ($\frac{\partial PD_t^{\mathbb{Q}}}{\partial L} > 0$), similar to $PD_t^{\mathbb{P}}$.

The results of empirical research documenting a negative relation between equity returns and $PD_t^{\mathbb{P}}$ (see, e.g., Dichev, 1998; Campbell et al., 2008) can thus be consistent with the Merton model in general. Similarly, evidence that there is no pronounced relation between firms' $PD_t^{\mathbb{Q}}$ and equity returns (see, e.g., Anginer and Yildizhan, 2010) is in line with the structural framework. The combination of these findings suggests that cross-sectional differences in μ may be an important driver behind the cross-section of (expected) equity returns, because $PD_t^{\mathbb{P}}$ is negatively related to μ while $PD_t^{\mathbb{Q}}$ is insensitive to μ , and both probabilities

²⁸Furthermore, note that r is the same for all firms and we assume that T is the same for all firms because we use CDS spreads with the same maturities for all firms in our empirical analysis.

share the same features with respect to L and σ . Furthermore, because λ_E increases with μ , decreases with σ , and is insensitive to L , it follows that, in the cross-section, firms with higher $PD_t^{\mathbb{P}}$ have lower equity excess returns per unit of risk. The empirical results in Campbell et al. (2008) suggest that equity Sharpe ratios indeed decrease with distress risk.

We also explore the relation of firms' equity returns to their default probabilities empirically by sorting firms into quintile portfolios from high (portfolio P1) to low (portfolio P5) probability of default. We use the level of the 5-year CDS spread ($S5$) as a proxy for the risk-neutral default probability and credit ratings as well as the distance-to-default (DD) as proxies for the real-world default probability and present results for equally- and value-weighted portfolios in Tables AA.1 to AA.3. We find that there is no pronounced relation for either of these distress risk measures to equity returns in the full sample period, with results depending on the default probability measure used and the weighting scheme applied. The main reason is, as the sub-sample results reveal, that default probabilities appear to exhibit a different relation to firms' stock returns prior to the crisis as compared to during the crisis. In the pre-crisis period, firms' equity returns tend to increase with default probabilities, but not monotonically, and the P1–P5 return is only significant when using DD ; such a positive relation is in line Vassalou and Xing (2004). During the crisis, we see more uniform patterns which resemble the distress puzzle as documented in, e.g., Campbell et al. (2008), however, the negative return of buying the high and selling the low distress portfolio is not significant. While one may argue that our dataset relying on CDS data is too small to allow for a confirmation of the results of previous research, the distinct patterns in the pre-crisis period as compared to during the crisis and, more importantly, the success of the credit risk premium measures that we propose, strongly suggest that the mixed evidence in the literature may result from only using either $PD_t^{\mathbb{P}}$ or $PD_t^{\mathbb{Q}}$ while equity risk premia are related to both.

BB CDS Slope and Equity Excess Returns

BB.1 Relation between CDS Slope, Risk Premia, and Equity Excess Returns

To analyze the relation between the slope of the term structure of CDS spreads and equity returns, we start from noting that the CDS slope contains the same information as CDS

forward premia (i.e. forward-implied changes in the CDS spread; see the definition below); in particular, the slope is a weighted average of CDS forward premia, i.e. an average of risk-neutral expectations. We first define the slope of the CDS term structure as the difference between the T -year CDS spread and the 1-year CDS spread

$$SL_t^T \equiv S_t^T - S_t^1. \quad (\text{BB.1})$$

Second, we define the 1-year forward premium for the T -year CDS spread as the forward CDS spread starting one year from now and then being effective for T years minus the current T -year CDS spread

$$FP_t^{1 \times T} \equiv F_t^{1 \times T} - S_t^T. \quad (\text{BB.2})$$

One can show that the T -year slope is a weighted average of 1-year forward premia for CDS spreads with maturities $1, \dots, (T-1)$,

$$SL_t^T = \sum_{j=1}^{T-1} FP_t^{1 \times (T-j)} \cdot \prod_{k=1}^j \frac{RPV_t^{1 \times (T-k)}}{RPV_t^{T-k+1}}. \quad (\text{BB.3})$$

The weights are determined by $RPVs$, see Appendix A, and increase with maturity.²⁹

Recalling that the forward CDS spread is the risk-neutral expectation about the future CDS spread, see Eq. (14), and that the forward premium therefore is the risk-neutrally expected change in the CDS spread, the slope as an average of forward premia thus conveys information about risk-neutral but not about real-world default expectations. Our structural model implies and our empirical results strongly support that the essential information implicit in the term structure of CDS spreads is not about forward-implied changes in CDS spreads but about risk premia, i.e. the difference in \mathbb{P} - and \mathbb{Q} -measure expectations. In

²⁹ To see this, start from the 2-year slope

$$SL_t^2 \equiv S_t^2 - S_t^1 = \frac{S_t^1 RPV_t^1 + F_t^{1 \times 1} RPV_t^{1 \times 1} - S_t^1 RPV_t^2}{RPV_t^2} = \frac{RPV_t^{1 \times 1}}{RPV_t^2} FP_t^{1 \times 1}$$

The 3-year slope can then be written as

$$SL_t^3 \equiv S_t^3 - S_t^1 = \frac{S_t^1 RPV_t^1 + F_t^{1 \times 2} RPV_t^{1 \times 2} - S_t^1 RPV_t^3}{RPV_t^3} = \frac{RPV_t^{1 \times 1}}{RPV_t^2} [FP_t^{1 \times 2} + SL_t^2],$$

and so forth for longer T .

other words, it is about the bias in forward credit spreads which is caused by deviations from the expectations hypothesis.³⁰ Recent research shows that deviations from the EH and the biasedness of forward rates can be explained by risk premia that feature particular patterns with respect to their correlation with forward premia (see, for example, Backus et al. (2001) and Dai and Singleton (2002) for bond markets and Sarno et al. (2011) for currency markets). Analogous to these markets, the predictive ability of CDS forward premia and, hence, of the CDS slope for subsequent CDS (excess) returns depends on the correlation between forward premia (and thus slope) with risk premia embedded in the term structure.

If the CDS slope positively predicts CDS spread changes, as reported by Han and Zhou (2011), it follows from the structural framework outlined in section 2 that it negatively predicts credit risk premia priced in equity returns: Eqs. (13) and (16) shows that there is an inverse relation between equity returns and CDS spread changes. In other words, the slope of the CDS term structure negatively predicts equity returns *because* it positively predicts changes in CDS spreads, which in turn results from negatively predicting the risk premium component in CDS spread changes. Our framework thus provides a credit risk premium based rationale for the negative relation between CDS slope and equity returns found in Han and Zhou (2011).

It is important to note, however, that capturing risk premia in this indirect way, i.e. just through their correlation with CDS slope, has the following implication: if the correlation of CDS slope and excess changes in CDS spreads exhibits time-variation, it follows that the predictive relation of CDS slope for equity returns changes over time as well. We present empirical evidence supporting this and our previous arguments in detail below.

BB.2 Empirical Results

We find that the CDS slope mostly reflects the information in CDS forward premia and to a much lesser extent information about risk premia. Table BB.1 reports results from regressing, on a firm by firm basis, CDS spread changes, CDS forward premia, and excess changes in

³⁰Finding that the slope positively predicts changes in CDS spreads can be viewed as being consistent with the expectations hypothesis (EH) since the slope is a weighted average of CDS forward premia. Conversely, the predictability of excess changes in CDS spreads that we report in Section 4.2 is indicative for the presence of time-varying risk premia and thus seems to be inconsistent with the EH. These apparently conflicting results qualitatively resemble the EH paradox uncovered by Campbell and Shiller (1991) and the EH failure documented in Fama and Bliss (1987) in bond markets and by Fama (1984) in the foreign exchange market.

CDS spreads on the CDS slope defined as 5-year minus 1-year CDS spread. Panel A reports results when using all firms in our sample, Panel B results for the sample excluding financial and utility firms. Our results suggest that the slope predicts CDS spread changes and excess returns with an average R^2 of 0.11 in the sub-samples and an R^2 s of 0.07 in the full sample; this is in line with our regressions of excess changes on forward premia reported in Panel A of Table 1. The relation between CDS slope and forward premia is much stronger. Furthermore, the sign of the relation between CDS slope and CDS spread changes as well as excess changes in CDS spreads changes over time. The summary statistics for the regression coefficients show that, on average, slope negatively predicts CDS spread changes and excess changes in CDS spreads prior to the crisis but positively during the crisis. This implies that slope positively predicts CDS-implied risk premia in the pre-crisis and negatively in the crisis period. From our structural framework it then follows that slope should positively predict equity excess returns in the first part of our sample and that slope should be negatively related to stock returns in the latter part.

We exactly find this empirically for, both, equally- and value-weighted portfolios when using all firms in our sample (Table BB.2) and when excluding financial and utility firms (see Table BB.3). In line with Han and Zhou (2011), we find that slope positively predicts CDS spread changes and negatively predicts equity returns during the crisis. In this period, the returns of trading high minus low slope portfolios are significant but only when we exclude financial and utility firms from the sample. Before the crisis, the relation between slope and stock returns tends to be positive but is not significant.

Our results thus show how the predictive relation between CDS slope and equity returns depends on the (time-varying) correlation between CDS slope and CDS risk premia. Overall, these findings suggest that the results of Han and Zhou (2011) are related to credit risk premia in a manner consistent with our structural framework and furthermore provide additional evidence for the necessity to not only rely on risk-neutral but to also explicitly account for real-world default risk information.

CC Empirical Analysis using an Alternative Data Set

CC.1 Data

We obtain daily CDS spreads for 677 USD denominated contracts of US based obligors from Datastream (the source is Credit Market Analytics (CMA)) for the period between January 2, 2004 and June 30, 2010. We use only the five canonical CDS maturities of 1, 3, 5, 7, and 10 years since these are most frequently quoted and traded. The protection payment may be triggered by several different restructuring events, ranging from no-restructuring to full-restructuring. We include contracts that adopt the modified-restructuring (MR) clause, which was the market convention before the introduction of the CDS Big Bang protocol in April 2009, and contracts that adopt the no-restructuring (NR) clause, which has been the market standard since the changes of the protocol took place.³¹ Moreover, we remove non-corporate obligors (such as states and counties) and daily observations where the 5-year CDS spread is not available which is typically an indication for contracts on reference entities being traded infrequently. This leaves us with 906,936 observations across 599 firms.

For our analysis of the link between stock and CDS markets, we obtain equity data from Datastream and firm characteristics from Compustat for the same sample period. We exclude firms for which stock data is not available (in most cases these are privately-held firms or non-list subsidiaries). We also apply a filter to remove stale price observations, where we define prices to be stale if we observe equal prices on at least five consecutive days. In such a case we only consider the first of these observations and classify the subsequent observations as not available. We calculate various proxies for distress risk following previous research. In particular, to compute firms' distance-to-default (see Appendix B) we obtain book values of liabilities using the Compustat annual files. To estimate the firm's notional debt value we assume that it consists of short-term and long-term debt. For short-term debt we use Compustat data item "Debt Due in 1st Year" (DD1) which represents the current portion of long-term debt. For long-term debt we use the Compustat data item "Long-Term Debt - Total" (DLTT).

³¹We still find observations in the CDS data set where the restructuring field is empty. Note that we do not remove these observations because according to Datastream the field of the restructuring clause was added not before 2006.

We finally end up with a merged data set consisting of 620,336 observations of 404 firms in the period between January 2, 2004 and June 30, 2010 where CDS spreads, stock prices and firm characteristics are available.

CC.2 Empirical Results

The empirical results using Datstream data are qualitatively identical to those reported in the main text using Markit, CRSP, and Compustat data, thereby providing strong evidence for the robustness of the relations established in the paper. We organize the presentation of results in this Internet Appendix analogue to the corresponding Tables in the paper. For space reasons, we limit our discussion to empirical estimates of the credit risk premium defined in Eq. (13) and we only report results for value-weighted equity portfolio returns, which, in line with the Markit data results, are somewhat less pronounced as compared to using equally-weighted portfolios. Note that the equity return results in Tables CC.2 to CC.6 are annualized.

We report descriptive statistics and predictability results for CDS spreads in Table CC.1. We find that the properties of CDS spreads are different prior as compared to during the crisis and that excess changes in CDS spreads are predictable using a single factor extracted from the term structure of forward CDS spreads. (Compare to Tables 1 and 2 in the paper.)

Table CC.2 reports our core result that empirically confirms the positive relation between equity returns and credit risk premia. (Compare to Table 5 in the paper.) To control for firm characteristics, we conduct sequential portfolio sorts using firm size, book-to-market ratios, and relative CDS bid-ask spreads (i.e. 5-year bid-ask spread divided by the 5-year mid CDS spread) as control variables. We find that buying high and selling low credit risk premium firm generates highest equity excess returns for small firms, value stocks, and firms whose CDS contracts are associated with high liquidity and low transaction costs in CDS markets; see Tables CC.3 to Table CC.5. (Compare to Tables 7, 8, and 11.)

In recourse to the debate on the distress puzzle, Table CC.6 shows that the link between default probabilities and equity returns is different in the pre-crisis period as compared to during the crisis. We find again that in the first part of our sample the relation between the

distance-to-default and the 5-year CDS spread to equity returns tends to be positive, while it appears to be negative during the crisis. (Compare to Internet Appendix AA, Tables AA.3 and AA.1.)

Overall, repeating the empirical analysis with the alternative data set provides further support for the strong link between equity excess returns and credit risk premia found in the paper and for our claim that relying on either real-world *or* risk-neutral default risk information may not be sufficiently informative. Furthermore, these results show that our findings are not driven by the choice of CDS data source, the particular cross-section of firms, and provide further evidence on robustness across sub-samples.

Table AA.1: Returns on Stock Portfolios sorted by 5-Year CDS Spread

We sort stocks based on firms' 5-year CDS spread ($S5$) into quintile portfolios and calculate equally-weighted and value-weighted excess returns in *Panel A (B)*. P1 contains firms with highest 5-year CDS spread, P5 the ones with lowest 5-year CDS spread. P1–P5 presents results for going long P1 and short P5. Sub-panel *Portfolio Characteristics* summarizes portfolio means of DD , $S5$, MV (market value), and BM (book-to-market). *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are t -statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

	P1	P2	P3	P4	P5	P1–P5	P1	P2	P3	P4	P5	P1–P5	P1	P2	P3	P4	P5	P1–P5
	Full Sample: 01/2001 – 04/2010						Prior to Crisis: 01/2001 – 06/2007						During Crisis: 07/2007 – 04/2010					
<i>Sort Variable: 5-Year CDS spread (S5)</i>																		
mean	447.09	137.49	76.76	48.63	29.28		343.36	101.38	58.12	39.27	23.22		702.46	227.27	123.42	72.31	44.6	
<i>Portfolio Characteristics</i>																		
DD	5.32	7.37	8.69	9.87	12.83		5.99	8.34	9.67	10.91	13.75		3.82	5.24	6.47	7.56	10.64	
$S5$	447.09	137.49	76.76	48.63	29.28		343.36	101.38	58.12	39.27	23.22		702.46	227.27	123.42	72.31	44.6	
MV	4.91	9.28	14.2	22.58	53.44		5.36	8.83	13.01	22.31	60.27		3.8	10.51	17.24	23.3	36.56	
BM	0.99	13.09	0.64	0.53	0.38		0.85	18.52	0.65	0.54	0.36		1.34	0.77	0.63	0.53	0.41	
Panel A: Equally-Weighted Portfolios																		
<i>Portfolio Returns</i>																		
mean	-0.75	-0.14	-0.25	0.11	-0.18	-0.57	0.12	0.58	0.14	0.75	0.08	0.04	-2.69	-1.62	-1.04	-1.28	-0.71	-1.99
sd	(-0.51)	(-0.16)	(-0.39)	(0.18)	(-0.38)	(-0.61)	(0.12)	(0.92)	(0.28)	(1.66)	(0.2)	(0.06)	(-0.68)	(-0.57)	(-0.53)	(-0.74)	(-0.47)	(-0.82)
SR	10.71	7.02	5.28	4.77	4.21	7.37	7.28	4.78	3.7	3.66	3.22	4.9	16.39	10.66	7.96	6.63	6.04	11.42
	-0.24	-0.07	-0.16	0.08	-0.15	-0.27	0.06	0.42	0.13	0.71	0.09	0.03	-0.57	-0.53	-0.45	-0.67	-0.41	-0.6
<i>Asset Pricing</i>																		
CAPM α	-0.73	-0.13	-0.24	0.11	-0.18	-0.55	-0.06	0.5	0.08	0.72	0.04	-0.1	-1.81	-1.15	-0.76	-1.04	-0.46	-1.34
3-fac α	(-0.8)	(-0.2)	(-0.49)	(0.25)	(-0.47)	(-0.98)	(-0.08)	(0.96)	(0.19)	(1.77)	(0.11)	(-0.18)	(-0.82)	(-0.69)	(-0.6)	(-0.91)	(-0.5)	(-0.9)
4-fac α	(-0.6)	(0.08)	(-0.13)	(0.56)	(-0.13)	(-0.78)	0.9	0.83	0.31	0.93	0.36	0.54	-1.57	-0.89	-0.5	-0.78	-0.27	-1.3
MKT	0.99	0.53	0.35	0.28	0.26	0.74	0.37	0.19	0.14	0.06	0	0.37	1.32	0.87	0.58	0.48	0.47	0.85
SMB	(3.87)	(3.46)	(3.16)	(2.41)	(2.22)	(4.36)	(1.34)	(1.19)	(1.17)	(0.45)	(-0.01)	(2.22)	(3.28)	(2.6)	(2.61)	(3.04)	(7.81)	(2.9)
HML	(-1.25)	(-1.24)	(-1.71)	(-1.79)	(-0.66)	(-1.27)	(-1.42)	(-0.27)	(-0.5)	(-0.6)	(0.64)	(-2.04)	(-2.26)	(-1.19)	(-1.6)	(-2.82)	(-8.64)	(-0.31)
	-0.17	-0.1	-0.12	-0.04	-0.17	0	-0.91	-0.32	-0.21	-0.19	-0.38	-0.53	-0.01	-0.35	-0.27	-0.16	-0.19	0.18
	(-0.69)	(-0.5)	(-0.77)	(-0.33)	(-1.4)	(0.01)	(-3.27)	(-1.54)	(-1.82)	(-1.13)	(-3.05)	(-3.58)	(-0.02)	(-0.49)	(-0.56)	(-0.7)	(-2.93)	(0.42)
Panel B: Value-Weighted Portfolios																		
<i>Portfolio Returns</i>																		
mean	-1.26	-0.42	-0.64	-0.13	-0.38	-0.87	-0.24	0.35	-0.2	0.57	-0.27	0.03	-3.7	-2.12	-1.55	-1.69	-0.58	-3.12
sd	(-0.97)	(-0.46)	(-0.96)	(-0.23)	(-0.87)	(-0.96)	(-0.26)	(0.61)	(-0.35)	(1.19)	(-0.67)	(0.02)	(-0.93)	(-0.74)	(-0.81)	(-1.13)	(-0.49)	(-1.17)
SR	10.16	7.03	5.45	4.93	3.76	7.63	6.81	4.85	4.29	4.21	3.07	4.92	15.57	10.59	7.59	6.15	5.16	11.83
	-0.43	-0.21	-0.4	-0.09	-0.35	-0.4	-0.12	0.25	-0.16	0.47	-0.3	0.01	-0.82	-0.69	-0.71	-0.95	-0.39	-0.91
<i>Asset Pricing</i>																		
CAPM α	-1.25	-0.41	-0.63	-0.13	-0.38	-0.87	-0.36	0.31	-0.27	0.58	-0.27	-0.09	-3.14	-1.66	-1.29	-1.53	-0.39	-2.75
3-fac α	(-1.21)	(-0.59)	(-1.14)	(-0.26)	(-1.11)	(-1.22)	(-0.45)	(0.55)	(-0.54)	(1.16)	(-0.72)	(-0.16)	(-1.58)	(-0.89)	(-0.95)	(-1.43)	(-0.5)	(-1.69)
4-fac α	(-1)	(-0.59)	(-0.93)	0	(-0.73)	(-1)	0.31	0.58	0.04	0.91	0.03	0.28	-2.73	-1.53	-1.09	-1.2	-0.23	-2.5
MKT	(-1.13)	(-0.58)	(-0.88)	(-0.01)	(-0.76)	(-1.13)	0.26	0.58	0.03	0.89	0.07	0.45	(-1.02)	(-0.96)	(-0.76)	(-2.81)	(-0.37)	(-1.54)
SMB	(3.45)	(2.35)	(3.35)	(1.29)	(1.59)	(4.15)	0.22	-0.01	0.12	-0.11	-0.07	0.29	1.02	0.78	0.48	0.34	0.38	0.64
HML	(-1.24)	(-0.13)	(-1.25)	(-1.5)	(-1.31)	(-1.02)	(-0.87)	(0.84)	(-0.35)	(-0.38)	(-0.17)	(-0.79)	(-1.19)	(-0.64)	(-1.25)	(-2.24)	(-3.31)	(-0.95)
	-0.22	-0.06	-0.13	-0.02	-0.12	-0.1	-0.62	-0.36	-0.31	-0.31	-0.31	-0.31	-0.26	-0.37	-0.15	0.08	-0.16	-0.1
	(-0.95)	(-0.29)	(-0.83)	(-0.12)	(-1.07)	(-0.55)	(-2.02)	(-1.7)	(-2.11)	(-1.69)	(-2.55)	(-1.46)	(-0.33)	(-0.52)	(-0.26)	(2.78)	(-1.22)	(-0.25)

Table AA.2: Returns on Stock Portfolios sorted by Credit Ratings

We sort stocks based on firms' credit ratings into quintile portfolios and calculate equally-weighted and value-weighted excess returns in *Panel A (B)*. We assign integer numbers to the credit ratings, i.e. AAA=1, AA+=2, etc. P1 contains firms with lowest credit rating, P5 the ones with highest credit rating. P1-P5 presents results for going long P1 and short P5. Sub-panel *Portfolio Characteristics* summarizes portfolio means of *DD*, *S5*, *MV* (market value), and *BM* (book-to-market). *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

Sort Variable: Credit Rating	Full Sample: 01/2001 – 04/2010					Prior to Crisis: 01/2001 – 06/2007					During Crisis: 07/2007 – 04/2010							
	P1	P2	P3	P4	P5	P1-P5	P1	P2	P3	P4	P5	P1-P5	P1	P2	P3	P4	P5	P1-P5
mean	12.76	10.13	8.78	7.26	4.92		12.30	9.84	8.57	7.04	4.76		13.78	10.77	9.26	7.74	5.24	
<i>Portfolio Characteristics</i>																		
<i>DD</i>	5.52	7.68	8.97	10.15	12		6.26	8.66	9.85	11	13.05		4.01	5.63	7.07	8.37	9.74	
<i>S5</i>	437.63	167.79	103.76	73.87	51.67		344.17	129.6	81.69	51.76	31.37		652.53	257.41	156.18	128.84	96.65	
<i>MV</i>	4.57	6.74	9.97	17.26	53.07		5.12	7.07	10.45	17.81	55.26		3.29	5.99	8.79	16	48.99	
<i>BM</i>	0.83	0.77	15.91	0.57	0.47		0.75	0.75	22.76	0.53	0.44		1.02	0.82	0.73	0.65	0.53	
Panel A: Equally-Weighted Portfolios																		
<i>Portfolio Returns</i>																		
mean	-0.26	-0.25	-0.17	-0.09	-0.55	0.29	0.68	0.29	0.17	0.49	0.06	0.62	-2.18	-1.27	-0.78	-1.16	-1.81	-0.37
sd	(-0.2)	(-0.28)	(-0.22)	(-0.13)	(-0.8)	(0.45)	(0.78)	(0.45)	(0.32)	(0.95)	(0.15)	(1.16)	(-0.58)	(-0.51)	(-0.35)	(-0.6)	(-0.92)	(-0.2)
SR	9.68	6.7	5.97	5.38	5.41	5.84	6.38	4.9	4.27	4.02	3.73	4.13	14.6	9.68	8.75	7.64	7.88	8.71
	-0.09	-0.13	-0.1	-0.06	-0.35	0.17	0.37	0.21	0.14	0.42	0.06	0.52	-0.52	-0.45	-0.31	-0.53	-0.79	-0.15
<i>Asset Pricing</i>																		
CAPM α	-0.48	-0.37	-0.27	-0.17	-0.62	0.14	0.29	0.07	-0.06	0.35	-0.04	0.33	-1.37	-0.82	-0.4	-0.84	-1.57	0.2
3-fac α	(-0.58)	(-0.6)	(-0.5)	(-0.34)	(-1.25)	(0.31)	(0.38)	(0.11)	(-0.11)	(0.71)	(-0.09)	(0.61)	(-0.71)	(-0.62)	(-0.29)	(-0.74)	(-1.09)	(0.26)
4-fac α	-0.24	-0.12	-0.04	-0.02	-0.48	0.25	1.08	0.63	0.46	0.75	0.39	0.69	-1.06	-0.36	-0.15	-0.63	-1.36	0.3
	(-0.3)	(-0.22)	(-0.09)	(-0.04)	(-0.93)	(0.58)	(1.18)	(1.16)	(1.09)	(1.72)	(0.93)	(1.27)	(-0.61)	(-0.49)	(-0.59)	(-0.98)	(-1.36)	(0.26)
	-0.23	-0.12	-0.04	-0.02	-0.48	0.25	1.08	0.63	0.46	0.75	0.39	0.69	-1.09	-0.66	-0.21	-0.64	-1.49	0.4
	(-0.3)	(-0.22)	(-0.09)	(-0.03)	(-0.97)	(0.58)	(1.18)	(1.22)	(0.93)	(1.59)	(0.97)	(1.29)	(-0.54)	(-0.58)	(-0.16)	(-0.58)	(-1.23)	(0.33)
MKT	0.98	0.58	0.52	0.39	0.32	0.66	0.4	0.24	0.28	0.11	0.03	0.37	1.31	0.81	0.64	0.58	0.45	0.85
SMB	(3.82)	(3.4)	(5.26)	(2.45)	(2.32)	(4.07)	(1.87)	(1.31)	(1.94)	(0.57)	(0.2)	(1.99)	(3.02)	(3.17)	(2.34)	(3.14)	(3.55)	(3.11)
HML	(-1.2)	(-1.84)	(-2.33)	(-0.81)	(-0.7)	(-1.11)	(-0.71)	(-1.14)	(-1.53)	(0.06)	(0.09)	(-0.71)	(-1.92)	(-2.4)	(-1.25)	(-1.52)	(-2.52)	(-0.72)
	-0.32	-0.31	-0.23	-0.24	-0.22	-0.09	-0.96	-0.64	-0.55	-0.52	-0.56	-0.4	-0.24	-0.28	-0.08	-0.18	-0.13	-0.11
	(-1.17)	(-1.31)	(-1.12)	(-0.96)	(-1.27)	(-0.66)	(-3.76)	(-2.77)	(-3.29)	(-2.81)	(-3.53)	(-3.08)	(-0.37)	(-0.62)	(-0.14)	(-0.48)	(-1)	(-0.24)
Panel B: Value-Weighted Portfolios																		
<i>Portfolio Returns</i>																		
mean	-0.57	-0.52	-0.52	-0.17	-0.77	0.2	0.42	-0.04	-0.04	0.35	-0.37	0.78	-2.53	-1.51	-1	-1.16	-1.56	-0.97
sd	(-0.48)	(-0.59)	(-0.76)	(-0.27)	(-1.34)	(0.29)	(0.52)	(-0.08)	(-0.44)	(0.69)	(-0.89)	(1.38)	(-0.74)	(-0.6)	(-0.53)	(-0.68)	(-0.97)	(-0.52)
SR	8.48	6.18	5.35	5.02	4.61	5.94	5.81	4.39	4.28	4.23	3.54	4.71	12.59	9.06	7.29	6.5	6.41	8.11
	-0.23	-0.29	-0.34	-0.12	-0.58	0.11	0.25	-0.03	-0.2	0.28	-0.36	0.58	-0.7	-0.38	-0.48	-0.62	-0.84	-0.42
<i>Asset Pricing</i>																		
CAPM α	-0.75	-0.62	-0.61	-0.25	-0.81	0.06	0.11	-0.2	-0.44	0.21	-0.39	0.5	-1.84	-1.12	-0.7	-0.88	-1.37	-0.47
3-fac α	(-0.9)	(-0.99)	(-1.13)	(-0.53)	(-1.86)	(0.12)	(0.16)	(-0.37)	(-0.87)	(0.42)	(-0.89)	(0.86)	(-1.18)	(-0.82)	(-0.57)	(-0.86)	(-1.21)	(-0.44)
4-fac α	-0.45	-0.36	-0.39	-0.08	-0.67	0.22	0.71	0.29	0.11	0.67	0.02	0.69	-1.47	-0.81	-0.47	-0.69	-1.17	-0.3
	(-0.65)	(-0.64)	(-0.84)	(-0.21)	(-1.48)	(0.5)	(0.8)	(0.51)	(0.2)	(1.34)	(0.04)	(1.11)	(-1.5)	(-0.57)	(-0.49)	(-0.79)	(-1.11)	(-0.36)
	-0.44	-0.39	-0.08	-0.08	-0.67	0.23	0.71	0.3	0.11	0.67	0.02	0.69	-1.57	-1.12	-0.52	-0.79	-1.25	-0.33
	(-0.6)	(-0.66)	(-0.88)	(-0.2)	(-1.54)	(0.51)	(0.76)	(0.57)	(0.2)	(1.25)	(0.04)	(1.19)	(-1.38)	(-0.78)	(-0.53)	(-0.83)	(-1.43)	(-0.39)
MKT	0.83	0.51	0.44	0.36	0.22	0.61	0.3	0.15	0.2	0.07	-0.06	0.35	1.29	0.77	0.54	0.54	0.37	0.92
SMB	(2.99)	(2.77)	(4.67)	(2.56)	(1.6)	(3.06)	(1.33)	(1.31)	(1.29)	(0.37)	(-0.34)	(1.52)	(4.01)	(2.19)	(2.13)	(3.56)	(2.19)	(3.59)
HML	(-1.3)	(-1.78)	(-1.88)	(-0.7)	(-1.1)	(-0.26)	(-0.14)	(-1.55)	(-1.56)	(0.35)	(-0.28)	(0.09)	(-3.99)	(-0.92)	(-1.24)	(-1.87)	(-1.64)	(-1.84)
	-0.45	-0.3	-0.27	-0.34	-0.19	-0.89	-0.77	-0.55	-0.6	-0.63	-0.55	-0.26	-0.63	-0.36	-0.1	-0.27	-0.09	-0.54
	(-1.54)	(-1.5)	(-1.44)	(-1.6)	(-1.08)	(-1.4)	(-3.77)	(-3.23)	(-3.16)	(-3.59)	(-2.9)	(-1.66)	(-1.35)	(-0.62)	(-0.18)	(-1.01)	(-0.36)	(-1.21)

Table BB.1: CDS Slope, Realized CDS Spread Change, Forward-Implied CDS Spread Change, and Excess Change in CDS Spreads

This table presents summary statistics for the relation between the slope of the CDS term structure ($S_t^T - S_t^1$) and the realized change in CDS spreads ($S_{t+\tau}^T - S_t^T$) as well as its components, the forward-implied CDS spread change ($F_t^{\tau \times T} - S_t^T$) and the excess change in CDS spreads ($RX_{t+\tau}^T$). The CDS slope is defined as the 5-year CDS spread minus the 1-year CDS spread, $T = 5$ and τ is set to a 1-month horizon. Panel A presents results when all firms are included in the sample, Panel B when financial and utility firms are excluded from the data set. The first sub-panel reports summary statistics of coefficients from regressing the variable in the respective column header on CDS slope, the second reports the corresponding summary statistics for R^2 s. All regressions are estimated for each firm separately. Statistics reported are means, standard deviations, as well as the 5% and 95% quantiles of estimates across firms. The respective sample periods are indicated in the column headers.

	Full Sample: 01/2001 - 04/2010			Prior to Crisis: 01/2001 - 06/2007			During Crisis: 07/2007 - 04/2010		
	$S_{t+\tau}^T - S_t^T$	$F_t^{\tau \times T} - S_t^T$	$RX_{t+\tau}^T$	$S_{t+\tau}^T - S_t^T$	$F_t^{\tau \times T} - S_t^T$	$RX_{t+\tau}^T$	$S_{t+\tau}^T - S_t^T$	$F_t^{\tau \times T} - S_t^T$	$RX_{t+\tau}^T$
Panel A: All Firms									
Reg. Coefficients									
mean	0.0184	0.0250	-0.0066	-0.1710	0.0268	-0.1978	0.0661	0.0230	0.0431
sd	0.3805	0.0204	0.3725	1.9448	0.0380	1.9716	1.0046	0.0892	1.0589
q05	-0.4775	0.0016	-0.4960	-0.6516	-0.0051	-0.6630	-0.8767	0.0007	-0.8672
q95	0.6007	0.0471	0.5695	0.5582	0.0474	0.5305	1.0099	0.0510	0.9496
Reg. R^2									
mean	0.0698	0.5458	0.0722	0.1074	0.5248	0.1115	0.1054	0.5791	0.1091
sd	0.1174	0.2899	0.1245	0.1667	0.3023	0.1660	0.1713	0.3004	0.1800
q05	0.0002	0.0539	0.0002	0.0005	0.0172	0.0004	0.0005	0.0416	0.0004
q95	0.3184	0.9608	0.3253	0.4322	0.9446	0.4355	0.4716	0.9784	0.5099
Panel B: Excluding Financial and Utility Firms									
Reg. Coefficients									
mean	0.0196	0.0250	-0.0053	-0.1960	0.0284	-0.2244	0.0908	0.0226	0.0682
sd	0.3865	0.0209	0.3771	2.2196	0.0422	2.2509	1.1211	0.1021	1.1861
q05	-0.4815	0.0011	-0.5006	-0.6281	-0.0038	-0.6544	-0.8807	0.0022	-0.8865
q95	0.5952	0.0473	0.5662	0.4770	0.0489	0.4447	1.0776	0.0523	1.0405
Reg. R^2									
mean	0.0677	0.5351	0.0713	0.1039	0.5490	0.1092	0.1044	0.5560	0.1103
sd	0.1150	0.2794	0.1247	0.1653	0.3026	0.1644	0.1769	0.2907	0.1882
q05	0.0002	0.0568	0.0003	0.0003	0.0214	0.0004	0.0005	0.0490	0.0003
q95	0.2868	0.9533	0.3326	0.4395	0.9457	0.4712	0.4669	0.9711	0.5322

Table BB.2: Returns on Stock Portfolios sorted by Slope of the CDS Term Structure

We sort stocks based on firms' slope of the CDS term structure ($S_t^T - S_t^1$) into quintile portfolios and calculate equally-weighted and value-weighted excess returns in Panel A (B). P1 contains firms with highest slope, P5 the ones with lowest slope. P1-P5 presents results for going long P1 and short P5. Sub-panel *Portfolio Characteristics* summarizes portfolio means of *DD*, *S5*, *MV* (market value), and *BM* (book-to-market). *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

		Full Sample: 01/2001 - 04/2010					Prior to Crisis: 01/2001 - 06/2007					During Crisis: 07/2007 - 04/2010							
		P1	P2	P3	P4	P5	P1-P5	P1	P2	P3	P4	P5	P1-P5	P1	P2	P3	P4	P5	P1-P5
<i>Sort Variable: CDS Slope ($S_t^T - S_t^1$)</i>		112.03	40.87	25.69	16.62	-28.06		84.11	33.86	21.84	14.14	-8.61		177.77	57.47	34.96	22.65	-76.98	
<i>Portfolio Characteristics</i>																			
<i>DD</i>	6.1	8.03	9.1	10.26	11.46		6.87	8.73	10.01	10.99	12.49		4.44	6.4	7.11	8.56	9.01		
<i>S5</i>	289.16	110.59	73.4	62.71	202.85		211.5	85.76	60.84	57.35	149.47		475.43	172.03	105.12	76.9	339.23		
<i>MV</i>	7.82	12.35	18.3	26.89	39.29		9.06	12.77	17.92	26.52	43.78		4.87	11.68	19.27	27.92	27.75		
<i>BM</i>	0.76	0.66	13.13	0.53	0.72		0.75	0.65	18.17	0.54	0.56		0.79	0.68	0.58	0.51	1.11		
Panel A: Equally-Weighted Portfolios																			
<i>Portfolio Returns</i>																			
mean	-0.48	-0.36	-0.06	0.07	-0.45	-0.03	-0.03	0.45	0.25	0.4	0.55	-0.09	0.54	-2.52	-1.66	-0.99	-0.97	-1.2	-1.32
sd	(-0.46)	(-0.46)	(-0.1)	(0.12)	(-0.45)	(-0.06)	(0.64)	(0.44)	(0.92)	(1.03)	(-0.12)	(1.33)	(-0.82)	(-0.66)	(-0.54)	(-0.57)	(-0.4)	(-1.26)	(-1.26)
SR	7.83	6.15	5.08	4.85	8.4	4.65	5.35	4.42	3.56	3.89	5.9	3.9	11.76	9.06	7.59	6.6	12.78	6.04	6.04
	-0.21	-0.2	-0.04	0.05	-0.19	-0.02	0.29	0.2	0.39	0.49	-0.05	0.48	-0.74	-0.64	-0.45	-0.51	-0.33	-0.33	-0.75
<i>Asset Pricing</i>																			
CAPM α	-0.47	-0.35	-0.05	0.08	-0.44	-0.02	0.34	0.16	0.36	0.51	-0.2	0.55	-1.9	-1.26	-0.72	-0.68	-0.65	-1.24	-1.24
3-fac α	(-0.75)	(-0.64)	(-0.12)	(0.17)	(-0.56)	(-0.05)	(0.63)	(0.37)	(0.92)	(1.08)	(-0.31)	(1.23)	(-1.23)	(-0.85)	(-0.64)	(-0.68)	(-0.31)	(-0.95)	(-0.95)
4-fac α	-0.29	-0.09	0.13	0.22	-0.29	0	0.81	0.75	0.63	0.69	0.46	0.35	-1.65	-1.04	-0.5	-0.41	-0.4	-1.25	-1.25
	(-0.48)	(-0.17)	(0.29)	(0.54)	(-0.42)	(0)	(1.53)	(1.66)	(1.46)	(1.08)	(0.62)	(0.71)	(-1.19)	(-0.79)	(-0.67)	(-0.49)	(-0.33)	(-0.93)	(-0.93)
	-0.29	-0.09	0.12	0.22	-0.29	0	0.79	0.74	0.63	0.69	0.44	0.35	-1.73	-1.09	-0.49	-0.47	-0.54	-1.19	-1.19
	(-0.48)	(-0.16)	(0.27)	(0.54)	(-0.46)	(-0.01)	(1.54)	(1.55)	(1.46)	(1.17)	(0.57)	(0.71)	(-1.14)	(-0.79)	(-0.46)	(-0.55)	(-0.28)	(-1.12)	(-1.12)
MKT	0.68	0.5	0.31	0.34	0.61	0.07	0.23	0.16	0.06	0.13	0.19	0.04	1.06	0.76	0.57	0.79	0.27	0.27	0.27
	(3)	(2.98)	(2.31)	(3.54)	(3.64)	(0.46)	(1.24)	(0.87)	(0.49)	(1.06)	(0.79)	(0.28)	(3.37)	(2.83)	(2.21)	(3.49)	(2.15)	(1.11)	(1.11)
SMB	-0.25	-0.25	-0.21	-0.31	-0.19	-0.05	-0.04	-0.09	-0.02	-0.13	-0.08	0.03	-0.75	-0.68	-0.67	-0.78	-0.67	-0.07	-0.07
	(-1.15)	(-1.26)	(-1.32)	(-2.1)	(-0.97)	(-0.46)	(-0.33)	(-0.5)	(-0.16)	(-1.05)	(-0.45)	(0.23)	(-2.82)	(-1.71)	(-7.46)	(-2.5)	(-0.83)	(-0.19)	(-0.19)
HML	-0.12	-0.29	-0.16	0	-0.12	0	-0.47	-0.58	-0.28	-0.13	-0.66	0.2	-0.37	-0.39	-0.36	-0.09	0.23	-0.59	-0.59
	(-0.5)	(-1.72)	(-1.23)	(0)	(-0.52)	(0)	(-2.24)	(-4.03)	(-2.48)	(-0.69)	(-2.75)	(1.11)	(-0.62)	(-0.81)	(-3.07)	(-0.38)	(0.33)	(-1.21)	(-1.21)
Panel B: Value-Weighted Portfolios																			
<i>Portfolio Returns</i>																			
mean	-0.53	-0.79	-0.51	-0.05	-0.62	0.09	0.17	-0.02	-0.03	0.48	-0.55	0.72	-2.16	-2.47	-1.53	-1.2	-0.69	-1.47	-1.47
sd	(-0.61)	(-1.12)	(-0.88)	(-0.09)	(-0.79)	(0.23)	(0.26)	(-0.04)	(-0.07)	(1)	(-0.92)	(1.7)	(-0.85)	(-1.21)	(-1.08)	(-0.89)	(-0.29)	(-1.49)	(-1.49)
SR	6.97	6.17	4.63	4.33	6.46	4.82	5.09	5.04	3.67	3.6	4.49	3.98	10.17	8.22	6.33	5.62	9.91	6.31	6.31
	-0.26	-0.44	-0.38	-0.04	-0.33	0.07	0.12	-0.02	-0.03	0.46	-0.43	0.63	-0.74	-1.04	-0.83	-0.74	-0.24	-0.81	-0.81
<i>Asset Pricing</i>																			
CAPM α	-0.52	-0.78	-0.5	-0.04	-0.62	0.09	0.13	-0.07	-0.06	0.48	-0.6	0.73	-1.74	-2.23	-1.31	-0.97	-0.34	-1.4	-1.4
3-fac α	(-0.75)	(-1.33)	(-1.26)	(-0.1)	(-1.01)	(0.19)	(0.21)	(-0.15)	(-0.14)	(1)	(-1.05)	(1.49)	(-1.2)	(-1.47)	(-1.57)	(-0.96)	(-0.29)	(-1.08)	(-1.08)
4-fac α	-0.4	-0.51	-0.36	0.06	-0.51	0.1	0.34	0.61	0.22	0.72	-0.18	0.52	-1.47	-2.04	-1.08	-0.74	-0.1	-1.37	-1.37
	(-0.7)	(-0.89)	(-0.79)	(0.15)	(-0.96)	(0.25)	(1.07)	(1.06)	(0.47)	(1.3)	(-0.3)	(1.07)	(-1.11)	(-1.56)	(-1.33)	(-0.79)	(-0.05)	(-1.18)	(-1.18)
	-0.41	-0.51	-0.36	0.06	-0.5	0.1	0.32	0.58	0.22	0.71	-0.18	0.51	-1.76	-2.21	-1.11	-0.9	-0.23	-1.53	-1.53
	(-0.7)	(-0.86)	(-0.84)	(0.16)	(-0.97)	(0.2)	(0.57)	(1.04)	(0.46)	(1.34)	(-0.31)	(1.02)	(-1.46)	(-1.61)	(-1.36)	(-0.17)	(-0.15)	(-1.5)	(-1.5)
MKT	0.4	0.3	0.25	0.23	0.36	0.05	0	-0.05	0.01	-0.02	0.03	-0.03	0.83	0.54	0.43	0.41	0.54	0.29	0.29
	(2.14)	(1.61)	(1.8)	(2.36)	(2.68)	(0.3)	(0)	(-0.2)	(0.08)	(-0.18)	(0.14)	(-0.18)	(2.18)	(1.88)	(2.49)	(4.06)	(1.97)	(1.38)	(1.38)
SMB	-0.15	-0.17	-0.21	-0.3	-0.17	0.03	0.14	-0.03	-0.04	-0.16	-0.03	0.17	-0.8	-0.59	-0.67	-0.65	-0.63	-0.17	-0.17
	(-0.56)	(-0.78)	(-1.34)	(-2.57)	(-1.09)	(0.19)	(0.83)	(-0.14)	(-0.27)	(-1.48)	(-0.33)	(1.33)	(-1.22)	(-1.75)	(-2.86)	(-3.52)	(-1.03)	(-0.45)	(-0.45)
HML	-0.1	-0.38	-0.09	0.06	-0.06	-0.04	-0.29	-0.7	-0.28	-0.17	-0.42	0.13	-0.46	-0.45	-0.15	0.01	0.16	-0.62	-0.62
	(-0.46)	(-1.98)	(-0.79)	(0.44)	(-0.26)	(-0.22)	(-1.29)	(-3.67)	(-2.9)	(-2.08)	(-2.08)	(0.71)	(-0.63)	(-0.79)	(-0.83)	(0.17)	(0.24)	(-1.05)	(-1.05)

Table BB.3: Returns on Stock Portfolios sorted by Slope of the CDS Term Structure excluding Financials and Utilities

We sort stocks based on firms' slope of the CDS term structure ($S_t^T - S_t^U$) into quintile portfolios and calculate equally-weighted and value-weighted excess returns in Panel A (B) excluding financials and utilities. P1 contains firms with highest slope, P5 the ones with lowest slope. P1-P5 presents results for going long P1 and short P5. Sub-panel *Portfolio Characteristics* summarizes portfolio means of *DD*, *S5*, *MV* (market value), and *BM* (book-to-market). *Portfolio Returns* reports monthly means and standard deviations of excess returns along with annualized Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

		Full Sample: 01/2001 - 04/2010					Prior to Crisis: 01/2001 - 06/2007					During Crisis: 07/2007 - 04/2010									
		P1	P2	P3	P4	P5	P1-P5	P1	P2	P3	P4	P5	P1-P5	P1	P2	P3	P4	P5	P1-P5		
<i>Sort Variable: CDS Slope ($S_t^T - S_t^U$)</i>																					
mean		120.99	45.56	27.73	17.25	-11.57		89.01	37.3	23.63	14.34	-6.01		196.05	64.59	37.42	24.24	-25.92			
<i>Portfolio Characteristics</i>																					
<i>DD</i>		5.91	7.96	9.22	10.55	11.99		6.7	8.58	10.03	11.31	13.1		4.22	6.4	7.41	8.84	9.41			
<i>S5</i>		306.21	122.16	77.4	64.06	178.54		220.17	94.19	64.99	60.78	145.43		514.66	190.16	108.68	73.15	264.18			
<i>MV</i>		7.4	10.41	15.89	26.1	41.44		8.76	10.55	14.84	24.85	45.06		4.14	10.24	18.67	29.19	32.19			
<i>BM</i>		0.72	0.62	0.55	0.47	0.56		0.7	0.6	0.56	0.48	0.51		0.77	0.66	0.54	0.44	0.69			
Panel A: Equally-Weighted Portfolios																					
<i>Portfolio Returns</i>																					
mean		-0.54	-0.45	0.06	0.19	-0.03	-0.51	0.44	0.09	0.56	0.6	-0.04	0.48	-2.71	-1.58	-1.07	-0.66	0.08	-2.79		
sd		(-0.52)	(-0.53)	(0.1)	(0.31)	(-0.04)	(-0.92)	(0.58)	(0.16)	(1.14)	(1.12)	(-0.06)	(1.06)	(-0.85)	(-0.57)	(-0.55)	(-0.4)	(0.03)	(-3.01)		
SR		8.26	6.71	5.21	5.04	7.65	5	5.63	4.83	3.78	4.14	6.03	4.06	12.46	9.94	7.67	6.76	10.86	6.26		
		-0.23	-0.23	0.04	0.13	-0.01	-0.36	0.27	0.07	0.52	0.5	-0.03	0.41	-0.75	-0.55	-0.48	-0.34	0.03	-1.54		
<i>Asset Pricing</i>																					
CAPM α		-0.53	-0.44	0.07	0.2	-0.02	-0.51	0.32	-0.01	0.52	0.55	-0.15	0.47	-2.06	-1.13	-0.78	-0.4	0.53	-2.6		
3-fac α		(-0.8)	(-0.74)	(0.13)	(0.43)	(-0.04)	(-0.96)	(0.55)	(-0.02)	(1.23)	(1.12)	(-0.24)	(0.96)	(-1.23)	(-0.71)	(-0.64)	(-0.37)	(0.34)	(-2.27)		
4-fac α		-0.33	-0.22	0.22	0.35	0.24	-0.57	0.85	0.58	0.81	0.73	0.57	0.27	-1.81	-0.91	-0.55	-0.15	0.82	-2.63		
MKT		(-0.55)	(-0.34)	(0.45)	(0.75)	(0.39)	(-1.05)	(1.63)	(1.2)	(1.52)	(1.06)	(0.66)	(0.43)	(-1.18)	(-0.59)	(-0.16)	(-0.39)	(0.33)	(-2.27)		
SMB		-0.34	-0.18	0.22	0.35	0.24	-0.34	0.83	0.58	0.8	0.71	0.55	0.28	-1.87	-1.01	-0.59	-0.25	0.86	-2.73		
HML		(-0.54)	(-0.32)	(0.44)	(0.78)	(0.4)	(-1.07)	(1.51)	(1.18)	(1.48)	(1.09)	(0.66)	(0.44)	(-1.13)	(-0.68)	(-0.55)	(-0.26)	(0.47)	(-2.18)		
		0.72	0.53	0.32	0.32	0.53	0.19	0.24	0.15	0.04	0.14	0.14	0.1	1.11	0.83	0.59	0.51	0.75	0.36		
		(2.92)	(2.56)	(2.24)	(3.06)	(3.31)	(1.3)	(1.55)	(0.69)	(0.29)	(0.94)	(0.94)	(0.54)	(3.35)	(2.1)	(3.43)	(2.33)	(1.89)	(1.29)		
		(-1.04)	(-0.98)	(-0.97)	(-2)	(-1.28)	(-0.06)	(-0.02)	(-0.02)	(0.03)	(-0.13)	(-0.06)	(0.04)	(-0.75)	(-0.68)	(-0.68)	(-0.72)	(-0.79)	0.04		
		-0.18	-0.32	-0.15	-0.02	-0.31	0.13	-0.55	-0.62	-0.33	-0.12	-0.74	0.19	(-2.65)	(-1.19)	(-3.44)	(-1.81)	(-1.23)	(0.09)		
		(-0.68)	(-1.68)	(-1.46)	(-0.18)	(-1.49)	(1.05)	(-2.36)	(-3.95)	(-2.31)	(-0.53)	(-2.56)	(0.83)	(-0.7)	(-0.64)	(-1.04)	(-0.37)	(-0.05)	(-0.77)		
Panel B: Value-Weighted Portfolios																					
<i>Portfolio Returns</i>																					
mean		-0.78	-0.8	-0.5	0.18	-0.37	-0.41	0.02	-0.28	-0.07	0.59	-0.45	0.47	-2.57	-1.99	-1.5	-0.69	-0.13	-2.44		
sd		(-0.84)	(-1.09)	(-0.83)	(0.34)	(-0.66)	(-0.64)	(0.03)	(-0.46)	(-0.13)	(1.34)	(-0.81)	(0.93)	(-0.9)	(-0.91)	(-1.1)	(-0.57)	(-0.09)	(-1.5)		
SR		7.64	6.45	4.58	4.36	5.06	5.49	5.47	5.26	3.94	3.62	4.35	4.51	11.29	8.75	5.86	5.71	6.63	7.04		
		-0.36	-0.43	-0.38	0.14	-0.26	-0.26	0.01	-0.18	-0.06	0.56	-0.36	0.36	-0.79	-0.79	-0.89	-0.42	-0.07	-1.2		
<i>Asset Pricing</i>																					
CAPM α		-0.78	-0.8	-0.5	0.18	-0.37	-0.41	-0.02	-0.35	-0.08	0.6	-0.49	0.47	-2.09	-1.72	-1.32	-0.49	0.14	-2.23		
3-fac α		(-1.02)	(-1.36)	(-1.04)	(0.42)	(-0.83)	(-0.67)	(-0.02)	(-0.68)	(-0.16)	(1.22)	(-0.9)	(0.84)	(-1.47)	(-1.1)	(-1.38)	(-0.49)	(0.15)	(-2.99)		
4-fac α		-0.62	-0.56	-0.34	0.29	-0.19	-0.42	0.24	0.18	0.26	0.81	-0.05	0.3	-1.83	-1.48	-1.1	-0.22	0.36	-2.19		
MKT		(-0.92)	(-1.01)	(-0.66)	(0.7)	(-0.48)	(-0.77)	(0.42)	(0.3)	(0.38)	(1.44)	(-0.09)	(0.52)	(-1.25)	(-1.04)	(-1.32)	(-0.29)	(0.33)	(-2.25)		
SMB		-0.62	-0.56	-0.34	0.29	-0.19	-0.43	0.22	0.18	0.25	0.79	-0.06	0.28	-2.19	-1.68	-1.19	-0.4	0.31	-2.49		
HML		(-0.99)	(-1.01)	(-0.72)	(0.72)	(-0.42)	(-0.83)	(0.37)	(0.31)	(0.34)	(1.37)	(-0.1)	(0.54)	(-1.61)	(-1.18)	(-1.28)	(-0.52)	(0.33)	(-2.26)		
		0.43	0.32	0.2	0.18	0.28	0.16	-0.04	-0.02	-0.06	-0.08	0	-0.03	0.98	0.63	0.39	0.4	0.47	0.51		
		(1.88)	(1.71)	(1.64)	(1.83)	(2.16)	(0.82)	(-0.26)	(-0.09)	(-0.36)	(-0.61)	(-0.01)	(-0.16)	(2.46)	(1.48)	(3.91)	(3.17)	(2.13)	(2.03)		
		(-0.48)	(-0.03)	(-1.29)	(-2.12)	(-1.8)	(0.33)	(0.82)	(1.38)	(-0.33)	(-1.08)	(-0.86)	(1.49)	(-1.08)	(-1.52)	(-3.65)	(-2.71)	(-1.77)	(-0.4)		
		-0.18	-0.45	-0.13	0.03	-0.14	-0.04	-0.36	-0.7	-0.35	-0.16	-0.16	0.05	-0.73	-0.54	-0.14	-0.04	-0.02	-0.7		
		(-0.81)	(-2.2)	(-1.36)	(0.27)	(-1.49)	(-0.19)	(-1.53)	(-3.8)	(-2.2)	(-1)	(-1.98)	(0.22)	(-0.99)	(-0.69)	(-0.25)	(-0.05)	(-0.05)	(-1.19)		

Table CC.1: Descriptives Statistics for CDS Spreads

This table presents summary statistics and predictability results for CDS spreads for the sample periods and maturities T given in the column headers. Data is sampled at a monthly frequency corresponding to the prediction horizon τ of one month. Panel A summarizes descriptive statistics for levels of CDS spreads (S_t^T), slopes of the CDS term structure defined as the T -year CDS spread minus the 1-year CDS spread ($S_t^T - S_t^1$), realized changes in CDS spreads ($S_{t+\tau}^T - S_t^T$), forward-implied CDS spread changes ($F_t^{\tau \times T} - S_t^T$), and excess changes in CDS spreads ($RX_{t+\tau}^T$). Means, standard deviations, as well as the 5% and 95% quantiles are presented in basis points. Panel B reports R^2 s for regressing excess changes in T -year CDS spreads $RX_{t+\tau}^T$ on the lagged forward-implied change in the CDS spread, ($F_t^{\tau \times T} - S_t^T$), the term structure of forward CDS spreads, \mathbf{F}_t , and the common factor, $(\gamma^{RX})^\top \mathbf{F}_t$. We report, across firms, the means, standard deviations, and 5% and 95% quantiles.

	Full Sample: 01/2004 – 06/2010				Prior to Crisis: 01/2004 – 06/2007				During Crisis: 07/2007 – 06/2010			
	$T = 1$	$T = 3$	$T = 5$	$T = 7$	$T = 1$	$T = 3$	$T = 5$	$T = 7$	$T = 1$	$T = 3$	$T = 5$	$T = 7$
Panel A: Descriptive Statistics												
CDS Spreads (S_t^T)												
mean	143.09	168.30	191.03	196.86	33.02	58.47	84.24	98.70	247.68	272.51	292.03	289.51
sd	472.21	406.60	384.46	362.99	95.69	113.02	126.21	131.18	635.31	536.60	502.02	472.03
q05	3.50	7.80	14.50	19.82	2.60	5.80	10.80	15.00	8.60	17.30	28.20	34.30
q95	589.42	670.18	714.44	706.28	130.00	242.56	321.70	352.23	1003.93	1051.70	1047.60	984.53
CDS Slopes ($S_t^T - S_t^1$)												
mean		25.22	47.94	53.77		25.44	51.22	65.67		24.83	44.35	41.83
sd		121.73	166.75	190.14		42.24	66.27	76.00		164.87	223.42	254.11
q05		-4.27	-8.40	-25.35		1.80	7.00	10.70		-48.60	-80.60	-122.40
q95		151.19	242.46	264.08		110.30	195.52	228.31		183.50	282.90	301.13
Changes in CDS Spreads ($S_{t+\tau}^T - S_t^T$)												
mean	4.07	4.22	4.38	4.19	-0.97	-0.81	-0.43	-0.19	8.25	8.00	7.54	6.97
sd	193.52	148.87	136.57	130.32	46.96	42.72	40.30	38.95	266.07	203.33	186.08	177.46
q05	-61.74	-65.60	-66.00	-65.88	-15.00	-22.70	-25.53	-27.30	-119.93	-114.47	-111.34	-108.30
q95	66.50	78.60	81.17	80.43	12.50	20.01	25.20	28.14	144.20	137.71	134.20	126.50
Forward-Implied Changes in CDS Spreads ($F_t^{\tau \times T} - S_t^T$)												
mean	2.67	2.05	0.97	0.74	3.05	2.63	1.93	1.65	2.29	1.47	0.03	-0.15
sd	20.92	13.85	11.95	11.19	5.28	3.37	2.34	2.03	28.74	19.03	16.46	15.44
q05	-0.50	-0.46	-1.30	-1.13	0.21	0.37	0.34	0.32	-5.93	-4.10	-5.01	-4.34
q95	18.35	11.93	7.12	5.79	13.23	9.58	6.41	5.22	22.60	14.22	8.05	6.57
Excess Changes in CDS Spreads ($RX_{t+\tau}^T$)												
mean	1.40	2.17	3.41	3.45	-4.02	-3.44	-2.37	-1.84	5.96	6.53	7.51	7.13
sd	190.29	147.30	135.36	129.28	46.68	42.57	40.18	38.87	261.54	201.10	184.36	175.96
q05	-69.89	-70.37	-69.66	-68.60	-24.70	-29.45	-29.95	-30.76	-125.48	-118.33	-111.79	-109.46
q95	59.68	74.56	80.11	78.37	7.32	15.76	22.65	25.44	140.98	138.36	136.24	129.29
Panel B: Predictability of Excess Changes in CDS Spreads ($RX_{t+\tau}^T$)												
R^2 for Regressions on the Forward-Implied Changes in CDS Spreads ($F_t^{\tau \times T} - S_t^T$)												
mean	0.0671	0.0531	0.0466	0.0413	0.1235	0.0884	0.0997	0.0990	0.0857	0.0678	0.0579	0.0539
sd	0.0932	0.0708	0.0635	0.0555	0.1165	0.0854	0.1017	0.0924	0.1153	0.0889	0.0783	0.0767
q05	0.0004	0.0002	0.0003	0.0002	0.0010	0.0012	0.0014	0.0024	0.0004	0.0004	0.0005	0.0003
q95	0.3109	0.2383	0.2109	0.1847	0.3548	0.2783	0.3279	0.2928	0.3989	0.2897	0.2405	0.2368
R^2 for Regressions on the Term Structure of Forward CDS Spreads (\mathbf{F}_t)												
mean	0.2440	0.2115	0.1950	0.1978	0.4026	0.3628	0.3193	0.3257	0.3151	0.2905	0.2813	0.2860
sd	0.1478	0.1263	0.1169	0.1137	0.1717	0.1626	0.1503	0.1577	0.1647	0.1463	0.1406	0.1435
q05	0.0691	0.0663	0.0631	0.0642	0.1448	0.1409	0.1328	0.1328	0.1122	0.1242	0.1222	0.1200
q95	0.5451	0.4836	0.4528	0.4514	0.7473	0.7002	0.6204	0.6841	0.6614	0.6173	0.6265	0.6358
R^2 for Regressions on the Common Factor ($(\gamma^{RX})^\top \mathbf{F}_t$)												
mean	0.2128	0.2052	0.1875	0.1811	0.2844	0.3117	0.2872	0.2852	0.2763	0.2817	0.2709	0.2612
sd	0.1422	0.1265	0.1174	0.1135	0.1663	0.1593	0.1457	0.1537	0.1600	0.1461	0.1391	0.1399
q05	0.0501	0.0572	0.0553	0.0507	0.0566	0.1004	0.0988	0.0870	0.0862	0.1194	0.1104	0.0943
q95	0.5200	0.4813	0.4490	0.4374	0.6096	0.6464	0.6051	0.6134	0.6320	0.6088	0.6161	0.6039

Table CC.2: Returns on Stock Portfolios sorted by Credit Risk Premia

We sort stocks based on firms' credit risk premia ($\widehat{RP}_{t+\tau}$) into quintile portfolios and calculate value-weighted excess returns p.a. P1 contains firms with highest credit risk premia, P5 the ones with lowest credit risk premia. P1-P5 presents results for going long P1 and short P5. Sub-panel *Portfolio Returns* reports annualized means and standard deviations of excess returns along with Sharpe ratios. *Portfolio Characteristics* summarizes portfolio means of *DD*, *S5*, *MV* (market value), and *BM* (book-to-market). *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

	Full Sample: 01/2004 - 06/2010					Prior to Crisis: 01/2004 - 06/2007					During Crisis: 07/2007 - 06/2010						
	P1	P2	P3	P4	P5	P1	P2	P3	P4	P5	P1	P2	P3	P4	P5		
<i>Sort Variable: Credit Risk Premia ($\widehat{RP}_{t+\tau}$)</i>																	
mean	34.96	3.34	-0.86	-5.83	-43.36	10.92	1.57	0.25	-0.98	-8.99	63.19	6.08	-1.74	-10.86	-78.56		
<i>Portfolio Returns</i>																	
mean	3.45 (0.26)	1.61 (0.23)	-0.57 (-0.09)	-7.02 (-0.63)	-26.33 (-1.2)	29.78 (2.65)	14.49 (2.93)	10.98 (4.48)	7.21 (1.95)	-1.92 (-0.54)	21.39 (3.91)	10.77 (0.44)	-2.7 (-0.16)	-9.21 (-0.55)	-20.87 (-0.83)	-64.36 (-1.54)	75.13 (4.09)
sd	25.83	13.94	12.97	18.18	29.17	21.63	10.08	8.35	6.94	8.16	10.75	32	19.93	18.72	27.16	39.72	26.59
SR	0.13	0.12	-0.04	-0.39	-0.9	1.38	1.44	1.32	1.04	-0.24	2.17	0.34	-0.14	-0.49	-0.77	-1.62	2.83
<i>Portfolio Characteristics</i>																	
<i>DD</i>	7.32	11.06	11.26	9.36	6.93		8.79	12.04	13.56	13.25	9.92	4.86	8.16	7.83	6.49	4.05	
<i>S5</i>	263.02	93.26	73.33	90.3	224.41		144.88	47.04	33.2	36.22	100.81	444.9	153.34	115.07	142.67	361.06	
<i>MV</i>	13.98	32.27	34.79	22.62	13.38		13.34	27.41	37.5	33.32	14.24	12.37	31.75	30.87	20.28	10.99	
<i>BM</i>	0.72	0.47	0.45	0.49	0.69		0.51	0.46	0.41	0.42	0.48	0.97	0.56	0.51	0.55	0.89	
<i>Asset Pricing</i>																	
CAPM α	1.7 (0.21)	1 (0.19)	-1 (-0.2)	-8.21 (-1.03)	-27.74 (-1.98)	29.45 (2.11)	13.62 (3)	12.9 (3.95)	7.64 (2.03)	-0.87 (-0.25)	-4.69 (-0.76)	18.31 (3.19)	-1.49 (-0.14)	-8.38 (-0.7)	-19.42 (-1.06)	-62.43 (-2.23)	75.1 (4.07)
3-fac α	3.27 (0.38)	1.82 (0.34)	-0.07 (-0.02)	-6.59 (-1.02)	-25.26 (-2.23)	28.53 (2.66)	16.64 (3.37)	16.06 (4.66)	10.06 (2.7)	1.67 (0.56)	-4.2 (-0.63)	20.84 (3.17)	0.82 (0.1)	-3.9 (-0.44)	-15.85 (-1.15)	-56.08 (-2.51)	71.23 (4.17)
4-fac α	3.28 (0.38)	1.85 (0.43)	-0.07 (-0.02)	-6.6 (-1.06)	-25.31 (-2.12)	28.59 (2.81)	18.18 (3.91)	17.47 (7.13)	10.67 (2.71)	1.86 (0.52)	-5.57 (-0.8)	23.74 (4.11)	0.1 (-0.01)	-4.04 (-0.43)	-15.84 (-1.13)	-55.86 (-2.47)	71.18 (3.84)
RM	0.83 (3.02)	0.33 (2.43)	0.27 (2.12)	0.61 (2.79)	0.8 (1.63)	0.04 (0.12)	0.03 (0.13)	-0.31 (-1.34)	-0.2 (-1.47)	-0.12 (-0.8)	-0.16 (-0.63)	0.19 (1.03)	0.69 (2.01)	0.4 (2.59)	0.37 (2.96)	0.85 (1.7)	-0.15 (-0.37)
SMB	-0.65 (-1.98)	-0.41 (-2.01)	-0.5 (-3.18)	-0.43 (-1.6)	-0.94 (-1.64)	0.29 (0.63)	0 (0.03)	0.08 (0.43)	0.2 (1.12)	-0.08 (-0.46)	-0.16 (-0.53)	0.16 (0.78)	-0.4 (-0.62)	-0.43 (-1.16)	-0.57 (-3.86)	-1.08 (-1.41)	0.67 (1.55)
HML	-0.15 (-0.43)	-0.04 (-0.14)	-0.02 (-0.15)	-0.29 (-1.09)	-0.29 (-0.49)	0.14 (0.4)	-0.3 (-1.38)	-0.27 (-1.99)	-0.14 (-0.82)	-0.3 (-1.72)	-0.13 (-0.37)	-0.17 (-0.59)	-0.27 (-0.52)	0.05 (0.14)	-0.48 (-1.24)	-0.44 (-0.55)	0.17 (0.43)

Table CC.3: Returns on Stock Portfolios sorted by Credit Risk Premia: Controlling for Size

We double-sort stocks first into three size portfolios, then each of them into tercile portfolios based on firms' credit risk premia ($\overline{RP}_{t+\tau}$) and calculate value-weighted excess returns p.a. P1.* contains small, P2.* medium, P3.* big firms. P*.1 contains for the respective size portfolio the firms with highest credit risk premia, P*.3 with lowest credit risk premia. P*.1-P*.3 presents results for going long P*.1 and short P*.3. Sub-panel *Portfolio Returns* reports annualized means and standard deviations of excess returns along with Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

	Full Sample: 01/2004 – 06/2010											
	P1.1	P1.2	P1.3	P1.1–P1.3	P2.1	P2.2	P2.3	P2.1–P2.3	P3.1	3.2	3.3	P3.1–P3.3
<i>Sort Variables</i>												
MV mean	2.77	3.29	2.74		10.42	10.81	9.95		52.93	65.29	52.42	
Credit Risk Premia mean	41.57	-1.51	-49.5		17.68	-1.11	-23.76		7.37	-0.51	-10.68	
<i>Portfolio Returns</i>												
mean	12.25	0.79	-16.61	28.86	6.66	1.92	-15.69	22.35	-1.75	-1.99	-9.63	7.88
	(0.85)	(0.06)	(-0.77)	(2.77)	(0.55)	(0.2)	(-0.88)	(3.55)	(-0.2)	(-0.39)	(-0.99)	(2.27)
sd	29.21	25.88	34.76	17.51	21.21	16.93	27.23	14.62	16.12	12.01	16.51	8.52
SR	0.42	0.03	-0.48	1.65	0.31	0.11	-0.58	1.53	-0.11	-0.17	-0.58	0.93
<i>Asset Pricing</i>												
CAPM α	10.38	-0.98	-19.19	29.57	5.2	1.04	-17.44	22.64	-2.41	-2.38	-10.44	8.03
	(1.08)	(-0.12)	(-1.43)	(3.07)	(0.7)	(0.15)	(-1.43)	(3.13)	(-0.36)	(-0.55)	(-1.28)	(2.46)
3-fac α	11.83	0.61	-17.09	28.92	6.5	2.63	-15.09	21.59	-0.88	-1.79	-9.42	8.54
	(1.1)	(0.08)	(-1.23)	(3.35)	(1.05)	(0.48)	(-1.34)	(3.35)	(-0.16)	(-0.53)	(-1.32)	(2.33)
4-fac α	11.85	0.58	-17.16	29.01	6.5	2.61	-15.14	21.64	-0.87	-1.78	-9.43	8.56
	(1.04)	(0.07)	(-1.33)	(3.7)	(1.09)	(0.45)	(-1.58)	(4.44)	(-0.16)	(-0.52)	(-1.42)	(2.47)
RM	0.89	0.84	1.21	-0.32	0.71	0.49	0.92	-0.21	0.4	0.23	0.42	-0.02
	(4.95)	(3.35)	(3.08)	(-0.7)	(3.43)	(3.1)	(3.2)	(-1.21)	(2.12)	(2.47)	(2.06)	(-0.41)
SMB	-0.86	-0.61	-0.85	-0.01	-0.71	-0.5	-0.95	0.25	-0.41	-0.46	-0.46	0.04
	(-2.44)	(-1.86)	(-2.2)	(-0.04)	(-2.82)	(-1.99)	(-2.89)	(1.55)	(-1.57)	(-3.34)	(-1.39)	(0.27)
HML	0.01	-0.18	-0.21	0.22	-0.03	-0.24	-0.24	0.21	-0.27	0.07	-0.08	-0.19
	(0.04)	(-0.44)	(-0.41)	(0.7)	(-0.15)	(-0.83)	(-0.71)	(0.72)	(-1.01)	(0.61)	(-0.33)	(-2.17)

Table CC.4: Returns on Stock Portfolios sorted by Credit Risk Premia: Controlling for Book-to-Market

We double-sort stocks first into three book-to-market portfolios, then each of them into tercile portfolios based on firms' credit risk premia ($\widehat{RP}_{t+\tau}$) and calculate value-weighted excess returns. P1.* contains value (high *BM*), P2.* neutral, P3.* growth stocks. P*.1 contains for the respective *BM* portfolio the firms with highest credit risk premia, P*.3 with lowest credit risk premia. P*.1–P*.3 presents results for going long P*.1 and short P*.3. Sub-panel *Portfolio Returns* reports annualized means and standard deviations of excess returns along with Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

	Full Sample: 01/2004 – 06/2010											
	P1.1	P1.2	P1.3	P1.1–P1.3	P2.1	P2.2	P2.3	P2.1–P2.3	P3.1	P3.2	P3.3	P3.1–P3.3
<i>Sort Variables</i>												
<i>BM</i> mean	1.08	0.84	1.02		0.48	0.48	0.49		0.24	0.23	0.24	
Credit Risk Premia mean	37.63	-0.79	-39.41		16.85	-0.94	-24.68		13.05	-0.68	-21.4	
<i>Portfolio Returns</i>												
mean	13.1	0.85	-19.64	32.74	-4.21	3.49	-14.82	10.62	-0.25	-4.23	-17.14	16.89
sd	(0.8)	(0.07)	(-1.04)	(3.66)	(-0.43)	(0.52)	(-1.37)	(2.34)	(-0.04)	(-0.72)	(-0.95)	(1.35)
sd	29.52	20.81	31.18	18.79	19.55	14.56	20.96	13.55	13.52	12.3	25.56	19.37
SR	0.44	0.04	-0.63	1.74	-0.22	0.24	-0.71	0.78	-0.02	-0.34	-0.67	0.87
<i>Asset Pricing</i>												
CAPM α	10.94	-0.51	-21.52	32.46	-5.19	3.01	-16.24	11.04	-0.7	-4.6	-18.14	17.43
3-fac α	(1.03)	(-0.07)	(-1.72)	(3.02)	(-0.79)	(0.48)	(-1.93)	(2.77)	(-0.13)	(-0.93)	(-1.41)	(1.6)
4-fac α	12.21	1.23	-20.81	33.03	-3.83	3.55	-14.4	10.57	0.21	-3.61	-15.71	15.91
	(1.16)	(0.21)	(-1.84)	(2.98)	(-0.67)	(0.74)	(-1.7)	(2.59)	(0.04)	(-0.86)	(-1.58)	(1.88)
RM	12.28	1.27	-20.87	33.16	-3.82	3.54	-14.42	10.6	0.18	-3.58	-15.76	15.94
	(1.21)	(0.21)	(-1.86)	(4.26)	(-0.68)	(0.77)	(-2.1)	(2.63)	(0.03)	(-0.91)	(-1.48)	(1.88)
SMB	0.96	0.7	0.81	0.15	0.53	0.26	0.72	-0.19	0.27	0.25	0.63	-0.36
	(3.41)	(2.97)	(2.4)	(0.85)	(2.66)	(1.59)	(6.25)	(-2.02)	(2.01)	(2.68)	(2.09)	(-1.93)
HML	-0.55	-0.66	-0.52	-0.03	-0.66	-0.5	-0.55	-0.1	-0.39	-0.39	-0.83	0.43
	(-1.52)	(-2.47)	(-1.15)	(-0.11)	(-2.45)	(-1.86)	(-7.26)	(-0.67)	(-1.81)	(-3.2)	(-1.59)	(0.95)
	-0.11	-0.2	0.06	-0.17	-0.08	0.1	-0.29	0.22	-0.08	-0.11	-0.33	0.26
	(-0.27)	(-0.76)	(0.19)	(-1.18)	(-0.27)	(0.55)	(-1.71)	(1.03)	(-0.38)	(-0.94)	(-0.8)	(0.87)

Table CC.5: Returns on Stock Portfolios sorted by Credit Risk Premia: Controlling for CDS Bid-Ask Spreads

We double-sort stocks first into three portfolios based on their bid-ask spreads relative to the CDS spread, then each of them into tercile portfolios based on firms' credit risk premia ($\widehat{RP}_{t+\tau}$) and calculate value-weighted excess returns. P1.* contains stocks of firms with high bid-ask spreads, P2.* with medium, P3.* with small. P*.1 contains for the respective bid-ask portfolio the firms with highest credit risk premia, P*.3 with lowest credit risk premia. P*.1-P*.3 presents results for going long P*.1 and short P*.3. Sub-panel *Portfolio Returns* reports annualized means and standard deviations of excess returns along with Sharpe ratios. *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

	Full Sample: 01/2004 - 06/2010											
	P1.1	P1.2	P1.3	P1.1-P1.3	P2.1	P2.2	P2.3	P2.1-P2.3	P3.1	P3.2	P3.3	P3.1-P3.3
<i>Sort Variables</i>												
CDS Bid-Ask Spread mean	22.07	23.14	20.46		10.64	10.94	10.62		5.61	6.04	5.62	
Credit Risk Premia mean	10.68	-0.9	-16.8		18.1	-0.79	-22.34		37.98	-1.04	-45.31	
<i>Portfolio Returns</i>												
mean	-0.87	0.87	-7.56	6.69	2.82	-0.29	-14.05	16.87	4.85	-5.14	-33.32	38.17
sd	(-0.14)	(0.17)	(-0.78)	(1.28)	(0.28)	(-0.03)	(-1.1)	(4.05)	(0.32)	(-0.5)	(-1.27)	(2.17)
SR	13.86	11.95	17.05	10.81	18.12	17.45	21.97	12.34	29.1	18.44	40.1	30.92
	-0.06	0.07	-0.44	0.62	0.16	-0.02	-0.64	1.37	0.17	-0.28	-0.83	1.23
<i>Asset Pricing</i>												
CAPM α	-1.28	0.56	-8.36	7.08	1.89	-1.18	-15.32	17.21	3.09	-6.41	-35.35	38.44
	(-0.24)	(0.11)	(-1.05)	(1.44)	(0.26)	(-0.16)	(-1.7)	(3.97)	(0.3)	(-1.02)	(-1.76)	(1.83)
3-fac α	0.16	1.15	-6.64	6.8	3.28	-0.21	-13.12	16.4	4.35	-5.16	-34.27	38.62
	(0.04)	(0.29)	(-0.95)	(1.55)	(0.42)	(-0.03)	(-1.83)	(4.03)	(0.44)	(-0.77)	(-1.97)	(1.76)
4-fac α	0.18	1.19	-6.64	6.83	3.29	-0.23	-13.14	16.42	4.36	-5.19	-34.4	38.76
	(0.05)	(0.33)	(-1.03)	(1.62)	(0.43)	(-0.04)	(-1.88)	(4.5)	(0.43)	(-0.88)	(-2.01)	(2.5)
RM	0.3	0.2	0.48	-0.18	0.5	0.45	0.7	-0.2	0.82	0.62	0.94	-0.12
	(2.44)	(2.62)	(2.68)	(-2.15)	(1.59)	(2.08)	(2.38)	(-1.99)	(4.74)	(2.88)	(1.74)	(-0.34)
SMB	-0.48	-0.43	-0.57	0.09	-0.53	-0.51	-0.61	0.08	-0.61	-0.47	-1.02	0.41
	(-2.49)	(-4.69)	(-2.07)	(0.48)	(-1.88)	(-1.89)	(-2.02)	(0.61)	(-1.69)	(-1.84)	(-1.12)	(0.56)
HML	-0.2	0.05	-0.25	0.04	-0.16	-0.03	-0.38	0.22	-0.07	-0.15	0.22	-0.3
	(-1.77)	(0.69)	(-1.09)	(0.39)	(-0.44)	(-0.08)	(-0.88)	(1.05)	(-0.2)	(-0.47)	(0.35)	(-1.22)

Table CC.6: Returns on Stock Portfolios sorted by Default Probabilities

We sort stocks based on firms' distance-to-default *DD* (*Panel A*) and their 5-year CDS spread *S5* (*Panel B*) into quintile portfolios and calculate value-weighted excess returns. P1 contains firms with highest distress risk (lowest *DD* or highest *S5*), P5 the ones with lowest distress risk. P1–P5 presents results for going long P1 and short P5. Sub-panel *Portfolio Returns* reports annualized means and standard deviations of excess returns along with Sharpe ratios. *Portfolio Characteristics* summarize portfolio means of *DD*, *S5*, *MV* (market value), and *BM* (book-to-market). *Asset Pricing* reports alpha estimates of regressing excess returns on market return (RM), as well as three (RM, SMB, HML) and four (RM, SMB, HML, UMD) Fama-French factors. Values in parentheses are *t*-statistics based on HAC standard errors using Newey and West (1987) with optimal truncation lag chosen as suggested by Andrews (1991).

		Full Sample: 01/2004 – 06/2010					Prior to Crisis: 01/2004 – 06/2007					During Crisis: 07/2007 – 06/2010							
		P1	P2	P3	P4	P5	P1–P5	P1	P2	P3	P4	P5	P1–P5	P1	P2	P3	P4	P5	P1–P5
<i>Sort Variable: Distance-to-Default (DD)</i>		mean	3.75	6.41	8.46	10.82	16.44	5.21	8.31	10.73	13.35	19.92	1.94	4.04	5.64	7.66	12.09		
<i>Portfolio Returns</i>		mean	-15.76	-3.19	-3.84	-2.25	-1.33	-14.43	-14.43	-14.43	-14.43	-14.43	-14.43	-39.99	-18.3	-12.81	-10.93	-5.67	-34.32
		sd	(-0.63)	(-0.21)	(-0.35)	(-0.29)	(-0.25)	(-0.73)	(-0.73)	(-0.73)	(-0.73)	(-0.73)	(-0.73)	(-0.71)	(-0.54)	(-0.64)	(-0.49)	(-0.49)	(-0.79)
		SR	37.1	25.61	19.1	13.93	11.36	29.9	29.9	29.9	29.9	29.9	8.94	54.1	35.94	27.4	19.12	15.23	43.55
			-0.42	-0.12	-0.2	-0.16	-0.12	-0.48	-0.48	-0.48	-0.48	-0.48	0.47	-0.74	-0.51	-0.47	-0.57	-0.37	-0.79
<i>Portfolio Characteristics</i>		DD	3.75	6.41	8.46	10.82	16.44	5.21	8.31	10.73	13.35	19.92	1.94	4.04	5.64	7.66	12.09		
		S5	381.15	164.38	93.18	64.37	41.04	181.5	73.47	48.67	35.76	22.9	628.11	276.77	148.37	99.8	63.55		
		MV	8.75	12.49	16.36	23.89	55.27	9.85	15.22	19.48	24.43	56.44	7.23	9.16	12.55	23.06	54.08		
		BM	0.91	0.6	0.54	0.46	0.31	0.59	0.52	0.47	0.42	0.29	1.31	0.7	0.61	0.52	0.33		
<i>Asset Pricing</i>		CAPM α	-18.38	-4.77	-4.91	-2.92	-1.68	-16.7	-16.7	-16.7	-16.7	-16.7	-16.7	-36.17	-15.98	-11.26	-9.95	-5.02	-31.15
		3-fac α	(-1.2)	(-0.48)	(-0.7)	(-0.49)	(-0.39)	(-1.36)	(-1.36)	(-1.36)	(-1.36)	(-1.36)	(-1.36)	(-1.16)	(-0.85)	(-0.76)	(-0.84)	(-0.59)	(-1.25)
		4-fac α	-16.77	-2.91	-3.68	-1.84	-1.02	-15.75	-15.75	-15.75	-15.75	-15.75	-15.75	-32.09	-11.65	-6.87	-6.16	-2.71	-29.38
		RM	(-1.11)	(-0.34)	(-0.67)	(-0.39)	(-0.27)	(-1.36)	(-1.36)	(-1.36)	(-1.36)	(-1.36)	(-1.36)	(-1.15)	(-0.62)	(-0.58)	(-0.64)	(-0.33)	(-1.24)
		SMB	-16.8	-2.9	-3.69	-1.85	-1.01	-15.79	-15.79	-15.79	-15.79	-15.79	-15.79	-31.06	-11.98	-6.87	-6.07	-3.03	-28.03
		HML	(-1.26)	(-0.33)	(-0.67)	(-0.39)	(-0.28)	(-1.41)	(-1.41)	(-1.41)	(-1.41)	(-1.41)	(-1.41)	(-1.09)	(-0.64)	(-0.6)	(-0.61)	(-0.46)	(-1.2)
		UMD	1.19	0.79	0.55	0.38	0.21	0.98	0.98	0.98	0.98	0.98	0.98	1.26	0.88	0.59	0.41	0.27	0.99
		RM	(2.22)	(2.2)	(2.79)	(2.84)	(2.11)	(2.39)	(2.39)	(2.39)	(2.39)	(2.39)	(2.39)	(2.13)	(2.15)	(2.47)	(3.07)	(3.97)	(2.14)
		SMB	-0.84	-0.65	-0.63	-0.5	-0.35	-0.49	-0.49	-0.49	-0.49	-0.49	-0.49	-0.72	-0.73	-0.78	-0.68	-0.41	-0.31
		HML	(-1.37)	(-1.61)	(-1.92)	(-2.19)	(-2.91)	(-0.93)	(-0.93)	(-0.93)	(-0.93)	(-0.93)	(-0.93)	(-0.74)	(-0.74)	(-0.74)	(-0.74)	(-0.74)	(-0.39)
		UMD	-0.06	-0.25	-0.05	-0.08	-0.02	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.13	-0.34	-0.08	-0.06	-0.06	-0.06
		UMD	(-0.09)	(-0.49)	(-0.14)	(-0.42)	(-0.22)	(-0.09)	(-0.09)	(-0.09)	(-0.09)	(-0.09)	(-0.09)	(-0.14)	(-0.44)	(-0.14)	(-0.28)	(-0.86)	(-0.11)
<i>Sort Variable: 5-Year CDS Spread (S5)</i>		mean	440.58	145.79	82.58	48.47	28.09	217.78	64.33	39.38	26.31	14.79	716	246.66	136.2	76.03	44.61		
<i>Portfolio Returns</i>		mean	-19.21	-7.59	-6.97	-0.61	-1.59	-17.63	-17.63	-17.63	-17.63	-17.63	-17.63	-49	-23.18	-21.81	-9	-5.99	-43.01
		sd	(-0.67)	(-0.46)	(-0.65)	(-0.08)	(-0.29)	(-0.8)	(-0.8)	(-0.8)	(-0.8)	(-0.8)	(-0.8)	(-0.78)	(-0.64)	(-0.92)	(-0.53)	(-0.49)	(-0.92)
		SR	43.73	24.92	18.55	14.79	11.52	36	36	36	36	36	64.1	35.61	23.36	19.59	15.65	52.71	52.71
			-0.44	-0.3	-0.38	-0.04	-0.14	-0.49	-0.49	-0.49	-0.49	-0.49	-0.76	-0.65	-0.86	-0.46	-0.38	-0.82	-0.82
<i>Portfolio Characteristics</i>		DD	4.82	7.37	8.9	10.29	14.47	6.7	9.57	11.14	12.53	17.55	2.5	4.61	6.08	7.47	10.66		
		S5	440.58	145.79	82.58	48.47	28.09	217.78	64.33	39.38	26.31	14.79	716	246.66	136.2	76.03	44.61		
		MV	5.75	9.64	14.42	24.6	62.11	7.39	9.86	14.34	25.13	68.4	3.74	9.37	14.54	23.93	54.28		
		BM	0.85	0.62	0.56	0.46	0.33	0.55	0.51	0.5	0.43	0.3	1.23	0.75	0.63	0.5	0.38		
<i>Asset Pricing</i>		CAPM α	-22.17	-9.3	-8.12	-1.18	-1.99	-20.18	-20.18	-20.18	-20.18	-20.18	-20.18	-44.8	-20.76	-20.12	-8.15	-5.29	-39.51
		3-fac α	(-1.33)	(-0.86)	(-1.24)	(-0.2)	(-0.43)	(-1.54)	(-1.54)	(-1.54)	(-1.54)	(-1.54)	(-1.54)	(-1.71)	(-1.01)	(-1.56)	(-0.66)	(-0.58)	(-2.33)
		4-fac α	-19.2	-7.54	-7.15	-0.1	-1.31	-17.9	-17.9	-17.9	-17.9	-17.9	-17.9	-34.92	-17.38	-17.38	-4.64	-2.55	-32.37
		RM	(-1.3)	(-0.81)	(-1.02)	(-0.02)	(-0.36)	(-1.5)	(-1.5)	(-1.5)	(-1.5)	(-1.5)	(-1.4)	(-0.92)	(-1.52)	(-1.32)	(-0.45)	(-0.34)	(-1.32)
		SMB	-19.26	-7.58	-7.17	-0.1	-1.29	-17.97	-17.97	-17.97	-17.97	-17.97	-17.97	-34.44	-17.08	-17.21	-4.72	-2.89	-31.55
		HML	(-1.45)	(-0.82)	(-1.2)	(-0.02)	(-0.36)	(-1.66)	(-1.66)	(-1.66)	(-1.66)	(-1.66)	(-1.34)	(-0.87)	(-1.47)	(-0.44)	(-0.41)	(-1.29)	(-1.29)
		UMD	1.46	0.83	0.55	0.34	0.23	1.23	1.23	1.23	1.23	1.23	1.57	0.92	0.59	0.35	0.28	1.29	1.29
		RM	(2.85)	(2.99)	(2.1)	(2.38)	(2.32)	(2.81)	(2.81)	(2.81)	(2.81)	(2.81)	(2.81)	(2.64)	(3.23)	(2.09)	(3.45)	(3.45)	(2.33)
		SMB	-1.38	-0.59	-0.54	-0.54	-0.36	-1.02	-1.02	-1.02	-1.02	-1.02	-1.74	-0.5	-0.48	-0.63	-0.49	-1.24	-1.24
		HML	(-1.66)	(-1.46)	(-1.88)	(-2.46)	(-2.33)	(-1.48)	(-1.48)	(-1.48)	(-1.48)	(-1.48)	(-1.44)	(-0.97)	(-1.07)	(-2.53)	(-3.12)	(-3.12)	(-1.27)
		UMD	-0.2	-0.24	-0.01	-0.05	-0.02	-0.17	-0.17	-0.17	-0.17	-0.17	-0.31	-0.5	-0.11	-0.03	-0.01	-0.3	-0.3
		UMD	(-0.32)	(-0.67)	(-0.04)	(-0.29)	(-0.19)	(-0.34)	(-0.34)	(-0.34)	(-0.34)	(-0.34)	(-0.32)	(-1.01)	(-0.19)	(-0.17)	(-0.14)	(-0.42)	(-0.42)