

# Credit spreads, daily business cycle, and corporate bond returns predictability

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## Paper in a nutshell

This paper is about **credit risk premium (CRP)**:

$$\text{Credit risk premium} = \text{Credit spread} - \text{Expected credit loss}$$

I treat business cycle as the factor of expected loss and estimate risk premium on the daily data.

### Key findings:

- ▶ CRP is **much smaller and less volatile** than previously thought;
- ▶ CRP does not forecast future economic activity (but expected credit loss does);
- ▶ CRP **forecasts corporate bond market returns** in-sample and **out-of sample** (alternative CRPs do not).

## Data and estimation strategy

Tick-by-tick bond price data from Enhanced TRACE + bond characteristics from Mergent FISD + firm and equity data from Compustat and CRSP → Credit spread is the 'GZ-spread' as in [Gilchrist and Zakrajšek \(2012\)](#).

Given bond  $i$  of firm  $k$  spread at day  $t$ , daily CRP is estimated in full sample (2004–2014) and in real time (2009–2014) as:

$$\log(S_{it}^{GZ}[k]) = \text{Firm-specific distance-to-default} + \text{Proxies for recovery rate} + \text{Call option adjustment} + \underbrace{\text{Daily business cycle and liquidity proxies}}_{\text{Novel}} + (\text{Industry and rating FE}) + \epsilon_{it}[k];$$

$$CRP_{i,t}[k] = \underbrace{S_{i,t}^{GZ}[k]}_{\text{Spread}} - \underbrace{\hat{S}_{i,t}^{GZ}[k]}_{\text{Expected loss}};$$

$CRP_t$  = cross-sectional mean of  $CRP_{i,t}[k]$  at each  $t$ .

Daily business cycle measure is the ADS index by the Philly Fed based on [Aruoba, Diebold, and Scotti \(2009\)](#). Liquidity proxy is the Amihud measure.

## Daily credit risk premium

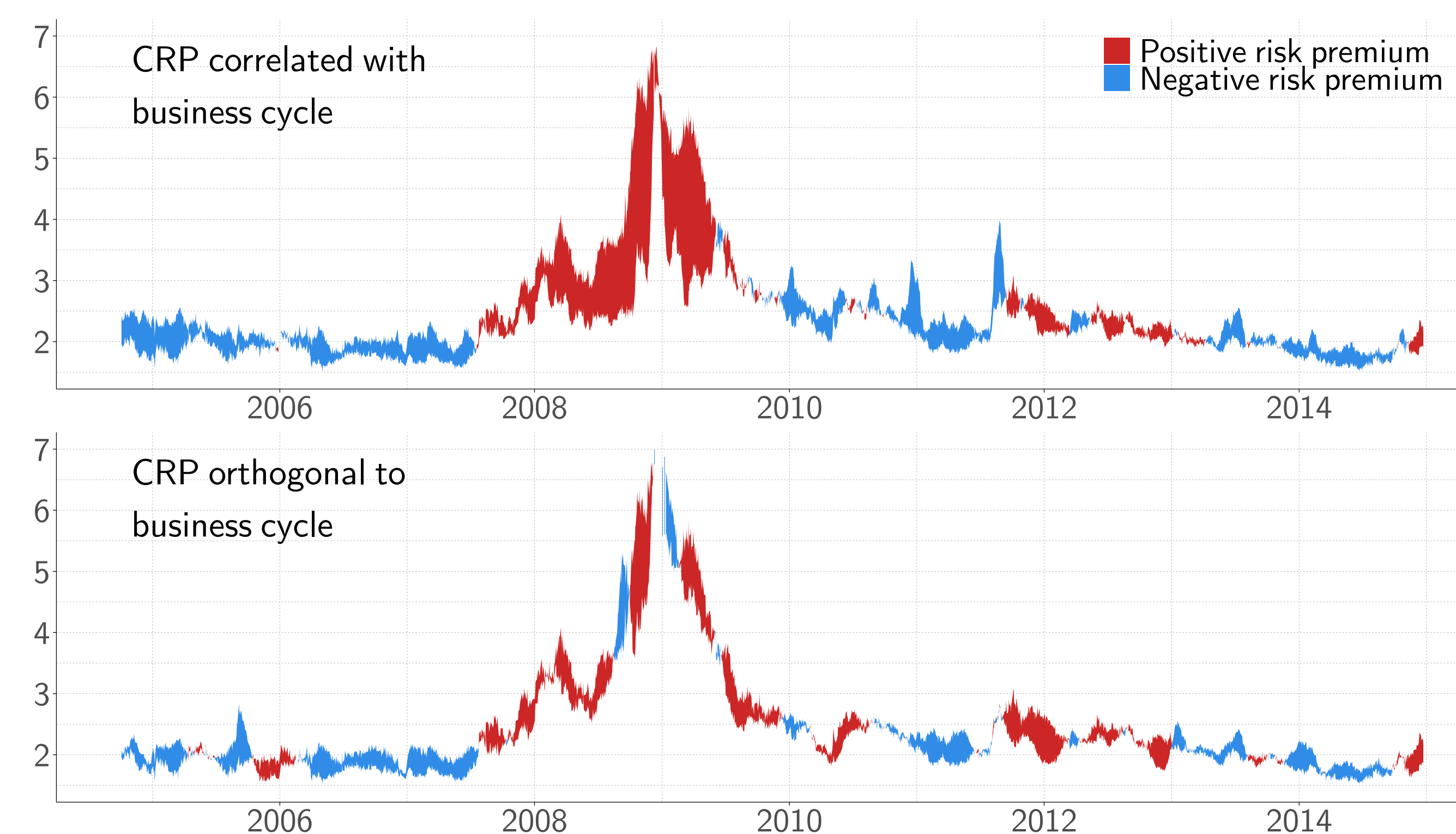


Figure 1: **Daily credit risk premium (CRP) as the p.p. difference between observed and fitted spreads.** Top vs. bottom: business cycle and liquidity proxies become factors of spreads at the bottom chart.

- ▶ **Business cycle and liquidity proxies are significant factors of spreads** with high explanatory power (both for investment-grade and high-yield bonds in different time sub-samples);
- ▶ The addition of these two factors considerably **changes CRP estimates**;
- ▶ Full-sample and real-time CRPs are close starting from 2010.

## Forecasting macro

Once CRP becomes orthogonal to the business cycle, it **no longer forecasts macro** as strongly on horizons up to 1 year.

	Industrial production		Unemployment rate			
	–	(A)	(B)	–	(A)	(B)
GZ spread	–1.84***	–	–	0.54***	–	–
	(0.40)	–	–	(0.05)	–	–
Fitted GZ	–	–0.70	–2.18***	–	0.46***	0.60***
		(0.54)	(0.35)		(0.08)	(0.04)
CRP	–	–2.85***	–0.82	–	0.59***	0.33***
		(0.60)	(0.66)		(0.07)	(0.10)
Adjusted R <sup>2</sup>	0.61	0.68	0.64	0.76	0.76	0.79

Table 1: **3m ahead predictive models.** Models also include yield curve factors. (A): CRP is correlated with the business cycle, (B): orthogonal to it.

## Forecasting bond market returns

Forecast cumulative corporate bond market returns  $h$  days ahead, where  $h \in \{1, 2, \dots, 90\}$ :

$$R_{t:t+h} = \alpha + \beta R_{t-h:t} + \gamma_1 LVL_t + \gamma_2 SLP_t + \gamma_3 CRV_t + \gamma_4 \hat{S}_t^{GZ} + \gamma_5 CRP_t + \epsilon_{t+h}.$$

- ▶ CRP (both full-sample and real-time) is a **significant predictor of returns** for all  $h$  between 10 and 60 days;
- ▶ CRP is **the only significant predictor** in the model, and only if it's orthogonal to the business cycle.

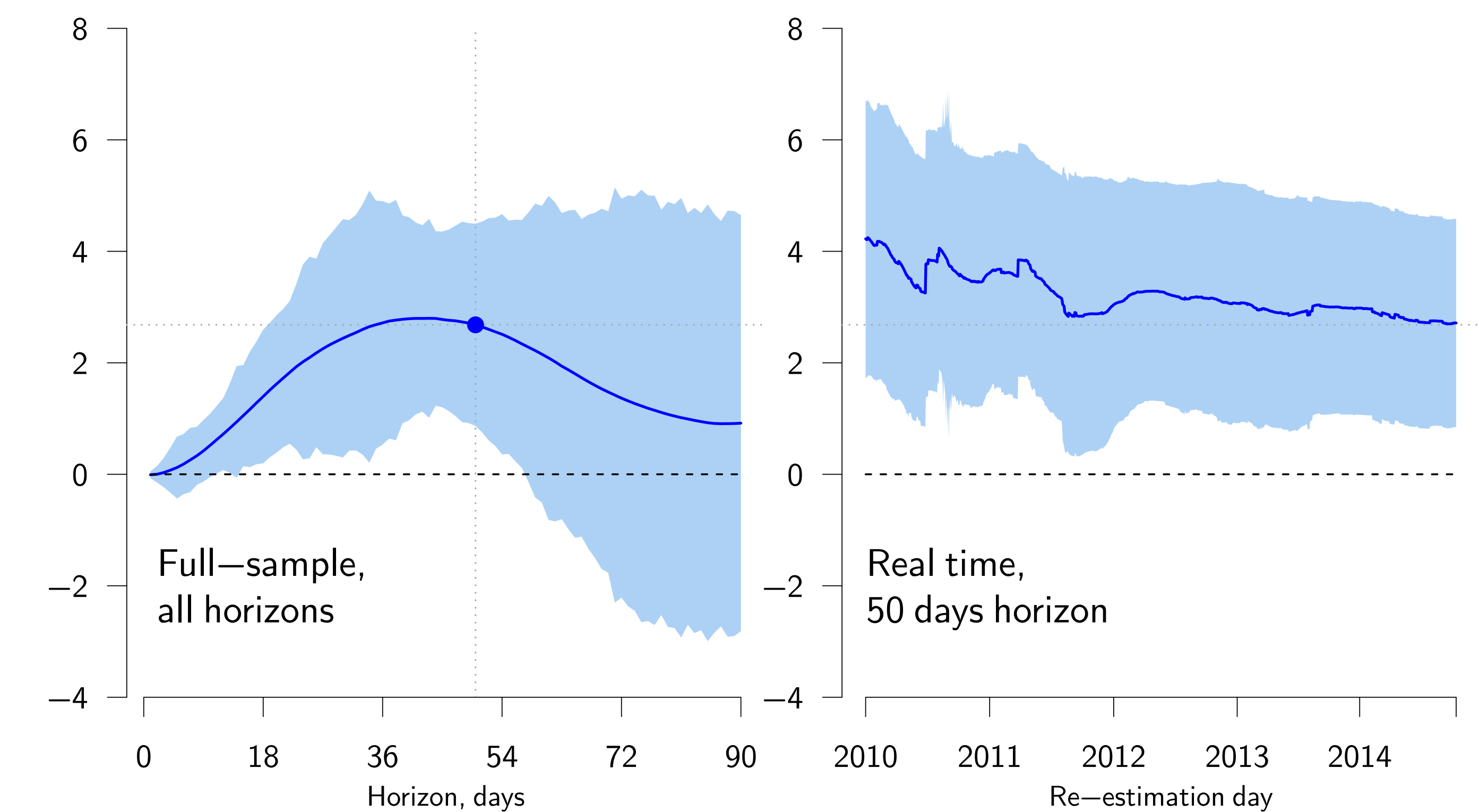


Figure 2: **Coefficients on CRP in return-forecasting models.** LHS estimates are for the full sample, RHS – for the expanding sample. The market is Barclays IG index. Newey-West standard errors.

- ▶ Timing the market with CRP-based forecasts:

	Train (2009–2011)		Test (2012–2014)	
	Market	Strategy	Market	Strategy
Mean excess return	0.21	0.33	0.10	0.18
Standard deviation	0.75	0.88	0.59	0.72
Sharpe ratio	0.28	0.37	0.17	0.25
Information ratio	–	0.25	–	0.24
Max. excess return	2.46	2.80	1.32	1.85
Min. excess return	–1.66	–2.48	–2.59	–2.39

Table 2: **Weekly performance measures of the market-timing strategy.** The strategy consists in leveraging up and investing in the corporate bond market ETF when 'high' returns are forecasted, stay away from the market when 'low' returns are forecasted, and simply follow the market otherwise. Rebalancing is weekly.