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

Nils Friewald[†] Christian Wagner[‡] Josef Zechner[§]

November 18, 2011

Abstract

We analyze risk premia in credit and equity markets by exploring the joint cross-section of credit default swaps (CDS) and stocks for US firms from 2001 to 2010. Structural models imply that (risk-adjusted) excess returns in both markets are driven by the relation between a firm's risk-neutral and real-world default probability. We extract information about this relation from credit markets by estimating risk premia embedded in the term structure of CDS spreads using a single-factor model in the spirit of Cochrane and Piazzesi (2005). Consistent with predictions from structural models, we find a strong positive relation between CDS-implied risk premia and equity risk premia: firms' equity excess returns increase with CDS-implied risk premia. CDS spreads contain equity-relevant information beyond size and book-to-market but excess returns are highest for small firms and value stocks. Our results are robust across pre-crisis and crisis subsamples, return weighting schemes, and CDS data sources.

JEL classification: G12, G13

Keywords: equity returns, default risk, risk premia, credit default swaps, cross-sectional asset pricing

*We thank Rui Albuquerque, Tobias Berg, Michael Brandt, Haibo Chen, Pierre Collin-Dufresne, Andreas Danis, Patrick Gagliardini, Andrea Gamba, Amit Goyal, Mark Grinblatt, Charles Jones, Miriam Marra, Caren Yinxia Nielsen, Juliusz Radwanski, Lucio Sarno, Clemens Sialm, Paul Schneider, Leopold Sögner and participants at the Swissquote Conference on Asset Management 2011 at EPFL as well as seminar participants at Cass Business School, Humboldt Universität Berlin, Leibniz Universität Hannover, University of Gothenburg, University of Lund, University of Piraeus, Warwick Business School, and WU Vienna for helpful comments.

[†]Institute for Finance, Banking and Insurance; WU Vienna. nils.friewald@wu.ac.at.

[‡]Institute for Finance, Banking and Insurance; WU Vienna. christian.wagner@wu.ac.at.

[§]Institute for Finance, Banking and Insurance; WU Vienna, CEPR and ECGI. josef.zechner@wu.ac.at.

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.

In the present paper we approach this issue from a novel angle. Using a structural model, we demonstrate that a firm's equity risk premium is neither directly related to its real-world nor to its risk-neutral probability of default. Instead, structural models imply that the market price of risk is a function of the real-world *and* the risk-neutral default probability. Since equity and credit protection instruments are claims on assets, (risk-adjusted) expected excess returns in both markets are a function of real-world and risk-neutral default probabilities as well. In particular, the structural framework implies an inverse relation between expected excess returns in credit and equity markets. We explore this relation by first estimating firms' credit market-implied risk premia and then relating them to equity excess returns.

We use CDS data to estimate risk premia in credit markets.[1] Specifically, we use a single-factor model, similar to Cochrane and Piazzesi (2005), to estimate expected CDS excess returns, defined as expected CDS spread changes in excess of the risk-neutrally expected change implied by the term structure of CDS spreads. We thereby extract the risk premium component of expected CDS spread changes, which equals minus the expected CDS excess return and is thus positively related to equity excess returns.[2] Sorting firms into portfolios, we find strong empirical support for a positive relation between credit risk premia and equity excess returns. In contrast, neither sorting stocks into portfolios using credit ratings or the

[1]Using 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. We therefore rely on the growing time-series and cross-section of CDS spreads and explore their link to equity risk premia.

[2]For easier readability, we also refer to credit market-implied risk premia that we estimate from CDS spreads just as credit risk premia.

distance-to default (both are monotonically related to real-world default probabilities) nor using the level of CDS spreads (monotonically related to risk-neutral default probabilities) results in a monotonic pattern that explains future equity excess returns. Our evidence is thus consistent with predictions derived from the structural credit risk framework.

Descriptive statistics for the portfolios suggest that credit risk premia are neither monotonically related to size or book-to-market, nor to (risk-neutral as well as real-world) default probabilities. We account for traditional risk factors by regressing equity portfolio excess returns on the market return, the three factors of Fama and French (1993), and the four factors of Carhart (1997). We find that the relation between equity and credit risk premia remains strong even after controlling for these factors and that CDS-implied risk premia convey information beyond that contained in the traditional factors: the factor model alphas of buying the high and selling the low risk premium portfolios are significant while the factor loadings are generally not different from zero. To take a closer look at the relation between credit risk premia and various firm characteristics, we double sort portfolios, first using either size, book-to-market, as well as proxies for the default probability and the liquidity of the firm's CDS contract, and subsequently by credit-implied risk premia. The high minus low credit risk premium strategy earns significant alphas in all size, book-to-market, default probability, and CDS liquidity portfolios, with excess returns being highest for small firms, growth 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 very similar but more pronounced during the crisis. Furthermore, our conclusions do not depend on whether we calculate equally-weighted or value-weighted portfolio returns. Our most comprehensive robustness check is to repeat the whole empirical analysis with an alternative CDS data set and the results confirm and strengthen our findings. Additionally, we discuss the link between the slope of the CDS term structure and equity returns and we present results for out-of-sample forecasts of credit risk premia and equity excess returns.

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) argue that ex-post realized returns are too noisy to estimate expected returns and that using estimates based on implied cost of capital reveals a positive relation between expected stock returns and default risk. However, there are numerous papers documenting a negative relation between the real-world default probability and stock returns. 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 equity returns. 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. Avramvov et al. (2009) find that the distress puzzle is more pronounced for worst-rated stocks around rating downgrades.

Ozdagli (2010) argues that the anomaly is due to firms heterogeneity with respect to cash flow and growth exposure to systematic risk and argues 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 firm's default risk is priced in equity markets nor that firms with high distress risk earn anomalous low returns.[3]

[3]Other attempts to explain the distress anomaly build for instance on models that allow for bargaining between equity holders and debt holders, strategic shareholder defaults, or on long-run risk aspects. Garlappi et al. (2008) 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. Related, Garlappi and Yan (2011) show that the empirical evidence is consistent with shareholders strategically defaulting on their debt to recover part of the residual firm value upon the resolution of financial distress. 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. Long-term risk models are used by Avramov et al. (2010) and Radwanski (2010). 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

With the increasing cross-section and time-series of CDS data 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 form slow information diffusion but that it cannot be explained by standard risk factors or default risk. The authors stress that their findings are thus "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). We argue that their finding that the slope negatively predicts equity returns is consistent with the predictions we make based on structural models of credit risk and that the predictability of stock returns depends on the slope's correlation with risk premia driving CDS spread changes.

Hence, all of these papers investigate the (informational) linkages between CDS and equity markets in a rather general way. In contrast, we directly exploit the suitability of CDS data for analyzing the link between credit risk and stock returns by extracting risk premia from the CDS term structure. Our empirical analysis is guided by the the theoretical prediction of the Merton (1974) model that the market price of risk is a function of a firm's real-world and its risk-neutral probability of default; see e.g. Duffie and Singleton (2003).[4] In analogy to

that distressed firms have short expected lifetimes and consequently earn lower returns because they are not exposed to long-run risk factors.

[4]Berg (2010) shows that the relation between real-world and risk-neutral default probabilities is hardly affected when moving away from the Merton framework to a first-passage time framework, to strategic default models or to models with unobservable asset values; there are only minor differences across different structural models of default such as those of Black and Cox (1976), Leland (1994), Leland and Toft (1996), and Duffie and Lando (2001).

the literature on bond excess returns, e.g. Fama and Bliss (1987) and Campbell and Shiller (1991), we exploit the fact that forward CDS spreads should be unbiased predictors of future spot CDS spreads if there is no time-variation in risk premia. We document that there is time-variation in CDS excess returns and use a single-factor model similar to Cochrane and Piazzesi (2005) to estimate credit risk premia.[5] Our finding that there is a strong positive relation between equity returns and credit risk premia, when simultaneously there is only a weak or no relation to risk-neutral or real-world default probabilities, can reconcile the mixed evidence documented in the existing literature.

The remainder of the paper is organized as follows: In Section 2 we discuss how stock returns are related to default risk and CDS spread dynamics in the Merton (1974) model. We then use these findings in Section 3 to show how we extract credit risk premia from the term structure of CDS spreads. In Section 4 we describe the data and report our empirical findings which we underpin by several robustness checks. Section 5 concludes. The Appendix describes technical details and the separate Internet Appendix reports and discusses additional empirical results.

2 Default Risk, Asset Dynamics and Stock Returns

In this section, we utilize a simple Merton (1974) framework to illustrate that information incorporated in the market for a firm's credit instruments must be related to expected returns of its equity. We demonstrate that it is not sufficient to exclusively rely on the risk-neutral default probabilities observable directly from credit spreads. Instead, the relevant information is contained in the difference between the real-world and risk-neutral default probabilities.

[5] Our approach only requires the use of CDS data. Recent 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.

2.1 Default Probabilities and Market Price of Risk

In the model of Merton (1974), the asset process follows a log-normal diffusion and the real-world measure ($\mathbb{P}$) dynamics are given by

$$dV_t = \mu V_t dt + \sigma V_t dW_t^{\mathbb{P}} \tag{1}$$

where μ is the drift, V denotes the asset value, σ is the volatility, and $W^{\mathbb{P}}$ denotes a standard $\mathbb{P}$-Brownian motion. In this framework two types of claims exist: debt and equity. Debt is a zero-coupon bond with face value D and time-to-maturity T. Default occurs if the value of assets at maturity is below the face value of debt. The default probability, given the asset dynamics in (1), is

$$PD_t^{\mathbb{P}} = \Phi\Bigg(- \underbrace{\frac{\log(V_t/D) + (\mu - \frac{1}{2}\sigma^2)T}{\sigma\sqrt{T}}}_{\equiv DD} \Bigg) \tag{2}$$

where Φ is the standard normal distribution function and DD defines a measure for the distance-to-default. Assuming complete markets and a constant riskless rate r, the drift of the asset value is r under the risk-neutral measure $\mathbb{Q}$. The risk-neutral probability of default is given by

$$PD_t^{\mathbb{Q}} = \Phi\Bigg(- \frac{\log(V_t/D) + (r - \frac{1}{2}\sigma^2)T}{\sigma\sqrt{T}} \Bigg). \tag{3}$$

Thus, the Merton framework implies a specific relation between the risk-neutral and real-world default probabilities (see e.g. Duffie and Singleton, 2003, p. 119f). Combining Eqs. (2) and (3) yields

$$PD_t^{\mathbb{Q}} = \Phi\Big(\Phi^{-1}(PD_t^{\mathbb{P}}) + \frac{\mu - r}{\sigma}\sqrt{T} \Big). \tag{4}$$

The market price of risk, defined as the expected asset excess return per unit of volatility, $\lambda \equiv \frac{\mu - r}{\sigma}$, is thus given by

$$\Big(\Phi^{-1}(PD_t^{\mathbb{Q}}) - \Phi^{-1}(PD_t^{\mathbb{P}}) \Big) \frac{1}{\sqrt{T}} = \lambda. \tag{5}$$

The relation in Eq. (5) shows that non-zero asset excess returns imply that $PD^{\mathbb{Q}}$ is different from $PD^{\mathbb{P}}$. In general, differences in risk-neutral and real-world probabilities of default arise when investors do not only care about the expected loss in the event of default but additionally demand a risk premium for uncertainty related to default. The market price of risk is hence associated with, both, the risk-neutral *and* the real-world default probabilities. In particular, asset excess returns (per unit of volatility) increase with the difference between the risk-neutral and real-world default probabilities. We next show, how one can extract the market price of risk from equity and credit instruments and that expected excess returns on equity are inversely related to expected CDS excess returns.

2.2 Equity and Credit Protection Dynamics

To investigate the link between a firm's equity returns and its credit risk premium, we note that equity and credit protection instruments are both claims on the firm's assets and their dynamics are thus related to the risk-neutral and real-world default probabilities. We discuss these relations below and elaborate on technical details in Appendix A.1.

In the Merton model, equity is a call option on the firm's assets with strike equal to D and maturity T. Because the call option is European-style, we can use the Black and Scholes (1973) framework to compute the dynamics of the firm's equity. It is straightforward to show that the expected equity excess return per unit of volatility equals the market price of risk

$$\lambda_E \equiv \frac{\mu_E - r}{\sigma_E} = \lambda. \tag{6}$$

The value of the bond is the present value of D, discounted at the riskless rate, plus a short put option on the firm's assets with strike D and maturity T. A long position in this put option represents a credit protection contract: in the event of default, the put pays the difference between debt and asset value, thereby providing a hedge against default risk. Consider a CDS contract that offers credit insurance to the protection buyer by paying off the loss given default. The protection buyer has to make periodic premium payments (the CDS spread) until default occurs or until the contract expires. Since default can only occur at time T in the Merton framework, the CDS contract has to have the same present value as the put option. Assuming continuous premium payments, the CDS spread S_t is given by

$$S_t = \frac{r}{1 - e^{-rT}} P_t, \tag{7}$$

where P_t denotes the value of the European put option. In our empirical analysis we use market spreads of CDS contracts with constant time-to-maturity, implying that the CDS spread is a function of the underlying asset value V_t, but not explicitly of time t, i.e. $S_t = s(V_t)$. We apply Itô's lemma to compute the expected CDS excess return, $\mu_S^{\mathbb{P}} - \mu_S^{\mathbb{Q}}$, and its standard deviation and get

$$\lambda_S \equiv \frac{\mu_S^{\mathbb{P}} - \mu_S^{\mathbb{Q}}}{\sigma_S} = -\frac{(\mu - r)}{\sigma} = -\lambda = -\lambda_E. \tag{8}$$

Eq. (8) shows that the expected CDS excess return is inversely related to the expected asset excess return and that the expected CDS excess return adjusted for risk hence equals minus the market price of risk. The intuition is that when the risk-neutral default probability is much higher than the real-world probability, expected asset and equity excess returns are high and buying credit protection is expensive. Conversely, when the difference between risk-neutral and real-world default probabilities is small, shareholders demand low (risk-adjusted) excess returns and the (risk-adjusted) expected excess returns to selling credit protection are low as well.

Building on these insights, our empirical objective is to estimate risk premia from market prices of firms' credit instruments and to analyze whether they are related to equity risk premia, as predicted by this structural framework. In particular, we analyze the implications of Eq. (8), whether (risk-adjusted) equity excess returns are inversely related to (risk-adjusted) CDS excess returns and thus positively related to risk premia embedded in the term structure of forward CDS spreads. In the following section we describe how we use CDS data to implement Eq. (8) empirically.

3 Using CDS Spreads to Extract Credit Risk Premia

We use credit market information to estimate risk premia and test whether they are priced in equity returns. 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.[6]

We use an essentially model-free approach to estimate the expected CDS excess return, $\mu_S^{\mathbb{P}} - \mu_S^{\mathbb{Q}}$, from Eq. (8). The (discrete time) expected change in the T-year CDS spread, S_t^T, from t to $t+\tau$ under the real-world measure is

$$\mathbb{E}_t^{\mathbb{P}}\left[\Delta S_{t+\tau}^T\right] \equiv \mathbb{E}_t^{\mathbb{P}}\left[S_{t+\tau}^T\right] - S_t^T. \tag{9}$$

We note that we can extract the risk-neutral expectation of the future CDS spread from the term structure of CDS spreads by calculating the forward CDS spread contracted at time t and being effective from time $t+\tau$ for T periods, i.e. we have that $\mathbb{E}_t^{\mathbb{Q}}\left[S_{t+\tau}^T\right] = F_t^{\tau\times T}$. We refer to

$$F_t^{\tau\times T} - S_t^T = \mathbb{E}_t^{\mathbb{Q}}\left[S_{t+\tau}^T\right] - S_t^T \tag{10}$$

as the CDS forward premium which represents the risk-neutral expectation of the change in the CDS spread. The expected CDS excess return is the $\mathbb{P}$-expected change in the CDS spread in excess of the $\mathbb{Q}$-expected change

$$\mathbb{E}_t^{\mathbb{P}}\left[RX_{t+\tau}^T\right] = \mathbb{E}_t^{\mathbb{P}}\left[\Delta S_{t+\tau}^T\right] - (F_t^{\tau\times T} - S_t^T). \tag{11}$$

The expected excess return is non-zero if market participants demand a compensation for bearing credit risk and forward CDS spreads thus carry a priced risk premium in addition to

[6] Empirical 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 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 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.

the expected future CDS spread, i.e. $F_t^{\tau \times T} = \mathbb{E}_t^{\mathbb{P}}\left[S_{t+\tau}^T\right] + RP_{t+\tau}^T$. This credit risk premium is

$$RP_{t+\tau}^T = -\mathbb{E}_t^{\mathbb{P}}\left[RX_{t+\tau}^T\right] = \mathbb{E}_t^{\mathbb{Q}}\left[S_{t+\tau}^T\right] - \mathbb{E}_t^{\mathbb{P}}\left[S_{t+\tau}^T\right]. \tag{12}$$

Our structural model framework implies, see Eq. (8), that the expected equity excess return is inversely related to the expected CDS excess return in Eq. (11) and hence positively related to the risk premium in Eq. (12). Since these credit risk premia cannot be observed directly, we estimate the right hand side of Eq. (12) using the term structure of spot CDS spreads.

3.1 The Term Structure of CDS Spreads and Expected CDS Excess Returns

In this subsection we specify the relation between credit risk premia and the term structure of forward CDS spreads, building on approaches established for fixed income. Our approach is motivated by Cochrane and Piazzesi (2005) who extract a single factor from forward interest rates to predict bond risk premia.

Let the term structure of forward CDS spreads be represented by the current 1-year CDS spread and 1-year forwards for $T = 1, 3, 5, 7$. The starting point for the single-factor model is to consider regressions of excess returns on T-year CDS contracts (with $T = 1, 3, 5, 7$), defined in Eq. (11), on all forward rates

$$RX_{t+1}^T = \delta_0^T + \delta_1^T S_t^1 + \delta_2^T F_t^{1\times 1} + \delta_3^T F_t^{3\times 1} + \delta_4^T F_t^{5\times 1} + \delta_5^T F_t^{7\times 1} + \varepsilon_{t+1}^T. \tag{13}$$

In the single-factor model, all T-excess returns are driven by the same linear combination of CDS spreads, parameterized with $\boldsymbol{\gamma} = (\gamma_0, \gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5)$. We estimate the single factor by regressing average excess returns across maturities on all forward rates. With $\overline{RX}_{t+1} \equiv 1/4 \sum_{T=\{1,3,5,7\}} RX_{t+1}^T$, we identify $\boldsymbol{\gamma}$ through

$$\begin{aligned} \overline{RX}_{t+1} &= \gamma_0 + \gamma_1 S_t^1 + \gamma_2 F_t^{1\times 1} + \gamma_3 F_t^{3\times 1} + \gamma_4 F_t^{5\times 1} + \gamma_5 F_t^{7\times 1} + \bar{\varepsilon}_{t+1}. \\ &= \boldsymbol{\gamma}'\mathbf{F}_t + \bar{\varepsilon}_{t+1}. \end{aligned} \tag{14}$$

Analogous to Eq. (12), we define $RP_{t+1} \equiv -\mathbb{E}_t^{\mathbb{P}}\left[\overline{RX}_{t+1}\right]$. Thus, the estimated credit risk premium is

$$\widehat{RP}_{t+1} = -\boldsymbol{\gamma}'\mathbf{F}_t. \tag{15}$$

Based on the above arguments, risk-adjusted equity excess returns should be positively related to credit risk premium estimates $\widehat{RP}_{t+1}$. We estimate $\widehat{RP}_{t+1}$ conditional on CDS term structure information that is available at time t but estimation of the parameters is based on full sample information; in doing so we exactly follow Cochrane and Piazzesi (2005). We then also present results where γ is estimated using only information up to time t.

To estimate the CDS-implied market price of risk, we scale the estimated credit risk premium by its standard deviation to obtain $\widehat{RP}_{t+1}/\widehat{\sigma}_S$. We experiment with a variety of volatility estimation specifications (different rolling window estimates, 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. The results that we report in the paper are based on a 30-day rolling window using daily CDS returns because choosing relatively short windows for the rolling estimates leaves us with a larger number of observations.

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 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.2).

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.[7] 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 firm's market value by the product of stock's price with the number of publicly held shares. The book-to-market value is determined by Compustat data item "Common/Oridinary 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 A.3) we obtain book values of liabilities using the Compustat annual files. To estimate the firm's notional debt value we follow the literature 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 and April 26, 2010. Standard risk factors in our asset pricing tests using the CAPM market factor, the three factors proposed by Fama and French (1993), and the four factors proposed by Carhart (1997) are obtained from Kenneth French's website.[8]

[7] We 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.

[8] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/

4.2 Descriptive Statistics and Predictability of CDS Excess Returns

We present various descriptive statistics for the CDS data in Panel A of 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 (07/2007–04/2010). All statistics are based on monthly data for all companies and presented in basis points. Forward CDS spreads are calculated as described in Appendix A.2.

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 CDS forward premia. Changes in CDS spreads 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. Furthermore, CDS excess returns 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. Recalling that CDS spread changes are the sum of CDS forward premia and CDS excess returns, we note that the contribution of the latter is larger to average spread changes (in the crisis up to ten times) and that the volatility of spread changes is almost entirely driven by the volatility of excess returns.

In the absence of risk premia, forward CDS spreads should be unbiased predictors for future spot CDS spreads and CDS excess returns should be unpredictable. In analogy to the literature in 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 T-year CDS excess return on the lagged T-year CDS forward premium. The results in Panel B of Table 1 provide evidence for time-variation in risk premia: the average R^2 across firms is around 0.07 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 excess returns to the full term structure of forward CDS spreads as discussed in Section 3.1. In Panel B of Table 1 we present R^2s for regressing the excess return of the T-year CDS spread on all forward CDS spreads see (Eq. (13)) as well as for regressions on the estimate of the single factor obtained from Eq. (14). Our findings suggest that CDS excess returns are indeed predictable in both sub-samples and in the full sample. Moreover, the single-factor, which represents the common component across CDS maturities and is minus the credit risk premium estimate, captures most of the variation that is explained by the unconstrained estimation. The R^2s 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^2s range from 0.25 to 0.29 and from 0.31 to 0.33 before and in the crisis, respectively.[9]

Our findings thus suggest that the term structure of CDS spreads contains information about risk premia. CDS excess returns 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.

4.3 Credit Risk Premia and Equity Returns

In this subsection we compute equity excess returns of quintile portfolios constructed by ranking firms at the end of each month using measures of distress risk suggested by previous research and based on our estimates of credit (market-implied) risk premia. At the outset, we document that there is strong comovement of equity and CDS markets consistent with the implications of our structural framework. We then show that there is a positive relation between risk premia extracted from the term structure of CDS spreads and equity excess

[9]Other 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 CDS excess returns. On average, the R^2s are somewhat lower than those of the unbiasedness regressions and substantially lower than those of the single-factor model.

returns. Our results suggest that these risk premia convey information beyond traditional factors and we provide additional support by further controlling for various firm characteristics. In addition, we summarize results of an out-of-sample analysis, discuss the link between CDS slope and equity returns and conduct further robustness checks, including a repetition of the whole empirical analysis using an alternative data set. Since all our findings are qualitatively identical when ranking firms by credit risk premium estimates or CDS-implied market prices of risk estimates (i.e. credit risk premium scaled by its standard deviation), we focus our presentation and discussion of results on credit risk premia to facilitate comparison with related research. For completeness, we report additional results using CDS-implied market prices of risk in the separate Internet Appendix AA.

4.3.1 Contemporaneous Relation between CDS and Equity Markets

We first show that there is strong comovement of equity and CDS markets consistent with the implications of our structural framework. Recall that CDS spread changes comprise two components: on the one hand, the CDS forward premium reflecting the risk-neutral expectation about the CDS spread change, and, on the other hand, the CDS excess return which is minus the risk premium priced in forward CDS spreads. The structural model implies that equity excess returns are positively related to the risk premium embedded in the CDS excess return. To gauge the contemporaneous relation between CDS and equity markets, we use 5-year CDS spreads to sort firms into portfolios based on time-t CDS forward premia (FP_t) as well as based on CDS excess returns (RX_{t+1}) and risk-adjusted CDS excess returns (RX_{t+1}/σ_S) from time t to $t+1$. Portfolio 1 contains firms with highest risk. Using FP_t as sort variable, these are the firms with highest CDS forward premia implying largest increases in the CDS spread under risk-neutral expectations. For RX_{t+1} and RX_{t+1}/σ_S, portfolio 1 contains firms with lowest (risk-adjusted) CDS excess returns because they are negatively related to credit risk premia and equity returns. Portfolio 5 contains firms with lowest risk as judged by CDS forward premia and (risk-adjusted) CDS excess returns. In Figure 1 we plot equally-weighted equity portfolio excess returns (left column) and Sharpe ratios (right column). In both cases, we find strong support that equity risk premia are inversely related to

CDS excess returns in the full sample, the pre-crisis period (01/2001-06/2007) and during the crisis (07/2007-04/2010). Over the full sample period, firms with lowest CDS excess returns earn a contemporaneous equity return in excess of companies with highest excess returns of 6.5% during the same month, prior to the crisis the P1–P5 return is 5.28% p.m., during the crisis it is 9.51% p.m. Similarly, the right column in Figure 1 shows a monotonic decrease in equity Sharpe ratios from portfolio 1 to portfolio 5 when ranking firms by minus the (risk-adjusted) CDS excess return. The plots also show that, in line with the structural model, there is no pronounced relation between (the risk-neutral information conveyed by) the CDS forward premium and equity excess returns.

Table 2 summarizes detailed results for the equally-weighted portfolios sorted by RX in Panel A. Panel B reports results for value-weighted portfolios and reveals the same but slightly less pronounced pattern with contemporaneous P1–P5 returns being 6.01%, 5.35%, and 7.63% per month over the full, pre-crisis, and crisis samples, respectively. The sub-panel labeled Portfolio Characteristics presents averages of other risk measures for the portfolios. The results suggest that the cross-sectional dispersion in common measures for distress risk is small. Furthermore, there is no monotonic pattern across portfolios related to default probabilities, firm size (MV), and book-to-market ratios (BM). Rather, larger CDS excess returns in *absolute* terms are associated with lower distance-to-default (DD) and higher 5-year CDS spreads (S5).[10] Furthermore, the largest absolute CDS excess returns are associated with firms that are small in size and have high book-to-market ratios.

The results in Table 3 confirm the implication of the Merton framework that CDS forward premia are not priced in equity returns. We do not find significant excess returns to trading high forward premium against low forward premium firms. The portfolio characteristics show that the forward premium's relation to the CDS spread level is U-shaped but also that the relation to firms' distance-to-default, size, and book-to-market ratio is monotonic: firms with highest risk-neutrally expected CDS spread changes are on average also more risky as judged by these common proxies for distress risk, which suggests that the informational content of CDS forward premia is (at least to some extent) are similar to that of these other firm

[10]Given this finding, we also consider relative changes in CDS spreads in our robustness checks. Using log or percentage changes in spreads produces very similar results.

characteristics.

Overall, the results document a strong negative relation between CDS excess returns and contemporaneous equity excess returns, consistent with our structural framework. The credit risk information embedded in CDS spreads appears to be relevant for stock pricing and it appears to be informative beyond traditional risk factors. We discuss these issues in more detail for the relation between credit risk premia and equity returns below.

4.3.2 Portfolios Sorted by Credit Risk Premia

We now relate equity excess returns and Sharpe ratios to credit risk premia extracted from the term structure of CDS spreads. In Figure 2 we plot excess returns for equally-weighted quintile portfolios sorted by common measures of distress risk and our credit risk premium estimates. The left column ranks firms by size from small (P1) to big (P5) and by book-to-market ratios from value (P1) to growth (P5) firms. In the middle column, we rank firms by their probabilities of default from high (P1) to low risk (P5). We use the level of the 5-year CDS spread as a proxy for the risk-neutral default probability as well as credit ratings and the distance-to-default as proxies for the real-world default probability. In the right column we plot results for portfolio sorts using our estimates of credit risk premia and CDS-implied market prices of risk. Panel (a) plots results for the full sample (01/2001–04/2010), panel (b) for the pre-crisis period (01/2001–06/2007), and panel (c) for the crisis sub-sample (07/2007–04/2010).

The graphs show that there is no monotonic relation between size, book-to-market, or default probability in the full sample period. The main reason is that, as the sub-sample plots reveal, these firm characteristics exhibit a different relation to firms' stock returns prior to the crisis as compared to during the crisis. While we see that firms' stock returns decrease when moving from the small to the big firm portfolio as well as from the value to the growth firm portfolio prior to July 2007, the reverse appears true during the crisis. Similarly, the full sample relation of the default probability to equity returns is ambiguous because it depends on the proxy used and on the weighting scheme. In the pre-crisis period, firms' equity returns tend to increase with their default probabilities with P1–P5 returns being positive across proxies and weighting schemes. The relation is not monotonic, though, and the differential return is only significant for the distance-to-default. While this positive relation is in line with e.g. Vassalou and Xing (2004), we see the reverse relation during the crisis which is thus consistent with the patterns of distress puzzle as documented in e.g. Campbell et al. (2008). The return of buying the high distress portfolio and selling the low distress portfolio is negative, but not significant, for all default probability proxies. Overall, these plots suggest that size, book-to-market, and default probability exhibit a different relation to stock returns prior and during the crisis and, as a consequence, the full sample results are ambiguous. However, the similarity in the behavior of returns on the high minus low distress portfolios across all five proxies suggests that these variables to a sizeable extent convey similar information. Taking a closer look at the portfolio characteristics shows that the relation between these five proxies is monotonic across the respective portfolios in all subperiods. We report these and other results (returns, alphas, factor loadings) in detail in Internet Appendix Tables BB.1 to BB.3.

In contrast to these inconclusive results, we document a strong positive relation between our estimate of credit risk premia ($\widehat{RP}_{t+1}$) and equity returns that holds in the full sample as well as in the pre-crisis and crisis sub-samples. In accordance with our predictions from the structural model, the right column in Figure 2 shows a monotonic decrease of excess returns on stocks from the portfolio of firms with highest risk premia (P1) to the portfolio of firms with lowest risk premia (P5). The P1–P5 returns are 2.91% per month in the full sample, 2.70% prior to the crisis, and 5.85% during the crisis and significant in all cases. The results are very similar when sorting firms by CDS-implied market prices of risk ($\widehat{RP}_{t+1}/\widehat{\sigma}_S$). We discuss results related to the credit risk premium in detail below; results using the CDS-implied market price of risk are qualitatively identical and thus again delegated to Internet Appendix AA.

Table 4 presents details on the positive relation between credit risk premia and equity excess returns as well as equity Sharpe ratios for equally-weighted portfolios in Panel A and value-weighted portfolios in Panel B. The return patterns are the same for both weighting schemes but slightly less pronounced for value-weighted portfolios. In particular, the table shows that that the returns on the high minus low risk premium strategy remain highly significant even after controlling 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 by heteroskedasticity and autocorrelation consistent t-statistics (reported in parentheses) of the alpha estimates. The alpha estimates are similar to the mean returns, only during the crisis controlling for momentum leads to a noticeable difference. Furthermore, there are no monotonic cross-sectional patterns for factor loadings and the estimates of 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, which is driven by the pre-crisis period. For the market factor, it appears that there is a U-shaped relation of beta estimates to credit risk premia. We find highest beta estimates for P1 and P5 returns, lowest estimates typically in P3, and betas very close to zero for the high minus low risk premium strategy. These results are in line with the portfolio characteristics suggesting that the relation to other proxies for distress risk is weak: across portfolios, the relation to DD, S5, MV, and BM is non-monotonic and the dispersion is small. Similar to our findings for the the contemporaneous comovement of CDS and equity risk premia, these proxies for distress risk appear to be related to the absolute value of credit risk premia, i.e. only to the magnitude but not to the sign of expected excess returns. Thus, the risk premia that we estimate from the term structure of CDS spreads appear to convey additional information not captured by traditional risk factors.

Since a sizeable fraction of our sample covers the recent financial crisis, we check whether our results change when we exclude financial firms (SIC codes 6000–6999) from our sample. Following related research, we also exclude utility firms (SIC codes 4900–4999). Table 5 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.

Overall, our findings show that there is a strong link between credit and equity markets that is driven by credit risk premia. The results reveal that our single factor estimate for the credit risk premium accurately predicts CDS excess returns (as reported above in Section 4.2) and conveys information relevant for cross-sectional pricing of equities: stocks of firms with higher credit risk premia earn higher equity excess returns and have higher Sharpe ratios. The expedience of our credit risk premium estimation is further supported by noting that the results feature exactly the same patterns related to equity return statistics and portfolio characteristics as the results for CDS excess returns. Moreover, we find that credit risk premia embedded in the term structure of CDS spreads contain information beyond that conveyed by traditional risk factors. We investigate this issue in further detail below.

4.3.3 Controlling for Firm Characteristics

To gain deeper insight into the relation between firm characteristics and the pricing of credit risk premia in equity returns, we double sort portfolios, first using either size or book-to-market as control variables and subsequently credit risk premia. Furthermore, we control for the firm's default probability as well as for the liquidity of the CDS contracts written on the firm as a reference entity.

Controlling for Size and Book-to-Market Table 6 reports results when we sort companies 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, however, is most pronounced in the small companies portfolio and excess returns of the long-short portfolios decrease with increasing firm size from around 3% per 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 significantly negative market beta in the small company portfolio.

Second, we control for book-to-market ratios and present results in Table 7. 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.

The result that the price of credit risk in equity returns decreases with size and increases with book-to-market suggests that these firm characteristics convey information about distress risk. However, 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. As for other analysis in the paper, results are very similar when using the distance-to-default instead of credit ratings. Tables 8 and 9 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 CDS contract. The results in Table 10 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 returns do not reflect liquidity premia in CDS markets. 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 EE), we also report results using CDS bid-ask spreads. 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 for our sequential-sort analysis of risk premium effects controlled for firm characteristics in Table 11. 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 reverses 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 while during the crisis the excess returns are highest for firms with the largest number of quote contributors (as in 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 of illiquidity and arbitrage cost considerations in more detail.

4.3.4 Additional Results and Robustness Checks

In this subsection, we briefly summarize results for an out-of-sample analysis and results related to the link between CDS slope and equity returns as well as further robustness checks. Our most comprehensive robustness check is to repeat the whole empirical analysis using an alternative data set. Detailed discussions and Tables reporting the results are delegated to the separate Internet Appendix to save space.

Out-of-Sample Analysis To supplement our result that credit risk premia are priced in the cross-section of equity returns, we conduct an out-of-sample analysis. 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 is based on full sample information; in doing so we exactly follow Cochrane and Piazzesi (2005). Now, we also estimate the parameters conditional on the time-t information set only by using rolling or expanding window schemes. Our results show that equity investment strategies based on out-of-sample forecasts of credit risk premia earn, across strategies, an average excess return of 6% per year with an average annual four-factor alpha of 8% that is significant in most cases. Our out-of-sample results thereby also alleviate potential concerns that look-ahead bias could have an impact on our conclusions. Furthermore, they confirm that credit risk premia capture additional information not embedded in traditional risk factors. We discuss the analysis and the results in detail in Internet Appendix CC.

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 CDS forward premia (thus only containing risk-neutral 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 DD.

Alternative Data Set We perform the whole empirical analysis reported in the paper using CDS, equity and firm data collected by Datastream for the period from 01/2004 to 06/2010. We present the most important results documenting that we find the same robust relation between credit risk premia estimated from CDS spreads and equity excess returns in Internet Appendix EE and Tables EE.1 to EE.7, respectively. Overall, these results suggest that our findings and conclusions are neither driven by the choice of data source nor by the particular cross section of companies and provide further evidence for robustness across sub-samples.

Other Checks As a robustness check, we also conduct the whole empirical analysis 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

Previous empirical research provides mixed evidence as to whether credit risk is priced in equity returns. Many papers argue that there is a distress anomaly because firms with higher default risk earn abnormally low returns. Building on insights from the structural framework of Merton (1974), we show in this paper, that equity risk premia are neither directly linked to firms' real-world nor to their risk-neutral default probabilities but to (a function of) the difference between the two.

We investigate the link between credit risk and equity returns by exploring the joint cross-section of CDS and stock returns for a large sample of US firms from 2001 to 2010. CDS spreads represent an ideal measure of credit risk because they have been shown to quickly incorporate market information and are less contaminated by non-default components as compared to other proxies. We use the term structure of CDS spreads to estimate expected CDS excess returns and extract credit credit risk premia which are a function of both real-world *and* risk-neutral default probabilities. We estimate these risk premia using a single-factor model in the spirit of Cochrane and Piazzesi (2005). Based on the structural framework of Merton (1974), we expect that companies with higher credit risk premia earn higher equity excess returns.

In our empirical analysis, we show that CDS excess returns and risk premia are predictable. Our results reveal that there is indeed a strong relation between equity excess returns and risk premia estimated from credit market data. Furthermore, our results suggest that the information conveyed by these credit risk premia is not fully captured by traditional risk factors because alphas remain significant after controlling for the CAPM market factor, the three factors of Fama and French (1993), and the four factors of Carhart (1997). However, the equity excess returns to buying high and selling low credit risk premium portfolios are highest for small firms, value stocks, and firms with high probabilities of default. All our results are robust to changes in the return weighting scheme, to changes in the sampling frequency, to the choice of CDS data source, as well as to splitting the sample into a pre-crisis period (until July 2007) and a crisis period (from July 2007).

A Technical Appendix

A.1 Equity and CDS Dynamics in the Merton Framework

In this appendix we show that the expected equity excess return per unit of risk equals the market price of risk and that the expected CDS excess return equals minus the market price of risk. This establishes the inverse relation between expected equity and CDS excess returns We start with equity and note that equity (E) is a function f of time t and the underlying asset value V, i.e.

$$E_t = f(t, V_t) \tag{16}$$

Applying Itô's lemma with the asset value governed by the $\mathbb{P}$-dynamics in Eq. (1) yields

$$df(t, V_t) = \left(\frac{\partial f}{\partial t} + \mu V \frac{\partial f}{\partial V} + \frac{1}{2}\sigma^2 V^2 \frac{\partial^2 f}{\partial V^2} \right) dt + \sigma V \frac{\partial f}{\partial V} dW_t^{\mathbb{P}} \equiv \mu_E E_t dt + \sigma_E E_t dW_t^{\mathbb{P}}, \tag{17}$$

where μ_E and σ_E denote the drift and the volatility of the equity E. The parameters are given by

$$\mu_E = \frac{\frac{\partial f}{\partial t} + \mu V \frac{\partial f}{\partial V} + \frac{1}{2}\sigma^2 V^2 \frac{\partial^2 f}{\partial V^2}}{E} \qquad \text{and} \qquad \sigma_E = \frac{\sigma V}{E} \frac{\partial f}{\partial V}. \tag{18}$$

Note that the partial derivatives $\frac{\partial f}{\partial t}$, $\frac{\partial f}{\partial V}$ and $\frac{\partial^2 f}{\partial V^2}$ correspond to the greeks Θ, Δ and Γ for a European call option. By substituting the greeks for the partial derivatives we see that the expected equity excess return per unit of volatility equals the risk-adjusted expected excess return on assets, i.e. the market price of risk:

$$\lambda_E = \frac{\mu_E - r}{\sigma_E} = \frac{\mu - r}{\sigma} = \lambda. \tag{19}$$

We proceed analogously for the constant time-to-maturity CDS contract: the CDS spread is a function of the underlying asset value V_t but not explicitly of time t, i.e. $S_t = s(V_t)$. We apply Itô's lemma to compute the $\mathbb{P}$- and $\mathbb{Q}$-measure dynamics of the CDS spread and get the expected CDS excess return

$$\mu_S^{\mathbb{P}} - \mu_S^{\mathbb{Q}} = (\mu - r)\frac{V}{S}\frac{\partial s}{\partial V}. \tag{20}$$

Substituting Eq. (7) for S into Eq. (20) and computing the partial derivative $\frac{\partial s}{\partial V}$ yields

$$\mu_S^{\mathbb{P}} - \mu_S^{\mathbb{Q}} = -(\mu - r)\frac{V}{P}\Phi(-d_1). \tag{21}$$

Eq. (21) shows that the expected CDS excess return is negatively related to the expected asset excess return and thus to the expected equity excess return as well. Using Itô's lemma and noting that volatility is defined to be positive we get

$$\sigma_S = |\sigma\frac{V}{P}\Phi(-d_1)|. \tag{22}$$

Substituting Eq. (21) and (22) into Eq. (8) we see that the expected CDS excess return per unit of volatility equals minus the risk-adjusted expected asset excess return,

$$\lambda_S \equiv \frac{\mu_S^{\mathbb{P}} - \mu_S^{\mathbb{Q}}}{\sigma_S} = -\lambda. \tag{23}$$

The (absolute) compensation per unit of risk is of course the same for assets and claims thereon, but the sign of expected excess returns on equity and CDS is different, and we have that

$$\lambda_E = -\lambda_S. \tag{24}$$

A.2 CDS Valuation and Forward CDS Spreads

A CDS 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 at time t is given as

$$V_t^{prot} = (1 - R)\int_t^{t+T} Z(t,u)(-dQ(t,u)), \tag{25}$$

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 instantaneous default probability at time u, conditional on surviving up to time u.

The premium leg is given by the product of the annual contract premium S_t^T and a time t present value of a credit risky dollar annuity $\mathrm{RPV01}_t^T$ starting at t and time-to-maturity T, i.e.

$$V_t^{prem} = S_t^T \mathrm{RPV01}_t^T \tag{26}$$

where $\mathrm{RPV01}_t^T$ is given by

$$\begin{aligned} \mathrm{RPV01}_t^T &= \sum_{n=1}^{N} \delta(t_{n-1}, t_n) Z(t, t_n) Q(t, t_n) \\ &+ \sum_{n=1}^{N} \int_{t_{n-1}}^{t_n} \delta(t_{n-1}, u) Z(t, u) Q(t, u)(-dQ(t, u)). \end{aligned} \tag{27}$$

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.[11] The first part of Eq. (27) refers to the expected present value of the risky premium payments made conditional on surviving to their payment dates and the second part corresponds to the effect of premium accrued at default.

Since the price of a CDS contract is zero at contract 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

$$S_t^T = \frac{(1-R)\int_t^{t+T} Z(t,u)(-dQ(t,u))}{\mathrm{RPV01}_t^T}. \tag{28}$$

Given the spreads of on-the-run CDS contracts we obtain the survival curve $Q(t, t_i)$ for various maturities t_i by bootstrapping where we assume 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

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

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

$$S_t^{\tau+T}\mathrm{RPV01}_t^{\tau+T} = S_t^{\tau}\mathrm{RPV01}_t^{\tau} + F_t^{\tau\times T}\mathrm{RPV01}_t^{\tau\times T} \tag{29}$$

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

A.3 Distance-to-Default Estimation

We compute a firm's distance-to-default defined in Eq. (2) as a proxy for distress risk in analogy to Crosbie and Bohn (2003) and Vassalou and Xing (2004) which requires the knowledge of the asset value V_t, its drift μ and volatility σ.

In finding these parameters, we follow the iterative scheme presented in Vassalou and Xing (2004). Note that in the Merton model equity represents a European call option on the firm's asset value for a given maturity T which we assume to be one year and with strike equal to the notional value of debt D. Hence, equity can be valued by applying the Black Scholes formula. Similarly to Crosbie and Bohn (2003), we assume 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.

Assume that we observe a daily time-series of n market values of equity for the past 12 months, E_{t_0}, E_{t_1}, ..., E_{t_n}, and an initial guess of the firm's asset volatility $\sigma^{(i)}$, starting with iteration step $i = 0$. Based on these observations we calculate a daily time series of asset value estimates $V_{t_0}(\sigma^{(i)}), \ldots, V_{t_n}(\sigma^{(i)})$ 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. Similarly to Vassalou and Xing (2004) we use $10\mathrm{E}-4$ as our tolerance level. Once the algorithm converges we obtain an estimate σ 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 obtain daily estimates for the asset value and volatility by conducting the estimation procedure on each day using a 12-month rolling window. 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. Note that in practice this distance-to-default estimate may be biased when predicting defaults, however, DD nevertheless serves well to rank firms in classes of risk (see e.g. Lando, 2004, p. 49).

References

Acharya, V., Johnson, T., 2007, "Insider trading in credit derivatives," *Journal of Financial Economics*, 84, 110–141.

Altman, E. I., 1968, "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy," *The Journal of Finance*, 23, 589–609.

Andrews, D., 1991, "Heteroskedasticity and Autocorrelation Consistent Covariance Matrix Estimation," *Econometrica*, 59, 817–858.

Anginer, D., Yildizhan, C., 2010, "Is There a Distress Risk Anomaly? Corporate Bond Spread as a Proxy for Default Risk," *Working Paper*.

Arora, N., Gandhi, P., Longstaff, F., 2010, "Counterparty Credit Risk and the Credit Default Swap Market," *Journal of Financial Economics*, Forthcoming.

Avramov, D., Cederburg, S., Hore, S., 2010, "Cross-Sectional Asset Pricing Puzzles: An Equilibirum Perspective," Working Paper.

Avramvov, D., Chordia, T., Jostova, G., Philipov, A., 2009, "Credit Ratings and the Cross-Section of Stock Returns," *Journal of Financial Markets*, 12, 469–499.

Backus, D. K., Foresi, S., Mozumdar, A., Wu, L., 2001, "Predictable changes in yields and forward rates," *Journal of Financial Economics*, 59, 281–311.

Berg, T., 2010, "From actual to risk-neutral default probabilities: Merton and beyond," *Journal of Credit Risk*, 6, 55–86.

Berndt, A., Douglas, R., Duffie, D., Ferguson, M., Schranz, D., 2008, "Measuring Default Risk Premia form Default Swap Rates and EDFs," Working paper, Stanford University.

Black, F., Cox, J., 1976, "Valuing Corporate Securities: Some Effects of Bond Indenture Provisions," *Journal of Finance*, 31, 351–367.

Black, F., Scholes, M., 1973, "The Pricing of Options and Corporate Liabilities," *Journal of Political Economy*, 81, 637–659.

Blanco, R., Brennan, S., Marsh, I. W., 2005, "An Empirical Analysis of the Dynamic Relation between Investment-Grade Bonds and Credit Default Swaps," *Journal of Finance*, 60:5, 2255–2281.

Campbell, J. Y., Hilscher, J., Szilagyi, J., 2008, "In Search of Distress Risk," *The Journal of Finance*, 63 (6), 2899–2939.

Campbell, J. Y., Shiller, R. J., 1991, "Yield Spreads and Interest Rate Movements: A Bird's Eye View," *Review of Economic Studies*, 58, 495–514.

Carhart, M., 1997, "On Persistence in Mutual Fund Performance," *Journal of Finance*, 52, 57–82.

Chava, S., Purnanandam, A., 2010, "Is Default Risk Negatively Related to Stock Returns?," *Review of Financial Studies*, 23, 2523–2559.

Clements, M., Hendry, D., 2006, "Forecasting with breaks in data processes," In: G. Elliot, C.W.J. Granger, A. Timmermann (Eds.), . pp. 605–657, Elsevier North Holland, Amsterdam.

Cochrane, J., Piazzesi, M., 2005, "Bond Risk Premia," *American Economic Review*, 95, 138–160.

Crosbie, P., Bohn, J., 2003, "Modeling Default Risk - Modeling Methodology," *KMV corporation.*

Dai, Q., Singleton, K. J., 2002, "Expectation puzzles, time-varying risk premia, and affine models of the term structure," *Journal of Financial Economics*, 63, 415–441.

Dichev, I. D., 1998, "Is the Risk of Bankruptcy a Systematic Risk?," *The Journal of Finance*, 53, 1131–1147.

Driessen, J., 2005, "Is Default Event Risk Priced in Corporate Bonds?," *Review of Financial Studies*, 18, 165–195.

Duffie, D., Lando, D., 2001, "Term Structures of Credit Spreads with Incomplete Accounting Information," *Econometrica*, 69, 633–664.

Duffie, D., Singleton, K., 2003, *Credit Risk - Pricing, Measurement, and Management*, Princeton University Press, first edn.

Elliot, G., Granger, C., Timmermann, A. (Eds.), 2006, *Handbook of Economic Forecasting*, Elsevier North-Holland.

Elton, E. J., Gruber, M. J., Agrawal, D., Mann, C., 2001, "Explaining the Rate Spread on Corporate Bonds," *Journal of Finance*, 56, 247–278.

Ericsson, J., Reneby, J., Wang, H., 2007, "Can Structural Models Price Default Risk? Evidence from Bond and Credit Derivative Markets," Working paper, McGill University.

Fama, E., 1984, "Forward and spot exchange rates," *Journal of Monetary Economics*, 14, 319–338.

Fama, E. F., Bliss, R. R., 1987, "The Information in Long-Maturity Forward Rates," *American Economic Review*, 77, 680–692.

Fama, E. F., French, K. R., 1993, "Common Risk Factors in the Returns on Stocks and Bonds," *Journal of Financial Economics*, 33, 3–56.

Feldhütter, P., Lando, D., 2008, "Decomposing Swap Spreads," *Journal of Financial Economics*, 88, 375–405.

Garlappi, L., Shu, T., Yan, H., 2008, "Default Risk, Shareholder Advantage, and Stock Returns," *Review of Financial Studies*, 21/6, 2743–2778.

Garlappi, L., Yan, H., 2011, "Financial Distress and the Cross Section of Equity Returns," *Journal of Finance*, Forthcoming.

Hackbarth, D., Haselmann, R., Schoenherr, D., 2001, "Default Risk, Stock Returns, and the 1978 Bankruptcy Reform Act," Working paper University of Illinois.

Han, B., Zhou, Y., 2011, "Term Structure of Credit Default Swap Spreads and Cross-Section of Stock Returns," McCombs Research Paper Series No. FIN-01-11, University of Texas at Austin.

Hilscher, J., Pollet, J. M., Wilson, M., 2011, "Are credit default swap a sideshow? Evidence that information flows from equity to CDS markets," *Working Paper*.

Huang, J., Huang, M., 2002, "How much of the corporate-treasury yield spread is due to credit risk? Results from a new calibration approach.," Working paper, Stanford University.

Lando, D., 2004, *Credit Risk Modeling: Theory and Applications*, Princeton University Press.

Leland, H., 1994, "Corporate debt value, bond covenants, and optimal capital structure," *Journal of Finance*, 49, 1213–1252.

Leland, H., Toft, K., 1996, "Optimal Capital Structure, Endogenous Bankruptcy, and the Term Structure of Credit Spreads," *Journal of Finance*, 51, 987–1019.

Longstaff, F. A., Mithal, S., Neis, E., 2005, "Corporate Yield Spreads: Default Risk or Liquidity? New Evidence from the Credit Default Swap Market," *Journal of Finance*, 60, 2213–2253.

Merton, R., 1974, "On the Pricing of Corporate Debt: The Risk Structure of Interest Rates," *Journal of Finance*, 29, 449–470.

Newey, W., West, K., 1987, "A Simple Positive Semi-Definite, Heteroscedasticity and Autorcorrelation Consitent Covariance Matrix," *Econometrica*, 55, 703–708.

Ni, X., Pan, J., 2010, "Trading Puts and CDS on Stocks with Short Sale Ban," Working paper, MIT and HKUST.

Ohlson, J. A., 1980, "Financial Ratios and the Probabilistic Prediction of Bankruptcy," *Journal of Accounting Research*, 18, 109–131.

Ozdagli, A., 2010, "The Distress Premium Puzzle," Working paper, Federal Reserve Bank of Boston.

Radwanski, J., 2010, "Can Long-Run Risks Explain the Distress Puzzle?," Working paper, Vienna Graduate School of Finance (VGSF).

Sarno, L., Schneider, P., Wagner, C., 2011, "Properties of Foreign Exchange Risk Premiums," *Journal of Financial Economics*, forthcoming.

Vassalou, M., Xing, Y., 2004, "Default Risk in Equity Returns," *The Journal of Finance*, 59, 831–868.

Table 1: Descriptives Statistics for CDS Spreads

This table presents summary statistics and predictability results for CDS spreads for the sample periods given in the column headers. The maturities T are indicated in the column headers. The horizon τ equals one month. Data is sampled at a monthly frequency for the periods indicated in the column headers. Panel A summarizes descriptive statistics for levels of CDS spreads, slopes of the term structure of CDS spreads defined as the T-year CDS spread minus the 1-year CDS Spread, monthly changes in CDS spreads, monthly CDS forward premia, and monthly CDS excess returns. Means, standard deviations, as well as the 5% and 95% quantiles are presented in basis points. Panel B summarizes results of predictability regressions for CDS excess returns. 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. We report R^2s for regressing CDS excess returns on CDS forward premia: $RX_t^{\tau\times T} = \alpha_0 + \beta_0(F_t^{1\times T} - S_t^T) + \epsilon_{0,t+1}$, regressions of excess returns on all forward CDS spreads as in Eq. (13) and for regressing the CDS excess returns on the single factor estimated using Eq. (14).

	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: Descriptive Statistics												
CDS Spreads (S_t^T)												
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
Slopes ($S_t^T - S_t^1$)												
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
Changes in CDS Spreads ($\Delta S_{t+\tau}^T$)												
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
CDS Forward Premia ($F_t^{\tau\times T} - S_t^T$)												
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
CDS Excess Returns ($RX_t^{\tau\times T}$)												
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
Panel B: Predictability of CDS Excess Returns												
R^2 for Regressions of the Excess Return on the Forward Premium												
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
R^2 for Excess Return Regressions using all Forward CDS Spreads												
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
R^2 for Single-Factor Regressions												
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

Table 2: Returns on Stock Portfolios sorted by CDS Excess Returns

We sort stocks based on firms' CDS excess returns into quintile portfolios and calculate equally-weighted and value-weighted excess returns *Panel A (B)*. P1 contains firms with lowest CDS excess returns, P5 the ones with highest CDS excess returns. 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).

	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
Sort Variable: Negative of CDS Excess Returns ($-RX$)																		
mean	44.12	7.73	1.12	-5.43	-53.01		32.82	6.31	1.81	-2.36	-31.3		73.12	11.63	-0.14	-12.23	-103.23	
Portfolio Characteristics																		
DD	7.27	9.26	10.17	9.95	7.95		7.74	10.03	11.03	11.1	9.22		6	7.49	8.18	7.52	5.3	
S5	272.21	98.2	69.35	85.5	213.19		218.29	76.88	52.92	64.78	151.48		409.2	150.31	109.66	136.47	363.61	
MV	10.24	21.28	27.73	28.01	17.72		10.22	21.51	28.82	30.06	19.89		10.25	20.77	25.03	22.71	12.86	
BM	0.78	0.59	0.56	12.95	0.75		0.73	0.59	0.56	18.39	0.64		0.93	0.6	0.56	0.58	1.01	
Panel A: Equally-Weighted Portfolios																		
Portfolio Returns																		
mean	2.44	0.74	0.2	-0.57	-4.07	6.51	2.59	1.18	0.53	-0.02	-2.69	5.28	2.33	-0.22	-0.52	-1.72	-7.18	9.51
	(2.57)	(1.18)	(0.38)	(-0.81)	(-2.91)	(6.24)	(4.29)	(2.41)	(1.25)	(-0.03)	(-2.54)	(5.8)	(0.78)	(-0.12)	(-0.32)	(-0.86)	(-1.85)	(5.62)
sd	7.41	5.26	4.63	5.37	9.94	6.24	5.05	3.97	3.56	3.96	6.83	4.92	11.47	7.56	6.56	7.76	14.81	8.08
SR	1.14	0.49	0.15	-0.37	-1.42	3.61	1.78	1.03	0.52	-0.02	-1.37	3.72	0.7	-0.1	-0.28	-0.77	-1.68	4.08
Panel B: Value-Weighted Portfolios																		
Portfolio Returns																		
mean	1.87	0.64	-0.01	-1.22	-4.14	6.01	2.4	1.15	0.19	-0.83	-2.95	5.35	0.76	-0.55	-0.39	-2.03	-6.87	7.63
	(2.44)	(1.16)	(-0.02)	(-1.8)	(-2.69)	(5.12)	(4.51)	(2.32)	(0.47)	(-1.34)	(-2.55)	(4.74)	(0.33)	(-0.35)	(-0.33)	(-1.18)	(-1.66)	(3.81)
sd	6.23	4.89	4.07	5.52	9.66	6.83	4.79	4.03	3.46	4.83	6.5	5.12	8.87	6.48	5.35	6.98	14.67	9.84
SR	1.04	0.46	-0.01	-0.76	-1.48	3.05	1.74	0.99	0.19	-0.59	-1.58	3.62	0.3	-0.29	-0.25	-1.01	-1.62	2.69

Table 3: Returns on Stock Portfolios sorted by CDS Forward Premia

We sort stocks based on firms' CDS forward premia into quintile portfolios and calculate equally-weighted and value-weighted excess returns *Panel A (B)*. P1 contains firms with highest CDS forward premia, P5 the ones with lowest CDS forward 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. 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).
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
Sort Variable: CDS Forward Premia																		
mean	1.66	-0.55	-0.87	-1.33	-3.38		0.41	-0.56	-0.84	-1.25	-2.8		4.8	-0.51	-0.93	-1.51	-4.68	
Portfolio Characteristics																		
DD	11.04	10.19	9.14	8.19	6.27		12.08	11	10.11	8.92	6.97		8.53	8.43	7	6.53	4.74	
S5	228.13	74.69	71.26	102.28	261.95		161.54	62.19	58.41	82.43	199.58		397.54	105.89	103.32	149.55	412.57	
MV	36.48	25.16	20.55	14.58	8.09		39.71	24.78	21.24	15.41	9.24		28.12	26.13	19.06	12.86	5.36	
BM	0.76	0.55	0.59	12.99	0.73		0.59	0.55	0.6	18.44	0.74		1.19	0.54	0.57	0.65	0.72	
Panel A: Equally-Weighted Portfolios																		
Portfolio Returns																		
mean	-0.42	-0.16	-0.01	-0.29	-0.3	-0.12	-0.01	0.12	0.58	0.35	0.64	-0.65	-1.32	-0.65	-1.27	-1.73	-2.37	1.05
	(-0.41)	(-0.25)	(-0.02)	(-0.4)	(-0.33)	(-0.24)	(-0.01)	(0.2)	(1.2)	(0.58)	(1.01)	(-1.62)	(-0.4)	(-0.38)	(-0.63)	(-0.79)	(-0.81)	(0.89)
sd	8.67	5.35	5.08	5.81	7.54	4.88	5.79	4	3.75	4.32	5.32	3.96	13.52	7.8	7.29	8.33	11.11	6.58
SR	-0.17	-0.1	-0.01	-0.17	-0.14	-0.08	0	0.1	0.54	0.28	0.42	-0.57	-0.34	-0.29	-0.6	-0.72	-0.74	0.55
Panel B: Value-Weighted Portfolios																		
Portfolio Returns																		
mean	-0.55	-0.47	-0.4	-0.55	-0.43	-0.13	-0.34	-0.05	0.08	0.1	0.41	-0.74	-0.99	-1.36	-1.4	-2.12	-2.32	1.34
	(-0.64)	(-0.9)	(-0.69)	(-0.78)	(-0.49)	(-0.27)	(-0.56)	(-0.1)	(0.17)	(0.16)	(0.72)	(-1.66)	(-0.36)	(-1.04)	(-0.88)	(-1.13)	(-0.9)	(0.88)
sd	6.86	4.72	4.6	5.84	6.83	5.31	4.84	3.69	3.8	4.72	4.96	3.88	10.42	6.6	6.09	7.85	9.96	7.76
SR	-0.28	-0.35	-0.3	-0.33	-0.22	-0.08	-0.24	-0.05	0.08	0.07	0.28	-0.66	-0.33	-0.71	-0.8	-0.93	-0.81	0.6

Table 4: Returns on Stock Portfolios sorted by Credit Risk Premia

We sort stocks based on firms' credit risk premia into quintile portfolios and calculate equally-weighted and value-weighted excess returns *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
Sort Variable: Credit Risk Premia																		
mean	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	
Portfolio Characteristics																		
DD	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	
S5	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	
MV	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	
BM	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	
Panel A: Equally-Weighted Portfolios																		
Portfolio Returns																		
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
	(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)
sd	7.78	5.31	5.06	5.24	8.86	4.77	5.29	3.88	3.59	3.79	6.4	3.9	11.33	7.9	7.21	8.14	13.09	6.18
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
Asset Pricing																		
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
	(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)	(-0.25)	(-1.02)	(-2.56)	(3.08)
3-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
	(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)
4-fac α	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
	(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)
MKT	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	0.67	0.97	-0.14
	(3.4)	(3.89)	(2.49)	(2.62)	(3)	(-0.84)	(0.91)	(1.23)	(0.13)	(0.45)	(1.66)	(-1.91)	(2.04)	(3.33)	(2.76)	(3.25)	(6.24)	(-0.92)
SMB	-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
	(-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)
HML	-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
	(-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)
Panel B: Value-Weighted Portfolios																		
Portfolio Returns																		
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
	(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)
sd	6.62	4.88	4.23	4.55	7.08	4.42	4.97	3.89	3.77	3.69	5.84	3.84	9.05	6.4	5.63	6.37	10.89	6.03
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
Asset Pricing																		
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
	(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)
3-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
	(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)
4-fac α	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
	(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)
MKT	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
	(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)	(2.37)	(2.3)	(2.66)	(2.81)	(-0.09)
SMB	-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
	(-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)
HML	-0.15	-0.27	-0.11	-0.03	-0.1	-0.06	-0.52	-0.34	-0.37	-0.2	-0.42	-0.1	-0.44	-0.17	-0.05	-0.12	-0.12	-0.32
	(-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 5: Returns on Stock Portfolios sorted by Credit Risk Premia excluding Financials and Utilities

We sort stocks based on firms' credit risk premia into quintile portfolios and calculate equally-weighted and value-weighted excess returns *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
Sort Variable: Credit Risk Premia																		
mean	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	
Portfolio Characteristics																		
DD	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	
S5	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	
MV	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	
BM	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	
Panel A: Equally-Weighted Portfolios																		
Portfolio Returns																		
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
	(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)
sd	8.24	5.51	5.28	5.18	8.45	4.52	5.67	4.21	3.8	4.02	6.53	4.02	11.67	8.17	7.24	7.89	12.5	5.77
SR	0.34	0.22	0.08	-0.08	-0.77	2.06	0.92	0.74	0.46	0.13	-0.69	2.42	0.14	-0.08	-0.15	-0.73	-1.16	2.81
Asset Pricing																		
CAPM 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
	(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)	(0.14)	(-0.01)	(-1.03)	(-2.2)	(2.86)
3-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
	(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)
4-fac α	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
	(1.72)	(1.34)	(0.56)	(-0.01)	(-2.28)	(5.56)	(3.56)	(2.05)	(1.44)	(0.73)	(-1.05)	(5.4)	(0.49)	(0.23)	(0.24)	(-0.97)	(-1.96)	(3.79)
MKT	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
	(3.37)	(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)
SMB	-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
	(-1.31)	(-1.08)	(-1.37)	(-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)
HML	-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	-0.5	0.2
	(-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)
Panel B: Value-Weighted Portfolios																		
Portfolio Returns																		
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
	(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)
sd	6.42	4.94	4.27	4.46	6.5	4.57	5.26	3.91	4.01	3.67	5.96	4.18	8.59	6.1	5.4	5.94	8.75	4.78
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
Asset Pricing																		
CAPM 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
	(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)
3-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
	(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)
4-fac α	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
	(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)
MKT	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
	(2.32)	(1.83)	(1.24)	(2.36)	(2.04)	(-0.21)	(0.19)	(0.89)	(-0.86)	(-0.08)	(0.17)	(0.03)	(1.58)	(2.01)	(3.39)	(2.89)	(2.12)	(-1.94)
SMB	-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
	(-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)
HML	-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	-0.19	-0.46	0.17
	(-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 6: 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 and calculate equally-weighted and value-weighted excess returns *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
Sort Variables												
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												
Portfolio Returns												
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
	(1.31)	(0.41)	(-1.4)	(3.92)	(0.65)	(0.32)	(-1.29)	(4.56)	(-0.17)	(-0.14)	(-1.64)	(3.5)
sd	8.75	7.09	10.37	5.17	5.87	5.3	6.69	3.65	5.32	4.37	5.54	2.55
SR	0.57	0.15	-0.61	2.19	0.28	0.14	-0.59	1.54	-0.08	-0.06	-0.76	1.49
Asset Pricing												
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												
Portfolio Returns												
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
	(1.21)	(0.51)	(-1.55)	(3.75)	(0.61)	(0.46)	(-1.25)	(4.32)	(-0.33)	(-0.89)	(-1.59)	(2.67)
sd	7.78	6.41	9.36	4.99	5.8	5.19	6.67	3.76	5.22	4.13	5.23	2.8
SR	0.49	0.19	-0.72	2.13	0.26	0.18	-0.58	1.43	-0.14	-0.36	-0.74	1.11
Asset Pricing												
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	-0.3	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 7: 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 premiaand calculate equally-weighted and value-weighted excess returns *Panel A (B)*. 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 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
Sort Variables												
BM 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												
Portfolio Returns												
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
	(1.13)	(0.65)	(-1.39)	(3.58)	(0.74)	(0.15)	(-0.99)	(3.76)	(0.38)	(-0.36)	(-1.9)	(5.03)
sd	8.21	6.09	10.53	5.42	6.51	5.5	6.19	3.09	6.06	4.31	5.91	3.44
SR	0.47	0.26	-0.64	1.96	0.29	0.06	-0.4	1.4	0.16	-0.15	-0.93	1.89
Asset Pricing												
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
	(1.42)	(0.78)	(-2.03)	(3.53)	(0.95)	(0.14)	(-1.25)	(3.79)	(0.44)	(-0.53)	(-2.8)	(5.32)
3-fac α	1.29	0.63	-1.9	3.19	0.67	0.25	-0.57	1.24	0.42	-0.05	-1.33	1.74
	(1.76)	(1.26)	(-2.16)	(3.41)	(1.41)	(0.53)	(-1.03)	(3.99)	(0.79)	(-0.12)	(-2.09)	(4.37)
4-fac α	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)
MKT	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)
SMB	-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)
HML	-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												
Portfolio Returns												
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
	(0.45)	(0.44)	(-1.42)	(2.51)	(0.45)	(0.06)	(-0.99)	(2.61)	(-0.46)	(-1.14)	(-1.88)	(3.02)
sd	7.61	5.56	10.19	6.49	5.92	4.87	5.86	3.62	5.2	3.99	4.85	3.26
SR	0.2	0.22	-0.68	1.29	0.15	0.02	-0.41	0.9	-0.19	-0.45	-0.86	0.97
Asset Pricing												
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
	(0.53)	(0.59)	(-1.74)	(2.82)	(0.48)	(0.02)	(-1.29)	(2.66)	(-0.54)	(-1.26)	(-2.47)	(2.93)
3-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)
4-fac α	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)
MKT	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)
SMB	-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)	(-0.61)	(-1.24)	(-2.26)	(3.09)
HML	-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 8: Returns on Stock Portfolios sorted by Credit Risk Premia: Controlling for Rating

We double-sort stocks first into three portfolios based on their real-world default probability measured by Ratings, then each of them into tercile portfolios based on firms' credit risk premia and calculate equally-weighted and value-weighted excess returns *Panel A (B)*. 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	3.2	3.3	P3.1–P3.3
Sort Variables												
num.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	
Panel A: Equally-Weighted Portfolios												
Portfolio Returns												
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
	(1.45)	(0.1)	(-1.51)	(4.29)	(0.72)	(0.35)	(-1.27)	(3.54)	(0.45)	(-0.28)	(-1.35)	(3.86)
sd	9.37	7.4	11.31	6.92	6.7	5.32	6.55	3.66	5.24	4.48	6.5	3.02
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
Asset Pricing												
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
	(1.94)	(0.08)	(-2.34)	(4.37)	(1)	(0.4)	(-1.62)	(3.86)	(0.51)	(-0.43)	(-1.83)	(4.43)
3-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
	(2.44)	(0.41)	(-2)	(3.84)	(1.36)	(0.74)	(-1.64)	(3.8)	(0.75)	(0.03)	(-1.57)	(4.2)
4-fac α	1.85	0.23	-2.2	4.05	0.73	0.34	-0.83	1.55	0.35	0.01	-1.05	1.4
	(2.46)	(0.42)	(-2.28)	(4.36)	(1.38)	(0.74)	(-1.3)	(3.56)	(0.73)	(0.03)	(-1.55)	(4.1)
MKT	0.85	0.71	0.98	-0.13	0.47	0.4	0.6	-0.13	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)
SMB	-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)
HML	-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												
Portfolio Returns												
mean	0.88	-0.06	-2.46	3.34	0.11	0.2	-1.53	1.64	-0.05	-0.6	-1	0.94
	(0.95)	(-0.06)	(-1.6)	(3.56)	(0.15)	(0.33)	(-1.68)	(3.74)	(-0.08)	(-1.33)	(-1.38)	(2.88)
sd	8.03	7.46	10.5	7.26	6.14	4.87	6.05	3.79	5.18	3.99	5.48	2.88
SR	0.38	-0.03	-0.81	1.6	0.06	0.14	-0.88	1.5	-0.04	-0.52	-0.63	1.13
Asset Pricing												
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
	(1.16)	(-0.14)	(-2.42)	(4.31)	(0.14)	(0.4)	(-2.04)	(3.91)	(-0.14)	(-1.7)	(-1.75)	(3.02)
3-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
	(2.08)	(0.11)	(-2.25)	(3.46)	(0.56)	(0.69)	(-2.31)	(3.83)	(0.02)	(-1.2)	(-1.41)	(2.59)
4-fac α	1.25	0.07	-2.16	3.42	0.28	0.31	-1.27	1.55	0.01	-0.46	-0.86	0.87
	(2.12)	(0.11)	(-1.97)	(3.43)	(0.56)	(0.71)	(-1.84)	(3.5)	(0.02)	(-1.33)	(-1.44)	(2.68)
MKT	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)
SMB	-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)
HML	-0.42	-0.22	-0.51	0.1	-0.24	-0.06	-0.2	-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)	(-1.29)	(-0.74)	(-0.14)

Table 9: Returns on Stock Portfolios sorted by Credit Risk Premia: Controlling for S5

We double-sort stocks first into three portfolios based on their risk-neutral default probability measured by the 5-year CDS spread, then each of them into tercile portfolios based on firms' credit risk premia and calculate equally-weighted and value-weighted excess returns *Panel A (B)*. 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	3.2	3.3	P3.1–P3.3
Sort Variables												
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	
Panel A: Equally-Weighted Portfolios												
Portfolio Returns												
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
	(1.01)	(0.08)	(-1.77)	(4.17)	(0.32)	(0.07)	(-0.97)	(2.9)	(0.5)	(-0.46)	(-0.41)	(2.24)
sd	9.14	8.27	11.45	5.77	5.75	5.44	5.96	2.89	4.36	4.24	4.57	2.02
SR	0.46	0.04	-0.78	2.28	0.13	0.03	-0.43	1.15	0.21	-0.19	-0.17	0.84
Asset Pricing												
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
	(1.35)	(0.05)	(-2.51)	(3.98)	(0.38)	(0.03)	(-1.26)	(3.35)	(0.62)	(-0.69)	(-0.59)	(2.21)
3-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)	(0.83)	(-0.26)	(-0.05)	(2.19)
4-fac α	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)
MKT	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)	(2.28)	(2.49)	(2.87)	(-0.73)	(2.53)	(2.01)	(2.43)	(-0.76)
SMB	-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)
HML	-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												
Portfolio Returns												
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
	(0.27)	(-0.41)	(-2.02)	(4.45)	(0.23)	(-0.21)	(-1.61)	(3.28)	(-0.11)	(-1.57)	(-0.85)	(1.66)
sd	9.21	8.02	10.3	6.5	5.74	5.54	6.33	4.02	4.38	3.9	4.38	2.45
SR	0.12	-0.2	-0.98	1.73	0.09	-0.09	-0.68	1.19	-0.04	-0.59	-0.35	0.55
Asset Pricing												
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
	(0.29)	(-0.6)	(-2.6)	(4.21)	(0.22)	(-0.37)	(-2.14)	(3.35)	(-0.15)	(-1.91)	(-1.1)	(1.76)
3-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)
4-fac α	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)	(-0.01)	(-1.94)	(3.29)	(0.14)	(-1.46)	(-0.61)	(1.42)
MKT	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)
SMB	-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)
HML	-0.47	-0.23	-0.22	-0.25	-0.09	-0.26	-0.06	-0.02	-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 10: Returns on Stock Portfolios sorted by Credit Risk Premia: Controlling for Liquidity

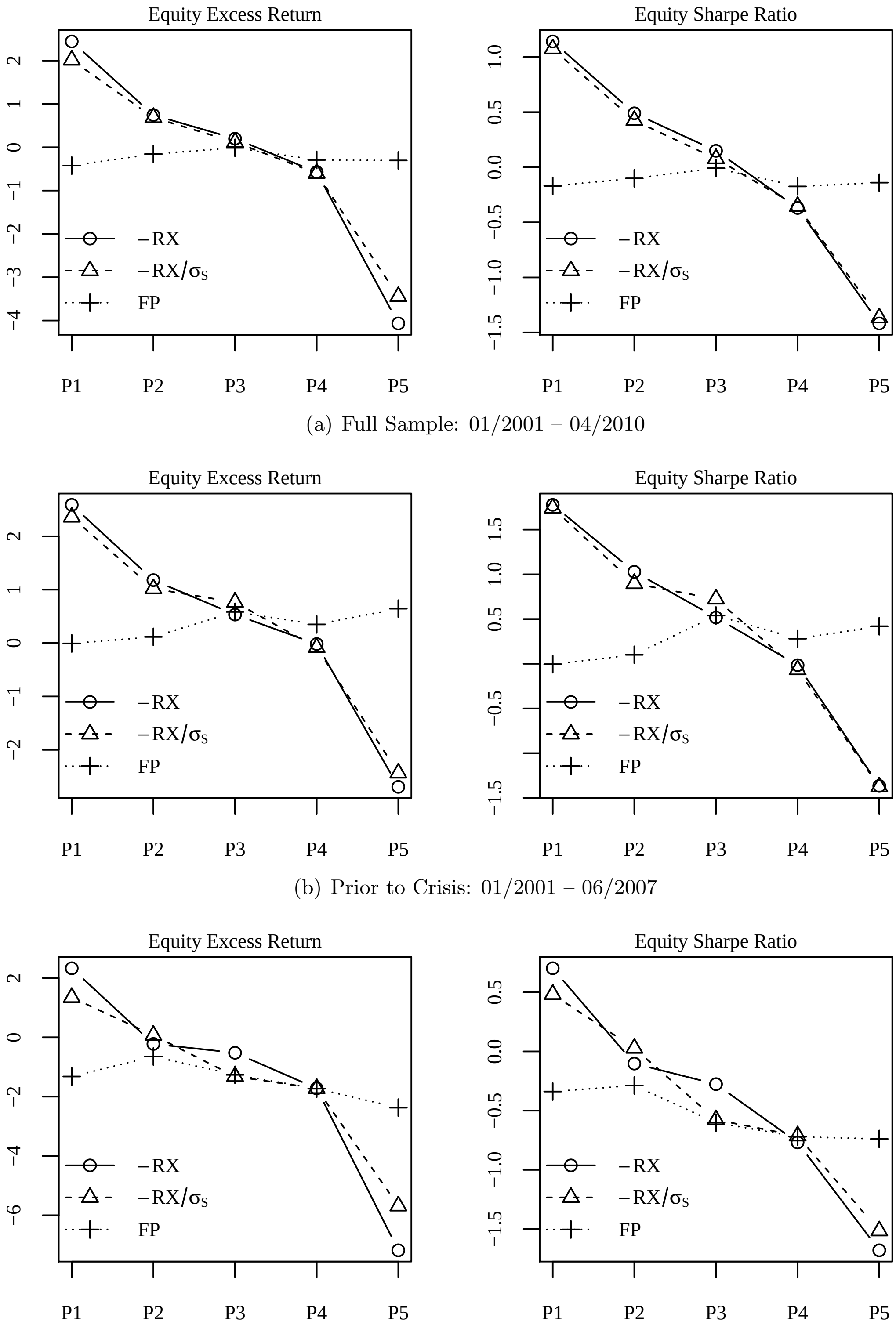
We double-sort stocks first into three portfolios based on their liquidity measured by the number of contributors by Markit, then each of them into tercile portfolios based on firms' credit risk premia and calculate equally-weighted and value-weighted excess returns *Panel A (B)*. P1.* contains stocks of firms with lowest number of contributors, P2.* with medium, P3.* with highest. P*.1 contains for the respective number of contributors 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
Sort Variables												
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	
Panel A: Equally-Weighted Portfolios												
Portfolio Returns												
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
	(0.8)	(-0.07)	(-1.15)	(6.46)	(0.93)	(-0.04)	(-1.22)	(2.92)	(0.52)	(0.45)	(-1.91)	(3.81)
sd	6.99	5.08	6.85	3.25	6.4	4.73	8.13	4.87	7.13	5.51	8.42	4.41
SR	0.34	-0.03	-0.58	1.95	0.42	-0.02	-0.58	1.52	0.21	0.17	-0.88	2.02
Asset Pricing												
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)
Panel B: Value-Weighted Portfolios												
Portfolio Returns												
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
	(0.5)	(-1.06)	(-1.34)	(3.52)	(0.27)	(-1.02)	(-1.41)	(2.48)	(0.18)	(0.22)	(-1.7)	(3.45)
sd	5.7	4.29	5.52	3.91	5.65	4.18	6.12	4.59	6.51	4.95	6.91	4.7
SR	0.2	-0.43	-0.67	1.24	0.13	-0.44	-0.68	1.07	0.07	0.08	-0.81	1.29
Asset Pricing												
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	0.39	-0.02	0.42	0.29	0.4	0.02	0.42	0.17	0.34	0.08
	(2.27)	(2.55)	(2.51)	(-0.55)	(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 11: 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 6 to 10, then each of them into tercile portfolios based on firms' credit risk premia and calculate value-weighted excess returns. P1.* contains stocks of firms with highest risk as judged by the firm characteristic (i.e. smallest size, highest book-to-market, worst rating, highest S5, lowest liquidity), P2.* with medium, and P3.* contains firms with 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	1.55	0.9	2.55	1.78	1.13	5.83	3.49	1.66
	(3.75)	(4.32)	(2.67)	(3.98)	(4.43)	(3.34)	(3.14)	(2.96)	(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	1.56	0.89	2.66	1.83	1.2	5.6	3.39	1.78
	(5.42)	(4.81)	(2.63)	(5.13)	(4.97)	(3.9)	(3.42)	(3.14)	(2.34)
3-fac α	3.09	1.47	0.88	2.64	1.58	1.34	5.61	3.41	1.63
	(5.37)	(4.23)	(2.68)	(3.39)	(3.56)	(3.75)	(3.15)	(2.77)	(2.84)
4-fac α	3.09	1.47	0.88	2.62	1.58	1.33	5.29	3.2	1.38
	(5.43)	(4.2)	(2.64)	(4.86)	(4.02)	(3.69)	(3.75)	(2.83)	(2.29)
Panel B: Controlling for Book-to-Market									
mean	2.44	0.94	0.92	1.83	1.67	1.48	6.56	2.21	1.38
	(2.54)	(2.6)	(3.02)	(3.33)	(3.94)	(4.78)	(2.04)	(1.62)	(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	0.94	0.92	1.84	1.76	1.53	6.69	2.17	1.41
	(2.85)	(2.65)	(2.93)	(3.08)	(4.43)	(4.67)	(2.35)	(1.58)	(2.41)
3-fac α	2.65	1.01	0.78	1.72	1.91	1.4	6.2	2.04	1.47
	(2.57)	(2.84)	(3.19)	(2.48)	(4.16)	(5.11)	(2.8)	(1.45)	(2.37)
4-fac α	2.66	1.01	0.78	1.72	1.89	1.38	5.27	1.73	1.51
	(2.89)	(2.6)	(2.77)	(2.84)	(4.05)	(5.12)	(2.56)	(1.2)	(2.13)
Panel C: Controlling for Credit Rating									
mean	3.34	1.64	0.94	2.71	2.07	0.94	5.39	2.3	2.18
	(3.56)	(3.74)	(2.88)	(4.06)	(3.88)	(3.06)	(3.92)	(3.69)	(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	1.64	0.95	2.72	2.12	0.97	5.16	2.36	2.22
	(4.31)	(3.91)	(3.02)	(3.76)	(4.54)	(3.04)	(4.57)	(3.17)	(2.14)
3-fac α	3.42	1.55	0.87	2.84	2	1.15	5.11	2.29	2.06
	(3.46)	(3.83)	(2.59)	(3.33)	(3.25)	(5.08)	(4.99)	(2.91)	(2.64)
4-fac α	3.42	1.55	0.87	2.81	2.01	1.14	4.78	2.22	1.64
	(3.43)	(3.5)	(2.68)	(3.13)	(3.16)	(4.01)	(6.11)	(2.8)	(2.73)
Panel D: Controlling for S5									
mean	3.24	1.38	0.39	2.42	1.9	0.49	5.28	2.61	0.53
	(4.45)	(3.28)	(1.66)	(3.75)	(3.77)	(1.49)	(2.56)	(2.3)	(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	1.39	0.39	2.5	2.04	0.5	5.09	2.73	0.56
	(4.21)	(3.35)	(1.76)	(4.2)	(4.95)	(1.43)	(3.05)	(2.09)	(1.32)
3-fac α	3.37	1.43	0.3	2.24	1.87	0.6	4.88	2.49	0.52
	(4.23)	(3.4)	(1.43)	(3.54)	(3.65)	(1.76)	(3.82)	(2.12)	(1.72)
4-fac α	3.37	1.43	0.3	2.24	1.87	0.58	4.46	2.1	0.34
	(5.05)	(3.29)	(1.42)	(3.37)	(3.87)	(1.76)	(3.45)	(1.96)	(0.99)
Panel E: Controlling for Liquidity									
mean	1.4	1.41	1.75	2.48	1.41	1.38	2.3	3.11	4.04
	(3.52)	(2.48)	(3.45)	(5.34)	(4.49)	(3.02)	(3.45)	(2.29)	(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	1.41	1.73	2.42	1.37	1.55	2.28	3	4.17
	(2.57)	(2.89)	(3.55)	(4.5)	(3.66)	(3.35)	(3.93)	(2.16)	(2.87)
3-fac α	1.33	1.54	1.65	2.48	1.29	1.62	2.29	2.83	3.89
	(2.85)	(2.56)	(3.24)	(4.96)	(3.99)	(3.49)	(4.3)	(2.4)	(3.05)
4-fac α	1.33	1.54	1.65	2.45	1.28	1.6	2.14	2.4	3.6
	(3.52)	(2.81)	(2.82)	(5.17)	(4.03)	(3.54)	(2.76)	(3.46)	(2.36)

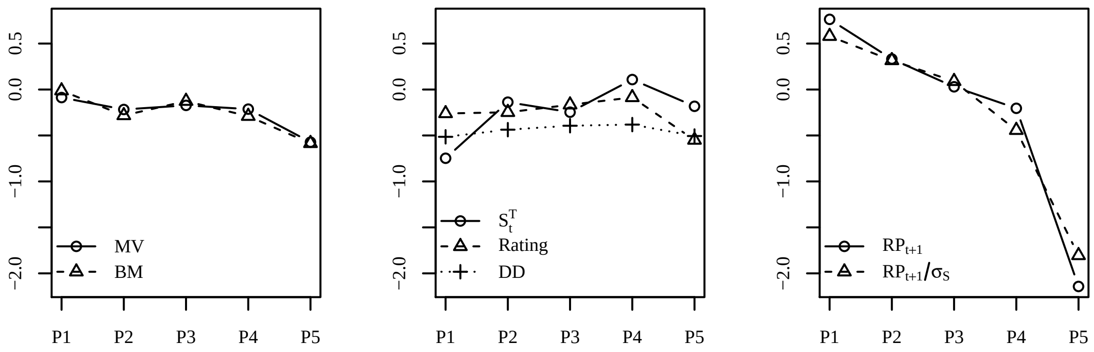


(a) Full Sample: 01/2001 – 04/2010

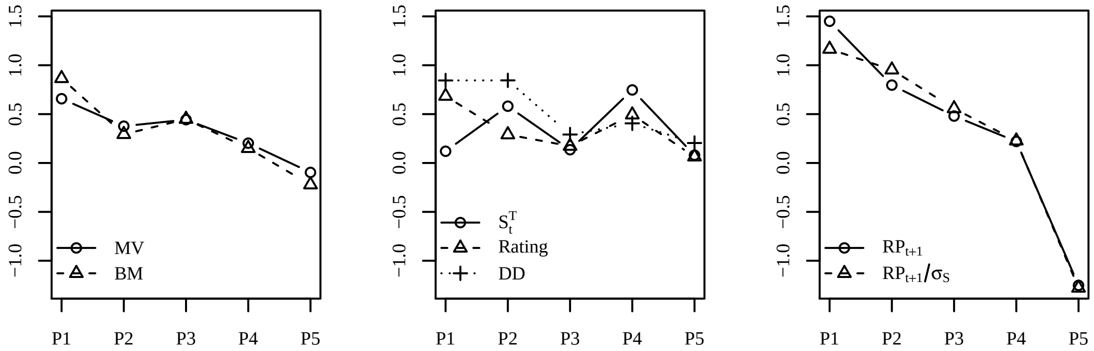
(b) Prior to Crisis: 01/2001 – 06/2007

(c) During Crisis: 07/2007 – 04/2010

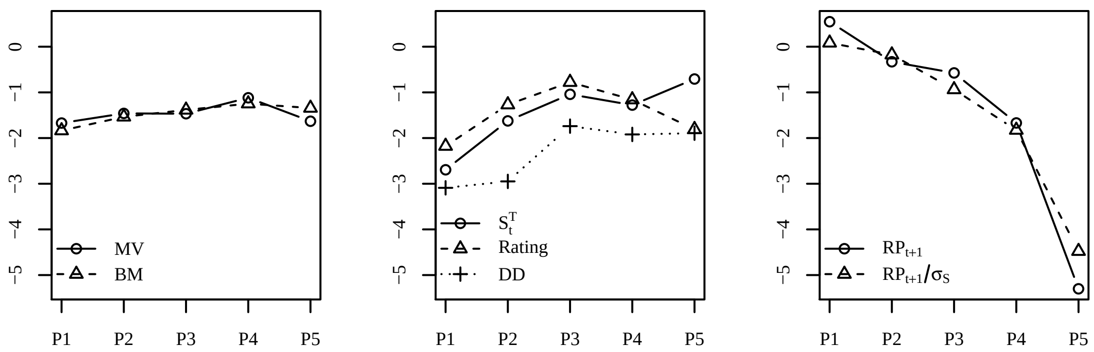
Figure 1: This figure plots monthly equity excess returns (left) and annualized Sharpe ratios (right) of equally-weighted portfolios sorted by CDS forward premia (FP) as well as CDS excess returns (RX) and CDS-implied market prices of risk (RX/σ_S). P1 contains firms with highest FP, lowest RX, and RX/σ_S, respectively and vice versa for P5. Note that for ease of comparability portfolio 1 always refers to high risk and portfolio 5 to low risk. Thus, we plot the negative values of the CDS excess returns and risk-adjusted CDS excess returns. Sub-panel (a) presents the results for the full sample, (b) for the pre-crisis period, and (c) for the crisis period.



(a) Full Sample: 01/2001 – 04/2010



(b) Prior to Crisis: 01/2001 – 06/2007



(c) During Crisis: 07/2007 – 04/2010

Figure 2: We plot monthly equity excess returns of equally-weighted portfolios sorted by firm size (MV), book-to-market ratio (BM), the 5-year CDS spread (S_t^T), Credit Ratings, distance-to-default (DD), credit risk premia (RP), and CDS-implied market prices of risk (RP/σ_S). P1 contains the high risk firms, P5 firms with lowest risk. Sub-panel (a) presents the results for the full sample, (b) for the pre-crisis period, and (c) for the crisis period.

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 strengthen the conclusions drawn in the paper.

AA Empirical Results using CDS Sharpe ratios

We now present some results using the CDS Sharpe ratio instead of the CDS risk premium as sorting variable for equity portfolios. These results show, as already suggested by the plots in Figures 1 and 2, that qualitatively the same conclusions with respect to the contemporaneous relation between CDS and equity markets (see Table AA.1) can be drawn. In line with Figure 2, the same is true for the relation between expected CDS Sharpe ratios (instead of credit risk premia) and equity excess returns and equity Sharpe ratios (see Table AA.2).

BB Portfolios sorted by Default Probabilities

Tables BB.1 to BB.3 report detailed results on the link between the firms' probability of default and equity returns plotted in the middle column of Figure 2. We use the level of the 5-year CDS spread as a proxy for the risk-neutral and credit rating as well as distance-to-default as proxies for real-world probabilities of default.

CC Out-of-Sample Analysis

Despite the fact that, first, the sample period is relatively short to set-up an out-of-sample analysis (and includes the recent financial crisis) and, second, the forecasting techniques we use are very simple, we find that equity investment strategies based on out-of-sample forecasts of credit risk premia earn significant excess returns. Our results show that such investment strategies earn an average excess return of up to 12% per year in the period from February

2002 to March 2010. Our out-of-sample results also confirm that credit risk premia capture additional information not embedded in traditional risk factors

To generate out-of-sample forecasts, we estimate predictive regressions using the single-factor model in Eq. (14). We apply different schemes for sampling (rolling and expanding windows) and residual weighting (equal and exponentially weighted) to estimate the conditional mean or conditional quantiles of the risk premium distribution (using ordinary least squares or quantile regressions, respectively) and account for (potential) changes in the data generating process using intercept corrections.[12] Table CC.1 presents detailed results for the out-of-sample performance using forecasts from least-squares regressions with exponentially-weighted residuals in Panel A. We choose this weighting scheme to give more weight to more recent observations and set the decay factor to the standard (industry) value of 0.94 in the left part of the panel and to 0.80 in the right part. The latter choice is guided by the aim of accounting even more strongly for the most recent information with half of the weight covered by the last quarter and close to 95% by the last year. Columns labeled P1–P5 and P1–P10 report the high-minus-low risk premium portfolio returns when using quintile and decile portfolios respectively. Columns P5–P1:4 (P10–P1:9) present results for quintile (decile) portfolios where we go short portfolio P5 (P10) and go long all other portfolios, i.e. P1 to P4 (P1 to P9). This strategy is motivated by the finding in the previous figures and tables that the portfolio with the most negative risk premia tends to have the largest equity return difference as compared to the adjacent portfolio. This finding also motivates the use of quantile regressions to generate risk premium forecasts and we report results in Panel B for rolling and expanding window estimates with the quantile being set to 20% for the quintile and to 10% for the decile portfolios.

The most successful strategy earns a monthly mean excess return of 0.99% and a 4-factor

[12] We implement the intercept correction as follows. From Eq. (14) we have that $\mathbb{E}_t^{\mathbb{P}}\left[\overline{RX}_{t+1}\right] = \boldsymbol{\gamma}'\mathbf{F}_t$ and we define the forecast error $\nu_{t+1} \equiv \overline{RX}_{t+1} - \mathbb{E}_t^{\mathbb{P}}\left[\overline{RX}_{t+1}\right]$. We rewrite the conditional expectation of the next period's excess return as

$$\mathbb{E}_{t+1}^{\mathbb{P}}\left[\overline{RX}_{t+2}\right] = \boldsymbol{\gamma}'\mathbf{F}_{t+1} = \mathbb{E}_t^{\mathbb{P}}\left[\overline{RX}_{t+1}\right] + \boldsymbol{\gamma}'(\mathbf{F}_{t+1} - \mathbf{F}_t). \tag{30}$$

To compute the forecast for the excess return from $t+1$ to $t+2$, we replace last periods expectation, $\mathbb{E}_t^{\mathbb{P}}\left[\overline{RX}_{t+1}\right]$, by the observed realized excess return, $\overline{RX}_{t+1}$, in (30), 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).

alpha of 1.11% and the least successful strategy generates an excess return of 0.19% with an alpha of 0.29% per month. All other strategies earn at least 0.41% and on average 0.5% per month, resulting in an average annual excess return of 6% and an average annual alpha of 8%. Most of the alpha estimates are different from zero at conventional levels of significance.[13] We also find that the market betas of all strategies are negative, in almost all cases significant, while the HML and SMB loadings do not reveal particular patterns. Furthermore, all returns are negatively correlated with returns of size and book-to-market sorted portfolio strategies. These results further support that credit risk premia convey information beyond that captured by traditional risk factors, and, from an asset management perspective, suggest potential for gains from diversification.

Thus, our findings suggest that the strong relation between equity and credit markets that we document in this paper can also be exploited out-of-sample. We leave it for future research to further exploit this link using more sophisticated econometric techniques for out-of-sample forecasting.

DD CDS Slope and Equity Excess Returns

DD.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; in particular, the slope is a weighted average of CDS forward premia, i.e. an average of risk-neutral expectations. To see this, define the slope of the CDS term structure as the difference between the T-year CDS spread and the 1-year CDS spread

$$SL_t^T \equiv S_t^T - S_t^1 \tag{31}$$

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

[13]The ordinary least-squares estimation with expanding sample window and equally-weighted residuals produces results similar to these averages.

T-year CDS spread

$$FP_t^{1\times T} \equiv F_t^{1\times T} - S_t^T. \tag{32}$$

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

$$SL_t^T = \sum_{j=1}^{T-1} FP_t^{1\times(T-j)} \cdot \prod_{k=1}^{j} \frac{RPV_t^{1\times(T-k)}}{RPV_t^{T-k+1}}. \tag{33}$$

The weights are determined by RPVs, see Appendix A.2, and increase with maturity.[14]

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 other words, it is about the bias in forward credit spreads which is caused by deviations from the expectations hypothesis.[15] 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.

[14] To see this, start from the 2-year slope

$$SL_t^2 \equiv S_t^2 - S_t^1 = \frac{S_t^1 RPV_t^1 + F_t^{1\times1} RPV_t^{1\times1} - S_t^1 RPV_t^2}{RPV_t^2} = \frac{RPV_t^{1\times1}}{RPV_t^2} FP_t^{1\times1}$$

The 3-year slope can then be written as

$$SL_t^3 \equiv S_t^3 - S_t^1 = \frac{S_t^1 RPV_t^1 + F_t^{1\times2} RPV_t^{1\times2} - S_t^1 RPV_t^3}{RPV_t^3} = \frac{RPV_t^{1\times1}}{RPV_t^2} [FP_t^{1\times2} + SL_t^2],$$

and so forth for longer T.

[15] Finding that the slope positively predicts changes in CDS spreads can be viewed as consistent with the expectations hypothesis (EH) since the slope is a weighted average of CDS forward premia. Conversely, the predictability of CDS excess returns 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.

If the CDS slope positively predicts CDS spread changes, as reported by Han and Zhou (2011), it follows from the relations in Eqs. (9) to (12) that it negatively predicts credit risk premia. Since our structural framework implies a positive relation between credit and equity risk premia it then follows that the slope negatively predicts equity returns, consistent with their findings. 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 credit risk premium component. 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 CDS excess returns 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.

DD.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 DD.1 reports results for regressing, on a firm by firm basis, CDS Spread changes, CDS forward premia, and CDS excess returns 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^2s of 0.07 in the full sample; this is in line with our regressions of excess returns on forward premia reported in Panel B 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 credit risk premia changes over time. The summary statistics for the regression coefficients show that, on average, slope negatively predicts CDS spread changes and CDS excess returns prior to the crisis but positively during the crisis. This implies that slope positively predicts CDS 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 DD.2) and when excluding financial and utility firms (see Table DD.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 to 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 findings of Han and Zhou (2011) are related to credit risk premia consistent with our structural framework.

EE Empirical Analysis using an Alternative Data Set

EE.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.[16] Moreover, we remove non-corporate obligors (such as states and counties) and daily observations where the 5-year CDS

[16]We 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.

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 A.3) 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).

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.

EE.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. All results in this Internet Appenidx are reported analogue to the respective tables in the paper. Equity returns are calculated for value-weighted portfolios; in line with the Markit data results our findings are somewhat stronger when using equally-weighted portfolios. Note that portfolio returns in the Tables of this Internet Appendix are annualized.

We report descriptive statistics and results related to the predictability of CDS excess returns in Table EE.1. These results show that the properties of CDS spreads are different prior and during the crisis and the CDS excess returns are predictable using a single factor extracted from the term structure of forward CDS spreads.

Table EE.2 documents the contemporaneous link between CDS and equity markets and shows that the relation is driven by risk premia and not by risk-neutral expectations reflected in forward CDS premia. Table EE.3 shows again 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 the r, that in the first part of our sample the relation between the distance-to-default and the 5-year CDS spread to equity returns is positive, while the crisis period appears to reflect the distress premium anomaly, i.e. a negative relation, reported in previous research.

Our core result that empirically establishes the positive relation between credit risk premia derived from the term structure of CDS spreads is presented in Table EE.4 and we show again that this relation remains significant when we conduct sequential portfolio sorts using firm size and book-to-market ratios as control variables, see Tables EE.5 and EE.6. Finally, we show in Table EE.7 that we also find in the Datastream data set that CDS excess returns do not reflect compensation for iliquidity in the CDS market by double sorting portfolios using relative CDS bid-ask spreads (i.e. 5-year bid-ask spread divided by the 5-year mid CDS spread).

Table AA.1: Returns on Stock Portfolios sorted by Contemporaneous CDS Sharpe Ratios

We sort stocks based on firms' contemporaneous CDS Sharpe Ratio into quintile portfolios and calculate equally-weighted and value-weighted excess returns *Panel A (B)*. P1 contains firms with highest contemporaneous CDS Sharpe ratios, P5 the ones with lowest contemporaneous CDS Sharpe ratios. 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).

	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
Sort Variable: Contemporaneous CDS Sharpe Ratio																		
mean	5.92	1.76	0.18	-1.49	-13.03		4.55	1.47	0.45	-0.58	-12.22		9.31	2.6	-0.34	-3.46	-14.66	
Portfolio Characteristics																		
DD	8.69	9.15	9.31	9.2	8.62		9.41	10.05	10.22	10.13	9.57		6.97	7.13	7.22	7.13	6.61	
S5	177.83	132.66	122.25	141.39	165.58		134.07	98.55	92.76	117.55	122.41		286.37	217.13	196.19	200.99	270.79	
MV	19.98	20.66	20.99	19.91	23.1		21.03	22.41	22.65	20.21	23.8		17.93	16.42	17.1	18.85	21.12	
BM	0.67	0.62	0.62	13.02	0.69		0.63	0.61	0.6	18.46	0.62		0.79	0.66	0.65	0.69	0.88	
Panel A: Equally-Weighted Portfolios																		
Portfolio Returns																		
mean	2.01	0.69	0.12	-0.6	-3.45	5.46	2.36	1.02	0.76	-0.09	-2.44	4.8	1.34	0.07	-1.32	-1.73	-5.69	7.03
	(2.64)	(0.95)	(0.17)	(-0.85)	(-2.85)	(6.96)	(4.2)	(2.1)	(1.6)	(-0.14)	(-2.51)	(5.82)	(0.56)	(0.03)	(-0.6)	(-0.78)	(-1.65)	(4.86)
sd	6.48	5.6	5.3	5.86	8.74	4.75	4.69	3.94	3.66	4.43	6.13	4.17	9.63	8.47	7.93	8.38	13	5.77
SR	1.07	0.42	0.08	-0.36	-1.37	3.98	1.74	0.9	0.72	-0.07	-1.38	3.98	0.48	0.03	-0.58	-0.71	-1.52	4.22
Panel B: Value-Weighted Portfolios																		
Portfolio Returns																		
mean	0.86	0.3	-0.23	-0.7	-2.83	3.69	1.45	0.68	0.17	-0.49	-2.36	3.82	-0.45	-0.53	-1.11	-1.15	-3.87	3.42
	(1.46)	(0.56)	(-0.43)	(-1.26)	(-2.93)	(5.77)	(3.27)	(1.72)	(0.4)	(-0.97)	(-3.12)	(5.78)	(-0.26)	(-0.36)	(-0.77)	(-0.71)	(-1.55)	(2.87)
sd	5.22	4.15	4.37	4.81	6.55	4.44	4.14	3.07	3.48	4.09	5.01	4.24	7.15	6.05	6.02	6.34	9.38	5.04
SR	0.57	0.25	-0.18	-0.5	-1.5	2.88	1.21	0.77	0.17	-0.42	-1.64	3.12	-0.22	-0.3	-0.64	-0.63	-1.43	2.35

Table AA.2: Returns on Stock Portfolios sorted by Expected CDS Sharpe Ratios

We sort stocks based on firms' expected CDS Sharpe ratios into quintile portfolios and calculate equally-weighted and value-weighted excess returns *Panel A (B)*. P1 contains firms with highest expected CDS Sharpe ratios, P5 the ones with lowest expected CDS Sharpe ratios. 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
Sort Variable: Expected CDS Sharpe Ratios																		
mean	5.56	1.14	0.27	-0.67	-6.94		3.2	1.08	0.49	-0.05	-3.39		7.33	1.6	-0.07	-2.08	-11.56	
Portfolio Characteristics																		
DD	8.84	9.26	9.23	9.36	8.78		9.41	10.1	10.33	10.1	9.64		7.19	7.03	7.37	7.21	6.79	
S5	169.76	133.43	125.77	138.38	171.79		141.7	98.15	86.96	95.39	135.04		279.41	216.69	194.96	193.2	287.09	
MV	20.17	19.57	17.69	20.88	27.44		19.82	25.52	22.71	23.22	20.45		18.33	15.51	16.64	18.1	22.81	
BM	0.67	0.59	0.62	0.65	13.09		0.65	0.6	0.58	0.61	18.22		0.76	0.68	0.64	0.67	0.92	
Panel A: Equally-Weighted Portfolios																		
Portfolio Returns																		
mean	0.58	0.32	0.09	-0.44	-1.81	2.38	1.17	0.95	0.56	0.23	-1.28	2.44	0.08	-0.18	-0.94	-1.82	-4.48	4.56
	(0.73)	(0.43)	(0.13)	(-0.6)	(-1.68)	(4.38)	(2.2)	(1.91)	(1.11)	(0.36)	(-1.52)	(5.21)	(0.04)	(-0.07)	(-0.45)	(-0.74)	(-1.46)	(3.57)
sd	6.52	5.55	5.71	6.08	7.98	3.9	4.57	3.95	3.81	4.43	5.81	3.44	9.54	8.82	8.21	8.82	12	4.78
SR	0.31	0.2	0.05	-0.25	-0.78	2.12	0.88	0.84	0.51	0.18	-0.76	2.46	0.03	-0.07	-0.4	-0.72	-1.29	3.3
Asset Pricing																		
CAPM α	0.59	0.32	0.1	-0.44	-1.8	2.38	1.09	0.89	0.49	0.16	-1.4	2.5	0.48	0.24	-0.56	-1.36	-4.01	4.49
	(1.03)	(0.66)	(0.21)	(-0.82)	(-2.37)	(4.19)	(2.44)	(2.2)	(1.16)	(0.29)	(-2.18)	(5.29)	(0.31)	(0.17)	(-0.48)	(-1.11)	(-2.23)	(3.6)
3-fac α	0.8	0.51	0.31	-0.31	-1.63	2.43	1.69	1.26	0.73	0.45	-0.85	2.55	0.68	0.48	-0.37	-1.12	-3.65	4.33
	(1.5)	(1.12)	(0.67)	(-0.56)	(-2.52)	(4.23)	(3.43)	(2.75)	(1.51)	(0.76)	(-1.1)	(4.5)	(0.43)	(0.34)	(-0.32)	(-1.11)	(-2.26)	(3.69)
4-fac α	0.8	0.51	0.31	-0.31	-1.63	2.43	1.67	1.24	0.73	0.45	-0.86	2.53	0.46	0.32	-0.48	-1.1	-3.51	3.97
	(1.51)	(1.06)	(0.62)	(-0.6)	(-2.59)	(5.58)	(3.66)	(2.78)	(1.56)	(0.73)	(-1.21)	(4.56)	(0.3)	(0.25)	(-0.42)	(-1)	(-2.1)	(5.28)
MKT	0.47	0.4	0.48	0.46	0.62	-0.15	0.06	0.14	0.16	0.11	0.31	-0.25	0.65	0.8	0.7	0.79	0.78	-0.13
	(3.22)	(3.18)	(3.08)	(3.9)	(2.94)	(-2.77)	(0.31)	(0.96)	(1.16)	(0.7)	(2.03)	(-2.99)	(1.82)	(3.34)	(3.25)	(4.06)	(2.78)	(-0.96)
SMB	-0.2	-0.12	-0.32	-0.27	-0.3	0.1	-0.03	-0.09	-0.08	0.07	-0.21	0.17	-0.57	-0.73	-0.56	-0.68	-1	0.43
	(-1.26)	(-0.71)	(-2.09)	(-1.65)	(-1.3)	(0.69)	(-0.35)	(-0.64)	(-0.61)	(0.47)	(-1.36)	(1.44)	(-0.96)	(-1.55)	(-1.47)	(-4.11)	(-2.53)	(1.51)
HML	-0.22	-0.25	-0.12	-0.01	-0.05	-0.18	-0.62	-0.35	-0.21	-0.34	-0.48	-0.14	-0.07	-0.45	-0.34	-0.18	0.05	-0.12
	(-1.43)	(-1.78)	(-0.91)	(-0.06)	(-0.18)	(-1.55)	(-3.17)	(-2.36)	(-1.37)	(-1.6)	(-3.1)	(-0.93)	(-0.12)	(-1.21)	(-0.78)	(-0.68)	(0.17)	(-0.73)
Panel B: Value-Weighted Portfolios																		
Portfolio Returns																		
mean	-0.15	-0.41	-0.41	-0.58	-1.33	1.19	0.37	0.26	0.08	-0.35	-1.22	1.59	-0.97	-0.97	-1.22	-1.47	-3.17	2.2
	(-0.23)	(-0.75)	(-0.69)	(-0.93)	(-1.65)	(2.95)	(0.94)	(0.5)	(0.22)	(-0.63)	(-1.72)	(3.29)	(-0.54)	(-0.55)	(-0.73)	(-0.88)	(-1.46)	(2.52)
sd	5.44	4.59	4.56	4.78	5.95	3.32	3.98	4.15	3.2	4.07	4.87	3.06	7.09	6.75	6.08	6.95	8.8	4.64
SR	-0.09	-0.31	-0.31	-0.42	-0.78	1.24	0.33	0.21	0.08	-0.29	-0.86	1.8	-0.47	-0.5	-0.7	-0.73	-1.25	1.64
Asset Pricing																		
CAPM α	-0.14	-0.4	-0.41	-0.58	-1.33	1.19	0.33	0.23	0.06	-0.38	-1.3	1.64	-0.69	-0.67	-0.98	-1.16	-3.01	2.32
	(-0.25)	(-1.01)	(-0.96)	(-1.25)	(-2.22)	(2.88)	(0.9)	(0.48)	(0.16)	(-0.72)	(-2.07)	(3.62)	(-0.6)	(-0.6)	(-0.88)	(-1.15)	(-1.84)	(2.22)
3-fac α	0.07	-0.21	-0.29	-0.51	-1.16	1.23	0.93	0.65	0.31	-0.14	-0.78	1.71	-0.54	-0.45	-0.75	-0.91	-2.62	2.08
	(0.14)	(-0.52)	(-0.69)	(-1.09)	(-1.82)	(3.06)	(2.11)	(1.06)	(0.9)	(-0.24)	(-1.19)	(3.31)	(-0.54)	(-0.47)	(-0.83)	(-1.05)	(-1.82)	(3.01)
4-fac α	0.07	-0.21	-0.29	-0.51	-1.17	1.24	0.92	0.64	0.31	-0.13	-0.79	1.71	-0.67	-0.69	-0.89	-0.88	-2.41	1.74
	(0.14)	(-0.49)	(-0.75)	(-1.13)	(-1.83)	(3.24)	(2.37)	(1.1)	(0.98)	(-0.22)	(-1.18)	(3.45)	(-0.69)	(-0.72)	(-1.02)	(-1.12)	(-2)	(2.36)
MKT	0.28	0.24	0.32	0.29	0.28	0	-0.05	-0.03	0.03	-0.02	0.2	-0.25	0.53	0.6	0.5	0.49	0.29	0.23
	(2)	(2)	(2.3)	(3.46)	(1.81)	(0.03)	(-0.35)	(-0.26)	(0.24)	(-0.12)	(1.07)	(-2.84)	(2.51)	(2.39)	(2.92)	(2.31)	(1.97)	(1.94)
SMB	-0.2	-0.06	-0.19	-0.22	-0.25	0.05	-0.03	-0.03	-0.11	0.1	-0.22	0.19	-0.47	-0.65	-0.67	-0.68	-1.06	0.59
	(-1.14)	(-0.33)	(-1.42)	(-1.51)	(-1.32)	(0.55)	(-0.22)	(-0.25)	(-0.82)	(0.7)	(-1.25)	(2.32)	(-1.03)	(-1.7)	(-2.04)	(-1.83)	(-1.81)	(1.56)
HML	-0.23	-0.33	-0.06	0.07	-0.1	-0.14	-0.62	-0.43	-0.21	-0.31	-0.45	-0.18	-0.3	-0.31	-0.26	0.14	0.32	-0.61
	(-1.61)	(-2.77)	(-0.46)	(0.41)	(-0.42)	(-0.87)	(-4.29)	(-2.26)	(-1.82)	(-1.64)	(-3.55)	(-1.43)	(-0.58)	(-0.83)	(-1.11)	(0.33)	(0.95)	(-1.91)

Table BB.1: Returns on Stock Portfolios sorted by Default Probabilities: 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 *Panel A (B)*. P1 contains firms with highest 5-year CDS spreads, 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).

	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
Sort Variable: S5																		
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	
Portfolio Characteristics																		
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																		
Portfolio Returns																		
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
	(-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)
sd	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
SR	-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
Asset Pricing																		
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
	(-0.8)	(-0.2)	(-0.49)	(0.25)	(-0.47)	(-0.98)	(-0.08)	(0.96)	(0.19)	(1.77)	(0.11)	(-0.18)	(-0.83)	(-0.69)	(-0.6)	(-0.91)	(-0.5)	(-0.9)
3-fac α	-0.49	0.05	-0.06	0.26	-0.05	-0.45	0.9	0.83	0.31	0.93	0.36	0.54	-1.57	-0.89	-0.5	-0.78	-0.27	-1.3
	(-0.6)	(0.08)	(-0.13)	(0.56)	(-0.13)	(-0.78)	(0.95)	(1.65)	(0.76)	(1.98)	(0.94)	(0.9)	(-0.74)	(-0.54)	(-0.41)	(-0.88)	(-0.44)	(-0.87)
4-fac α	-0.49	0.05	-0.06	0.26	-0.05	-0.45	0.86	0.83	0.31	0.93	0.35	0.51	-1.73	-0.94	-0.5	-0.81	-0.35	-1.38
	(-0.62)	(0.08)	(-0.13)	(0.6)	(-0.14)	(-0.71)	(0.9)	(1.61)	(0.71)	(2)	(0.88)	(0.83)	(-0.84)	(-0.55)	(-0.43)	(-0.84)	(-0.45)	(-0.98)
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
	(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)
SMB	-0.33	-0.26	-0.26	-0.27	-0.09	-0.23	-0.22	-0.05	-0.07	-0.09	0.08	-0.29	-0.67	-0.78	-0.75	-0.77	-0.57	-0.1
	(-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)
HML	-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																		
Portfolio Returns																		
mean	-1.26	-0.42	-0.64	-0.13	-0.38	-0.87	-0.24	0.35	-0.2	0.57	-0.27	0.02	-3.7	-2.12	-1.55	-1.69	-0.58	-3.12
	(-0.97)	(-0.46)	(-0.96)	(-0.23)	(-0.87)	(-0.96)	(-0.26)	(0.61)	(-0.35)	(1.19)	(-0.67)	(0.03)	(-0.93)	(-0.74)	(-0.81)	(-1.13)	(-0.49)	(-1.17)
sd	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
SR	-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
Asset Pricing																		
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
	(-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)
3-fac α	-0.93	-0.37	-0.47	0	-0.25	-0.68	0.31	0.58	0.04	0.91	0.03	0.28	-2.73	-1.53	-1.09	-1.2	-0.23	-2.5
	(-1)	(-0.59)	(-0.93)	(0)	(-0.73)	(-1)	(0.33)	(0.96)	(0.08)	(1.6)	(0.07)	(0.45)	(-1.02)	(-0.96)	(-0.76)	(-2.81)	(-0.37)	(-1.54)
4-fac α	-0.94	-0.37	-0.48	0	-0.25	-0.69	0.26	0.58	0.03	0.89	0.03	0.24	-2.96	-1.76	-1.15	-1.22	-0.34	-2.62
	(-1.13)	(-0.58)	(-0.88)	(-0.01)	(-0.76)	(-1.13)	(0.27)	(0.98)	(0.06)	(1.67)	(0.07)	(0.36)	(-1.3)	(-1.1)	(-1.01)	(-1.43)	(-0.52)	(-1.66)
MKT	0.68	0.41	0.33	0.17	0.18	0.51	0.22	-0.01	0.12	-0.11	-0.07	0.29	1.02	0.78	0.48	0.34	0.38	0.64
	(3.45)	(2.35)	(3.35)	(1.29)	(1.59)	(4.15)	(0.84)	(-0.08)	(0.99)	(-0.67)	(-0.5)	(1.62)	(2)	(2.3)	(1.75)	(23.16)	(3.11)	(2.41)
SMB	-0.44	-0.03	-0.19	-0.26	-0.15	-0.29	-0.17	0.15	-0.05	-0.06	-0.02	-0.15	-1.19	-0.41	-0.6	-0.9	-0.49	-0.71
	(-1.24)	(-0.13)	(-1.25)	(-1.5)	(-1.31)	(-1.02)	(-0.87)	(0.84)	(-0.35)	(-0.38)	(-0.17)	(-0.79)	(-1.35)	(-0.64)	(-1.25)	(-22.24)	(-3.31)	(-0.95)
HML	-0.22	-0.06	-0.13	-0.02	-0.12	-0.1	-0.62	-0.36	-0.3	-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 BB.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 *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).

	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
Sort Variable: Credit Rating																		
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	
Portfolio Characteristics																		
DD	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	
S5	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	
MV	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	
BM	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																		
Portfolio Returns																		
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
	(-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)
sd	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
SR	-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
Asset Pricing																		
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
	(-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)
3-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	-0.56	-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)	(-0.13)	(-0.59)	(-0.98)	(0.26)
4-fac α	-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)	(-0.51)	(-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
	(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)	(3.53)	(3.11)
SMB	-0.31	-0.33	-0.35	-0.16	-0.13	-0.17	-0.11	-0.17	-0.24	0.01	0.02	-0.13	-0.9	-0.77	-0.71	-0.6	-0.63	-0.27
	(-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)
HML	-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																		
Portfolio Returns																		
mean	-0.57	-0.52	-0.52	-0.17	-0.77	0.2	0.42	-0.04	-0.25	0.35	-0.37	0.78	-2.53	-1.51	-1	-1.16	-1.56	-0.97
	(-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)
sd	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
SR	-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	-0.58	-0.48	-0.62	-0.84	-0.42
Asset Pricing																		
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
	(-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)
3-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)
4-fac α	-0.44	-0.36	-0.39	-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
	(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)	(2.29)	(2.13)	(3.56)	(2.19)	(3.59)
SMB	-0.35	-0.37	-0.3	-0.12	-0.17	-0.17	-0.02	-0.16	-0.2	0.05	-0.04	0.02	-1.13	-0.92	-0.65	-0.55	-0.58	-0.54
	(-1.3)	(-1.78)	(-1.88)	(-0.7)	(-1.1)	(-0.89)	(-0.14)	(-1.59)	(-1.56)	(0.35)	(-0.28)	(0.09)	(-3.99)	(-1.6)	(-1.24)	(-1.87)	(-1.64)	(-1.84)
HML	-0.45	-0.3	-0.27	-0.34	-0.19	-0.26	-0.77	-0.55	-0.6	-0.63	-0.5	-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.3: Returns on Stock Portfolios sorted by Distance-to-Default

We sort stocks based on firms' distance-to-default (DD) into quintile portfolios and calculate equally-weighted and value-weighted excess returns *Panel A (B)*. P1 contains firms with lowest distance-to-default, P5 the ones with highest distance-to-default. 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
Sort Variable: DD																		
mean	4.47	6.79	8.59	10.58	14.8		5.02	7.55	9.51	11.58	16.05		3.3	5.13	6.57	8.35	12.02	
Portfolio Characteristics																		
DD	4.47	6.79	8.59	10.58	14.8		5.02	7.55	9.51	11.58	16.05		3.3	5.13	6.57	8.35	12.02	
S5	273.42	137.28	94.55	60.59	40.22		205.05	93.91	64.55	47.05	33.17		419.76	229.22	159.06	89.61	55.5	
MV	12.39	14.77	18.62	20.98	36.84		10.51	16.16	19.67	19.26	33.03		16.08	12.01	16.61	24.11	44.78	
BM	0.8	0.63	0.59	0.5	0.38		0.78	0.66	0.63	0.56	0.4		0.84	0.56	0.52	0.39	0.34	
Panel A: Equally-Weighted Portfolios																		
Portfolio Returns																		
mean	-0.51	-0.44	-0.39	-0.38	-0.51	-0.01	0.84	0.85	0.29	0.41	0.2	0.64	-3.09	-2.95	-1.74	-1.92	-1.89	-1.2
	(-0.4)	(-0.55)	(-0.55)	(-0.52)	(-0.92)	(-0.01)	(1.29)	(1.61)	(0.58)	(1.1)	(0.53)	(1.81)	(-0.87)	(-1.46)	(-0.95)	(-1)	(-1.47)	(-0.4)
sd	8.62	6.14	5.22	4.88	3.81	6.91	4.64	3.96	3.57	2.75	2.47	3.14	13.38	8.7	7.53	7.47	5.48	11.36
SR	-0.21	-0.25	-0.26	-0.27	-0.46	0	0.63	0.74	0.28	0.51	0.29	0.71	-0.8	-1.17	-0.8	-0.89	-1.2	-0.37
Asset Pricing																		
CAPM α	-0.66	-0.5	-0.45	-0.43	-0.54	-0.12	0.6	0.75	0.16	0.37	0.14	0.46	-2.18	-2.58	-1.43	-1.63	-1.71	-0.47
	(-0.84)	(-0.79)	(-0.87)	(-0.79)	(-1.03)	(-0.19)	(1.07)	(1.52)	(0.36)	(0.98)	(0.4)	(1.61)	(-1.74)	(-1.8)	(-1.25)	(-1.47)	(-1.51)	(-0.29)
3-fac α	-0.51	-0.3	-0.23	-0.34	-0.5	-0.01	1.04	1.13	0.48	0.49	0.16	0.88	-1.88	-2.06	-1.12	-1.53	-1.39	-0.49
	(-0.83)	(-0.49)	(-0.47)	(-0.69)	(-1.03)	(-0.21)	(1.98)	(2.55)	(1.19)	(1.21)	(0.46)	(2.98)	(-3.07)	(-2.07)	(-1.83)	(-1.35)	(-1.79)	(-1.24)
4-fac α	-0.51	-0.3	-0.23	-0.34	-0.5	-0.01	1.03	1.12	0.48	0.49	0.17	0.87	-1.72	-1.91	-1.26	-1.66	-1.12	-0.6
	(-0.77)	(-0.54)	(-0.48)	(-0.66)	(-1.16)	(-0.01)	(2.08)	(2.52)	(1.07)	(1.16)	(0.49)	(2.94)	(-1.79)	(-1.65)	(-1.58)	(-1.57)	(-1.86)	(-0.55)
MKT	1.04	0.52	0.46	0.34	0.25	0.79	0.38	0.1	0.17	0.03	0.1	0.28	1.39	0.72	0.66	0.55	0.29	1.1
	(2.91)	(3.08)	(2.39)	(1.51)	(4.03)	(33.57)	(2.34)	(0.53)	(0.85)	(0.27)	(1.02)	(3.29)	(2.97)	(4.09)	(2.48)	(1.78)	(4.34)	(2.55)
SMB	-0.56	-0.54	-0.38	-0.18	-0.28	-0.28	-0.26	-0.04	-0.07	0	0.01	-0.27	-0.87	-1.45	-0.9	-0.35	-0.86	0
	(-1.93)	(-2.07)	(-1.61)	(-0.8)	(-1.5)	(-31.17)	(-2.03)	(-0.2)	(-0.33)	(0.01)	(0.08)	(-2.07)	(-1.56)	(-3.42)	(-2.07)	(-0.57)	(-3.62)	(-0.01)
HML	0.13	-0.05	-0.25	-0.09	0.18	-0.06	-0.47	-0.49	-0.4	-0.16	-0.03	-0.44	-0.08	0.02	-0.36	-0.38	0.32	-0.4
	(0.69)	(-0.12)	(-2.85)	(-0.38)	(1.59)	(-9)	(-2.22)	(-2.47)	(-2.35)	(-1.74)	(-0.33)	(-3.06)	(-0.15)	(0.04)	(-1.2)	(-1.02)	(1.63)	(-0.66)
Panel B: Value-Weighted Portfolios																		
Portfolio Returns																		
mean	-0.83	-0.54	-0.67	-0.33	-0.93	0.1	0.57	0.64	0	0.28	-0.4	0.97	-3.51	-2.88	-2	-1.55	-1.98	-1.53
	(-0.88)	(-0.68)	(-1.02)	(-0.52)	(-1.52)	(0.14)	(1.04)	(1.19)	(0.01)	(0.96)	(-1.08)	(3.32)	(-1.39)	(-1.42)	(-1.09)	(-0.9)	(-1.21)	(-0.77)
sd	8.42	6.12	5.02	4.52	4.14	6.94	4.33	4.19	3.16	2.5	2.5	3.5	13.2	8.52	7.48	7.04	6.29	11.09
SR	-0.34	-0.3	-0.47	-0.25	-0.78	0.05	0.46	0.53	0	0.39	-0.56	0.96	-0.92	-1.17	-0.92	-0.76	-1.09	-0.48
Asset Pricing																		
CAPM α	-0.9	-0.6	-0.72	-0.37	-0.95	0.05	0.48	0.6	-0.05	0.29	-0.47	0.95	-3.07	-2.49	-1.72	-1.3	-1.86	-1.21
	(-1.18)	(-0.91)	(-1.38)	(-0.76)	(-1.65)	(0.08)	(0.96)	(1.11)	(-0.16)	(0.95)	(-1.36)	(2.37)	(-1.82)	(-1.83)	(-1.37)	(-1.33)	(-1.24)	(-0.72)
3-fac α	-0.75	-0.41	-0.56	-0.34	-0.92	0.17	0.86	0.88	0.19	0.4	-0.49	1.35	-2.3	-1.95	-1.4	-1.23	-1.56	-0.74
	(-1.17)	(-0.63)	(-1.24)	(-0.71)	(-1.77)	(0.33)	(1.5)	(1.85)	(0.61)	(1.19)	(-1.42)	(2.29)	(-1.73)	(-2.05)	(-1.61)	(-1.18)	(-1.54)	(-0.49)
4-fac α	-0.75	-0.41	-0.56	-0.34	-0.92	0.17	0.86	0.86	0.2	0.41	-0.48	1.34	-2.18	-2.06	-1.41	-1.39	-1.31	-0.87
	(-1.31)	(-0.74)	(-1.21)	(-0.69)	(-1.7)	(0.36)	(1.54)	(1.69)	(0.61)	(1.21)	(-1.44)	(2.72)	(-1.56)	(-1.91)	(-1.52)	(-1.37)	(-1.53)	(-0.69)
MKT	0.57	0.5	0.36	0.25	0.19	0.37	0.07	0.04	0.02	-0.04	0.16	-0.09	0.74	0.74	0.59	0.42	0.16	0.58
	(2.76)	(2.41)	(1.98)	(1.4)	(4.3)	(1.99)	(0.26)	(0.25)	(0.14)	(-0.49)	(1.67)	(-0.44)	(2.69)	(3.45)	(1.76)	(1.81)	(2.82)	(2.84)
SMB	-0.67	-0.59	-0.29	-0.13	-0.35	-0.32	0.02	-0.07	0.08	-0.02	-0.16	0.18	-2.06	-1.52	-0.93	-0.2	-0.77	-1.29
	(-1.12)	(-2.08)	(-0.94)	(-0.57)	(-2.75)	(-0.64)	(0.09)	(-0.34)	(0.41)	(-0.15)	(-1.63)	(1.08)	(-1.3)	(-5.43)	(-2.18)	(-0.3)	(-2.15)	(-0.95)
HML	0.24	0.05	-0.18	0.05	0.26	-0.02	-0.51	-0.34	-0.36	-0.14	0.09	-0.6	0.63	0.07	-0.27	-0.13	0.45	0.18
	(0.84)	(0.2)	(-5.38)	(0.3)	(1.33)	(-0.11)	(-2.03)	(-1.63)	(-1.87)	(-2.24)	(0.79)	(-1.97)	(1.02)	(0.16)	(-0.84)	(-0.61)	(1.34)	(1.09)

Table CC.1: Out-of-Sample Results

We sort stocks based on firms' credit risk premia into quintile and decile portfolios and calculate equally-weighted excess returns. Credit risk premia are estimated out-of-sample using least-squares regressions with exponentially-weighted residuals in *Panel A* with the decay factor set to 0.94 in the left part and to 0.80 in the right part of the panel. *Panel B* presents results for quantile regressions with the quantiel det to 20% for the quintile and to 10% for the decile portfolios. P1 contains firms with highest credit risk premia and, for quintile (decile) portfolios, P5 (P10) the ones with lowest credit risk premia. P1–P5 (P1–P10) presents results for quintile (decile) portfolios going long P1 and short P5 (P10). Columns P5–P1:4 (P10–P1:9) present results for quintile (decile) portfolios where we go short portfolio P5 (P10) and go long all other portfolios, i.e. P1 to P4 (P1 to P9). *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: Exponentially-Weighted Least Squares

	Decay factor 0.94				Decay factor 0.80			
	P1–P5	P1–P10	P1:4–P5	P1:9–P10	P1–P5	P1–P10	P1:4–P5	P1:9–P10
Portfolio Returns								
mean	0.46	0.51	0.19	0.66	0.52	0.47	0.42	0.7
	(1.49)	(1.2)	(0.33)	(0.85)	(1.9)	(1.14)	(0.96)	(1.04)
sd	4.12	4.2	4.77	6.17	3.67	3.82	4.44	5.99
SR	0.39	0.42	0.14	0.37	0.49	0.43	0.32	0.41
Asset Pricing								
CAPM α	0.51	0.57	0.24	0.75	0.55	0.52	0.45	0.79
	(1.85)	(1.99)	(0.51)	(1.29)	(2.19)	(1.81)	(1.16)	(1.5)
3-fac α	0.43	0.49	0.28	0.77	0.47	0.48	0.47	0.86
	(1.63)	(1.32)	(0.57)	(1.35)	(1.93)	(1.62)	(1.21)	(1.81)
4-fac α	0.43	0.49	0.29	0.77	0.47	0.48	0.47	0.86
	(1.64)	(1.81)	(0.54)	(1.49)	(1.87)	(1.8)	(1.2)	(2.11)
MKT	-0.28	-0.4	-0.21	-0.43	-0.19	-0.33	-0.16	-0.4
	(-2.86)	(-3.15)	(-1.98)	(-2.24)	(-2.67)	(-3.06)	(-1.67)	(-2.17)
SMB	0.07	0.14	0.1	0.08	0.06	0.08	0.06	0.02
	(0.55)	(0.95)	(0.61)	(0.33)	(0.61)	(0.64)	(0.45)	(0.08)
HML	0.18	0.1	-0.32	-0.19	0.2	0.06	-0.18	-0.29
	(1.33)	(0.63)	(-2.32)	(-0.95)	(1.67)	(0.45)	(-1.39)	(-1.46)
Correlations								
MV	-0.38	-0.63	-0.32	-0.55	-0.27	-0.59	-0.33	-0.54
BM	-0.36	-0.61	-0.39	-0.47	-0.21	-0.55	-0.36	-0.44

Panel B: Quantile Regressions

	Rolling windows				Expanding windows			
	P1–P5	P1–P10	P1:4–P5	P1:9–P10	P1–P5	P1–P10	P1:4–P5	P1:9–P10
Portfolio Returns								
mean	0.63	0.41	0.67	0.75	0.71	0.7	0.99	0.88
	(2.55)	(1.03)	(1.62)	(1.08)	(2.24)	(1.38)	(2.22)	(1.06)
sd	3.35	3.23	3.97	5.28	4.12	4.03	4.72	6.04
SR	0.65	0.44	0.58	0.49	0.6	0.61	0.73	0.51
Asset Pricing								
CAPM α	0.64	0.46	0.7	0.84	0.75	0.77	1.04	0.99
	(2.95)	(1.72)	(2.02)	(1.73)	(3.03)	(2.38)	(2.67)	(1.84)
3-fac α	0.69	0.48	0.82	0.89	0.77	0.77	1.1	0.98
	(3.1)	(1.73)	(2.23)	(1.96)	(3.02)	(2.34)	(2.84)	(1.76)
4-fac α	0.69	0.48	0.82	0.89	0.77	0.77	1.11	0.99
	(2.9)	(1.91)	(2.25)	(2.04)	(2.76)	(2.35)	(2.83)	(1.96)
MKT	-0.07	-0.27	-0.13	-0.43	-0.23	-0.37	-0.22	-0.56
	(-1.63)	(-3.41)	(-1.8)	(-3.54)	(-1.88)	(-3.35)	(-1.81)	(-3.55)
SMB	-0.32	-0.11	-0.4	-0.19	-0.15	-0.01	0.04	0.13
	(-2.21)	(-0.88)	(-2.08)	(-1.18)	(-0.79)	(-0.05)	(0.2)	(0.72)
HML	0.21	0.07	0.11	0.08	0.12	0.01	-0.29	-0.11
	(2.09)	(0.65)	(0.69)	(0.4)	(1.08)	(0.1)	(-1.44)	(-0.5)
Correlations								
MV	-0.02	-0.59	-0.16	-0.55	-0.22	-0.6	-0.12	-0.57
BM	-0.07	-0.62	-0.23	-0.52	-0.31	-0.66	-0.27	-0.51

Table DD.1: CDS Slope, Spread Changes, Forward Premia, and Excess Returns

This table presents summary statistics for the relation between the slope of the CDS term structure and CDS spread changes ($\Delta S_{t+\tau}^{T}$) as well as its components, the CDS forward premium ($F_t^{\tau\times T} - S_t^T$) and the CDS excess return ($RX_t^{\tau\times T}$). 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 subpanel 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^2s. 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		
	$\Delta S_{t+\tau}^{T}$	$F_t^{\tau\times T} - S_t^T$	$RX_t^{\tau\times T}$	$\Delta S_{t+\tau}^{T}$	$F_t^{\tau\times T} - S_t^T$	$RX_t^{\tau\times T}$	$\Delta S_{t+\tau}^{T}$	$F_t^{\tau\times T} - S_t^T$	$RX_t^{\tau\times T}$
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 DD.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 into quintile portfolios and calculate equally-weighted and value-weighted excess returns *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
Sort Variable: CDS Slope																		
mean	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	
Portfolio Characteristics																		
DD	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	
S5	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	
MV	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	
BM	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																		
Portfolio Returns																		
mean	-0.48	-0.36	-0.06	0.07	-0.45	-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
	(-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)
sd	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
SR	-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	-0.75
Asset Pricing																		
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
	(-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)
3-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
	(-0.48)	(-0.17)	(0.29)	(0.5)	(-0.42)	(0)	(1.53)	(1.66)	(1.46)	(1.08)	(0.62)	(0.71)	(-1.19)	(-0.79)	(-0.67)	(-0.49)	(-0.19)	(-0.93)
4-fac α	-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
	(-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)
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	0.53	0.79	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)	(7.21)	(3.49)	(2.15)	(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
	(-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)
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
	(-0.5)	(-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)
Panel B: Value-Weighted Portfolios																		
Portfolio Returns																		
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
	(-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)
sd	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
SR	-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
Asset Pricing																		
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
	(-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)
3-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
	(-0.7)	(-0.89)	(-0.79)	(0.15)	(-0.96)	(0.25)	(0.59)	(1.06)	(0.47)	(1.3)	(-0.3)	(1.07)	(-1.11)	(-1.56)	(-1.33)	(-0.79)	(-0.05)	(-1.18)
4-fac α	-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
	(-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)	(-1.24)	(-0.17)	(-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
	(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)
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
	(-0.56)	(-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)
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
	(-0.46)	(-1.98)	(-0.79)	(0.44)	(-0.26)	(-0.22)	(-1.29)	(-3.67)	(-2.9)	(-0.94)	(-2.08)	(0.71)	(-0.63)	(-0.79)	(-0.83)	(0.17)	(0.24)	(-1.05)

Table DD.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 into quintile portfolios and calculate equally-weighted and value-weighted excess returns *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
Sort Variable: CDS Slope																		
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	
Portfolio Characteristics																		
DD	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	
S5	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	
MV	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	
BM	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																		
Portfolio Returns																		
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
	(-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)
sd	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
SR	-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
Asset Pricing																		
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
	(-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)
3-fac α	-0.33	-0.18	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
	(-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)	(-0.63)	(-0.16)	(0.39)	(-2.27)
4-fac α	-0.34	-0.18	0.22	0.35	0.24	-0.58	0.83	0.58	0.8	0.71	0.55	0.28	-1.87	-1.01	-0.59	-0.25	0.86	-2.73
	(-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)
MKT	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)	(0.54)	(0.54)	(3.35)	(2.1)	(3.43)	(2.33)	(1.89)	(1.29)
SMB	-0.23	-0.21	-0.17	-0.29	-0.22	-0.01	-0.02	-0.02	0.03	-0.13	-0.06	0.04	-0.75	-0.68	-0.68	-0.72	-0.79	0.04
	(-1.04)	(-0.98)	(-0.97)	(-2)	(-1.28)	(-0.06)	(-0.12)	(-0.08)	(0.33)	(-0.9)	(-0.27)	(0.26)	(-2.65)	(-1.19)	(-3.44)	(-1.81)	(-1.23)	(0.09)
HML	-0.18	-0.32	-0.15	-0.02	-0.31	0.13	-0.55	-0.62	-0.33	-0.12	-0.74	0.19	-0.42	-0.45	-0.3	-0.14	-0.04	-0.39
	(-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																		
Portfolio Returns																		
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
	(-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)
sd	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
SR	-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
Asset Pricing																		
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
	(-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)	(-1.99)
3-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
	(-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)
4-fac α	-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
	(-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)
MKT	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)
SMB	-0.15	-0.01	-0.2	-0.28	-0.22	0.08	0.17	0.26	-0.04	-0.1	-0.09	0.26	-0.83	-0.73	-0.66	-0.74	-0.62	-0.21
	(-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)
HML	-0.18	-0.45	-0.13	0.03	-0.14	-0.04	-0.36	-0.7	-0.35	-0.16	-0.41	0.05	-0.73	-0.54	-0.14	-0.04	-0.02	-0.7
	(-0.81)	(-2.2)	(-1.36)	(0.27)	(-0.81)	(-0.19)	(-1.53)	(-3.8)	(-2.2)	(-1)	(-1.98)	(0.22)	(-0.99)	(-0.69)	(-0.99)	(-0.25)	(-0.05)	(-1.19)

Table EE.1: Descriptives Statistics for CDS Spreads

This table presents summary statistics and predictability results for CDS spreads for the sample periods given in the column headers. The maturities T are indicated in the column headers. The horizon τ equals one month. Data is sampled at a monthly frequency for the periods indicated in the column headers. Panel A summarizes descriptive statistics for levels of CDS spreads, slopes of the term structure of CDS spreads defined as the T-year CDS spread minus the 1-year CDS Spread, monthly changes in CDS spreads, monthly CDS forward premia, and monthly CDS excess returns. Means, standard deviations, as well as the 5% and 95% quantiles are presented in basis points. Panel B summarizes results of predictability regressions for CDS excess returns. 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. We report R^2s for regressing CDS excess returns on CDS forward premia: $RX_t^{\tau\times T} = \alpha_0 + \beta_0(F_t^{1\times T} - S_t^T) + \epsilon_{0,t+1}$, regressions of excess returns on all forward CDS spreads as in Eq. (13) and for regressing the CDS excess returns on the single factor estimated using Eq. (14).

	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
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 ($\Delta S_{t+\tau}^T$)												
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
CDS Forward Premia ($F_t^{\tau\times T} - S_t^T$)												
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
CDS Excess Returns ($RX_t^{\tau\times T}$)												
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 CDS Excess Returns												
R^2 for Regressions of the Excess Return on the Forward Premium												
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 Excess Return Regressions using all Forward CDS Spreads												
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 Single-Factor Regressions												
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 EE.2: Returns on Stock Portfolios sorted by CDS Forward Premia and Contemporaneous Risk Premia

We sort stocks based on firms' CDS forward premia (*Panel A*) and their contemporaneous risk premia (*Panel B*) into quintile portfolios and calculate value-weighted excess returns. P1 contains firms with highest CDS forward premia (contemporaneous risk premia), P5 the ones with lowest CDS forwards premia (contemporaneous risk premia) in Panel A (B). 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–P5	P1	P2	P3	P4	P5	P1–P5	P1	P2	P3	P4	P5	P1–P5
Panel A: Portfolios sorted by CDS Forward Premia																		
Sort Variable: CDS Forward Premia																		
mean	2.03	-0.63	-1.07	-1.73	-4.79		-0.44	-0.8	-1.14	-1.76	-4.33		5.1	-0.43	-0.96	-1.68	-5.29	
Portfolio Returns																		
mean	-0.88	-2.12	-0.62	-5.16	-10.55	9.66	1.99	7.6	6.75	7.89	5.87	-3.88	-4.13	-12.94	-7.6	-18.29	-28.21	24.09
	(-0.07)	(-0.25)	(-0.08)	(-0.45)	(-0.74)	(1.39)	(0.73)	(2.11)	(2.14)	(1.65)	(1.1)	(-0.85)	(-0.14)	(-0.69)	(-0.48)	(-0.73)	(-0.93)	(2.4)
sd	24.71	15.35	15.11	18.11	23.7	20.76	6.93	7.98	9.09	10.01	10.58	8.93	36.78	21.06	20.22	24.37	33.12	29.3
SR	-0.04	-0.14	-0.04	-0.28	-0.45	0.47	0.29	0.95	0.74	0.79	0.56	-0.43	-0.11	-0.61	-0.38	-0.75	-0.85	0.82
Portfolio Characteristics																		
DD	11.98	10.66	9.57	8.1	5.6		16.49	12.91	11.45	9.71	6.97		6.34	7.86	7.23	6.08	3.89	
S5	210.64	73.97	66.9	103.4	288.71		26.81	28.29	40.9	64.08	201.87		439.36	130.76	98.95	151.94	394.89	
MV	47.94	27.66	20.22	13.98	6.99		62.61	26.71	17.61	11.69	6.77		29.54	28.99	23.53	16.89	7.26	
BM	0.68	0.48	0.49	0.55	0.62		0.34	0.43	0.47	0.5	0.55		1.11	0.54	0.52	0.6	0.72	
Panel B: Portfolios sorted by Contemporaneous Risk Premia																		
Sort Variable: Contemporaneous Risk Premia																		
mean	49.97	8.59	0.6	-7.06	-55.76		22.04	4.5	1.61	-0.92	-16.83		85.33	14.04	-0.2	-13.68	-100.18	
Portfolio Returns																		
mean	18.16	7.83	1.87	-8.25	-47.08	65.23	19.21	13.88	6.91	2.81	-14.83	34.05	19.81	2.36	-3.43	-19.96	-87.18	106.99
	(1.68)	(0.99)	(0.24)	(-0.88)	(-1.85)	(3.95)	(3.92)	(3.62)	(1.52)	(0.87)	(-3.09)	(7.33)	(0.8)	(0.13)	(-0.18)	(-1.02)	(-1.7)	(3.63)
sd	21.35	15.17	14.71	17.46	34.11	26.39	9.15	8.92	8.84	9.34	10.42	7.68	30.72	20.63	19.96	23.61	47.99	35.45
SR	0.85	0.52	0.13	-0.47	-1.38	2.47	2.1	1.56	0.78	0.3	-1.42	4.43	0.64	0.11	-0.17	-0.85	-1.82	3.02
Portfolio Characteristics																		
DD	7.03	9.76	10.64	10.5	7.99		8.96	11.78	13.01	13.24	10.59		4.53	7.11	7.69	7.18	4.89	
S5	283.22	97.71	73	85.57	204.68		146.41	48.88	36.99	37.43	92.35		455.5	159.02	117.98	144.72	339.88	
MV	12.05	25.3	31.51	30.35	17.81		12.3	25.05	32.71	34.88	20.83		11.39	25.23	30.02	25.11	14.49	
BM	0.7	0.5	0.47	0.49	0.66		0.51	0.45	0.43	0.43	0.47		0.94	0.57	0.53	0.56	0.89	

Table EE.3: 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-panels *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
Panel A: Portfolios sorted by Real-World Default Probabilities using Distance-to-Default (DD)																		
Sort Variable: DD																		
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	
Portfolio Returns																		
mean	-15.76	-3.19	-3.84	-2.25	-1.33	-14.43	6.36	10.59	4.41	5.71	2.18	4.17	-39.99	-18.3	-12.81	-10.93	-5.67	-34.32
	(-0.63)	(-0.21)	(-0.35)	(-0.29)	(-0.25)	(-0.73)	(0.96)	(1.81)	(1.22)	(1.64)	(0.88)	(0.7)	(-0.71)	(-0.54)	(-0.54)	(-0.64)	(-0.49)	(-0.79)
sd	37.1	25.61	19.1	13.93	11.36	29.9	10.88	12.27	8.01	7.5	6.98	8.94	54.1	35.94	27.4	19.12	15.23	43.55
SR	-0.42	-0.12	-0.2	-0.16	-0.12	-0.48	0.58	0.86	0.55	0.76	0.31	0.47	-0.74	-0.51	-0.47	-0.57	-0.37	-0.79
Portfolio Characteristics																		
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	
Asset Pricing																		
CAPM α	-18.38	-4.77	-4.91	-2.92	-1.68	-16.7	6.52	10.92	4.1	6.34	4.66	1.86	-36.17	-15.98	-11.26	-9.95	-5.02	-31.15
	(-1.2)	(-0.48)	(-0.7)	(-0.49)	(-0.39)	(-1.36)	(0.99)	(1.92)	(1.38)	(2.17)	(2.47)	(0.29)	(-1.16)	(-0.85)	(-0.76)	(-0.84)	(-0.59)	(-1.25)
3-fac α	-16.77	-2.91	-3.68	-1.84	-1.02	-15.75	15.06	17.29	3.61	8.86	6.31	8.75	-32.09	-11.65	-6.87	-6.16	-2.71	-29.38
	(-1.11)	(-0.34)	(-0.67)	(-0.39)	(-0.27)	(-1.36)	(3.08)	(3.89)	(0.86)	(3.1)	(3.04)	(1.49)	(-1.15)	(-0.62)	(-0.58)	(-0.64)	(-0.33)	(-1.24)
4-fac α	-16.8	-2.9	-3.69	-1.85	-1.01	-15.79	16.36	18.01	3.66	9.36	6.7	9.66	-31.06	-11.98	-6.87	-6.07	-3.03	-28.03
	(-1.26)	(-0.33)	(-0.67)	(-0.39)	(-0.28)	(-1.41)	(3.32)	(3.34)	(0.93)	(3.62)	(1.98)	(1.64)	(-1.09)	(-0.64)	(-0.6)	(-0.61)	(-0.46)	(-1.2)
RM	1.19	0.79	0.55	0.38	0.21	0.98	-0.16	-0.24	0.12	-0.13	-0.36	0.2	1.26	0.88	0.59	0.41	0.27	0.99
	(2.22)	(2.2)	(2.79)	(2.84)	(2.11)	(2.39)	(-0.87)	(-1.08)	(0.7)	(-0.81)	(-2.57)	(1.88)	(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	-0.08	0.12	-0.15	0.01	0.12	-0.2	-0.72	-0.73	-0.78	-0.68	-0.41	-0.31
	(-1.37)	(-1.61)	(-1.92)	(-2.19)	(-2.91)	(-0.93)	(-0.26)	(0.45)	(-1.12)	(0.03)	(0.7)	(-0.97)	(-0.74)	(-1.09)	(-1.47)	(-2.09)	(-5.75)	(-0.39)
HML	-0.06	-0.25	-0.05	-0.08	-0.02	-0.04	-0.89	-0.57	-0.03	-0.25	-0.1	-0.79	-0.13	-0.34	-0.08	-0.06	-0.06	-0.06
	(-0.09)	(-0.49)	(-0.14)	(-0.42)	(-0.22)	(-0.09)	(-3.19)	(-2.1)	(-0.16)	(-1.37)	(-0.97)	(-4.06)	(-0.14)	(-0.44)	(-0.14)	(-0.28)	(-0.86)	(-0.11)
Panel B: Portfolios sorted by Risk-Neutral Default Probabilities using 5-year CDS Spreads (S5)																		
Sort Variable: S5																		
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	
Portfolio Returns																		
mean	-19.21	-7.59	-6.97	-0.61	-1.59	-17.63	6.75	7.95	6.48	7.32	2.12	4.64	-49	-23.18	-21.81	-9	-5.99	-43.01
	(-0.67)	(-0.46)	(-0.65)	(-0.08)	(-0.29)	(-0.8)	(1.15)	(1.74)	(2.14)	(1.84)	(0.76)	(0.91)	(-0.78)	(-0.64)	(-0.92)	(-0.53)	(-0.49)	(-0.92)
sd	43.73	24.92	18.55	14.79	11.52	36	11.9	9.47	9.39	9.22	6.8	9.82	64.1	35.61	25.36	19.59	15.65	52.71
SR	-0.44	-0.3	-0.38	-0.04	-0.14	-0.49	0.57	0.84	0.69	0.79	0.31	0.47	-0.76	-0.65	-0.86	-0.46	-0.38	-0.82
Portfolio Characteristics																		
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	
Asset Pricing																		
CAPM α	-22.17	-9.3	-8.12	-1.18	-1.99	-20.18	5.11	7.38	7.33	8.36	4.09	1.02	-44.8	-20.76	-20.12	-8.15	-5.29	-39.51
	(-1.33)	(-0.86)	(-1.24)	(-0.2)	(-0.43)	(-1.54)	(1.01)	(1.78)	(3.23)	(1.99)	(1.59)	(0.2)	(-1.71)	(-1.01)	(-1.56)	(-0.66)	(-0.58)	(-2.19)
3-fac α	-19.2	-7.54	-7.15	-0.1	-1.31	-17.9	7.31	8.71	8.84	10.34	6.86	0.45	-34.92	-17.53	-17.38	-4.64	-2.55	-32.37
	(-1.3)	(-0.81)	(-1.02)	(-0.02)	(-0.36)	(-1.5)	(0.91)	(2.08)	(3.2)	(2.36)	(3.14)	(0.06)	(-1.14)	(-0.92)	(-1.52)	(-0.45)	(-0.34)	(-1.32)
4-fac α	-19.26	-7.58	-7.17	-0.1	-1.29	-17.97	8.68	9.81	9.46	11.01	6.98	1.7	-34.44	-17.08	-17.21	-4.72	-2.89	-31.55
	(-1.45)	(-0.82)	(-1.2)	(-0.02)	(-0.36)	(-1.66)	(1.28)	(2.16)	(2.34)	(2.57)	(2.28)	(0.26)	(-1.34)	(-0.87)	(-1.47)	(-0.44)	(-0.41)	(-1.95)
RM	1.46	0.83	0.55	0.34	0.23	1.23	0.13	0.05	-0.06	-0.07	-0.34	0.48	1.57	0.92	0.59	0.35	0.28	1.29
	(2.85)	(2.99)	(2.1)	(2.38)	(2.32)	(2.81)	(0.46)	(0.25)	(-0.43)	(-0.3)	(-2.23)	(1.71)	(2.64)	(3.23)	(2.09)	(2.59)	(3.45)	(2.33)
SMB	-1.38	-0.59	-0.54	-0.54	-0.36	-1.02	-0.01	-0.03	-0.12	-0.16	0.14	-0.15	-1.74	-0.5	-0.48	-0.63	-0.49	-1.24
	(-1.66)	(-1.46)	(-1.88)	(-2.46)	(-2.33)	(-1.48)	(-0.04)	(-0.16)	(-0.67)	(-0.82)	(0.75)	(-0.72)	(-1.44)	(-0.97)	(-1.07)	(-2.53)	(-3.12)	(-1.27)
HML	-0.2	-0.24	-0.01	-0.05	-0.02	-0.17	-0.22	-0.15	-0.21	-0.28	-0.2	-0.02	-0.31	-0.5	-0.11	-0.03	-0.01	-0.3
	(-0.32)	(-0.67)	(-0.04)	(-0.29)	(-0.19)	(-0.34)	(-0.62)	(-0.58)	(-1.42)	(-1.14)	(-1.6)	(-0.06)	(-0.32)	(-1.01)	(-0.19)	(-0.17)	(-0.14)	(-0.42)

Table EE.4: Returns on Stock Portfolios sorted by Credit Risk Premia

We sort stocks based on firms' credit risk premia 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–P5	P1	P2	P3	P4	P5	P1–P5	P1	P2	P3	P4	P5	P1–P5
Sort Variable: Credit Risk Premia																		
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	
Portfolio Returns																		
mean	3.45	1.61	-0.57	-7.02	-26.33	29.78	14.49	10.98	7.21	-1.92	-6.9	21.39	10.77	-2.7	-9.21	-20.87	-64.36	75.13
	(0.26)	(0.23)	(-0.09)	(-0.63)	(-1.2)	(2.65)	(2.93)	(4.48)	(1.95)	(-0.54)	(-1.23)	(3.91)	(0.44)	(-0.16)	(-0.55)	(-0.83)	(-1.54)	(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	9.86	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	-0.64	2.17	0.34	-0.14	-0.49	-0.77	-1.62	2.83
Portfolio Characteristics																		
DD	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	
S5	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	
MV	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	
BM	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	
Asset Pricing																		
CAPM α	1.7	1	-1	-8.21	-27.74	29.45	13.62	12.9	7.64	-0.87	-4.69	18.31	12.67	-1.49	-8.38	-19.42	-62.43	75.1
	(0.21)	(0.19)	(-0.2)	(-1.03)	(-1.98)	(2.11)	(3)	(3.95)	(2.03)	(-0.25)	(-0.76)	(3.19)	(0.76)	(-0.14)	(-0.7)	(-1.06)	(-2.23)	(4.07)
3-fac α	3.27	1.82	-0.07	-6.59	-25.26	28.53	16.64	16.06	10.06	1.67	-4.2	20.84	15.15	0.82	-3.9	-15.85	-56.08	71.23
	(0.38)	(0.34)	(-0.02)	(-1.02)	(-2.23)	(2.66)	(3.37)	(4.66)	(2.7)	(0.56)	(-0.63)	(3.17)	(0.72)	(0.1)	(-0.44)	(-1.15)	(-2.51)	(4.17)
4-fac α	3.28	1.85	-0.07	-6.6	-25.31	28.59	18.18	17.47	10.67	1.86	-5.57	23.74	15.32	-0.1	-4.04	-15.84	-55.86	71.18
	(0.38)	(0.43)	(-0.02)	(-1.06)	(-2.12)	(2.81)	(3.91)	(7.13)	(2.71)	(0.52)	(-0.8)	(4.11)	(0.81)	(-0.01)	(-0.43)	(-1.13)	(-2.47)	(3.84)
RM	0.83	0.33	0.27	0.61	0.8	0.04	0.03	-0.31	-0.2	-0.12	-0.16	0.19	0.69	0.4	0.37	0.64	0.85	-0.15
	(3.02)	(2.43)	(2.12)	(2.79)	(1.63)	(0.12)	(0.13)	(-1.34)	(-1.47)	(-0.8)	(-0.63)	(1.03)	(2.01)	(2.59)	(2.84)	(2.96)	(1.7)	(-0.57)
SMB	-0.65	-0.41	-0.5	-0.43	-0.94	0.29	0	0.08	0.2	-0.08	-0.16	0.16	-0.4	-0.43	-0.81	-0.57	-1.08	0.67
	(-1.98)	(-2.01)	(-3.18)	(-1.6)	(-1.64)	(0.63)	(0.03)	(0.43)	(1.12)	(-0.46)	(-0.53)	(0.78)	(-0.62)	(-1.16)	(-3.86)	(-1.6)	(-1.41)	(1.55)
HML	-0.15	-0.04	-0.02	-0.29	-0.29	0.14	-0.3	-0.27	-0.14	-0.3	-0.13	-0.17	-0.27	0.05	-0.05	-0.48	-0.44	0.17
	(-0.43)	(-0.14)	(-0.15)	(-1.09)	(-0.49)	(0.4)	(-1.38)	(-1.99)	(-0.82)	(-1.72)	(-0.37)	(-0.59)	(-0.52)	(0.14)	(-0.24)	(-1.24)	(-0.55)	(0.43)

Table EE.5: 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 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
Sort Variables												
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	
Portfolio Returns												
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
Asset Pricing												
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 EE.6: 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 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	3.2	3.3	P3.1–P3.3
Sort Variables												
BM 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	
Portfolio Returns												
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
	(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
Asset Pricing												
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
	(1.03)	(-0.07)	(-1.72)	(3.02)	(-0.79)	(0.48)	(-1.93)	(2.77)	(-0.13)	(-0.93)	(-1.41)	(1.6)
3-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)
4-fac α	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)
RM	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)
SMB	-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)
HML	-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 EE.7: 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 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	3.2	3.3	P3.1–P3.3
Sort Variables												
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	
Portfolio Returns												
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
	(-0.14)	(0.17)	(-0.78)	(1.28)	(0.28)	(-0.03)	(-1.1)	(4.05)	(0.32)	(-0.5)	(-1.27)	(2.17)
sd	13.86	11.95	17.05	10.81	18.12	17.45	21.97	12.34	29.1	18.44	40.1	30.92
SR	-0.06	0.07	-0.44	0.62	0.16	-0.02	-0.64	1.37	0.17	-0.28	-0.83	1.23
Asset Pricing												
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)	(0.49)	(-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)