Expected Government Support and Bank Risk Premia

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Motivation

‘We find that sovereign credit rating downgrades have a large negative effect on bank stock returns for those banks that are expected to receive stronger support from their governments.’ (Correa et at., 2014, JMCB)

Hypothesis

- Expected government support
  1. reduces banks' probabilities of default
  2. but renders banks more exposed to sovereign credit risk,
     - thus having the potential to raise bank risk premia, and consequently banks' funding costs.

- Consider a bank with the following balance sheet:

Liabilities	Assets
D	A
E	

- Let A and E be fixed.
- Focus on how D along with debt and equity prices respond to the introduction of government support.

- Suppose that the value of the bank's assets $\mathcal{A}$ is determined by a Bernoulli random variable x:

$$\mathcal{A} = \begin{cases} \mathcal{A}_l & \text{if } x = 0 \\ \mathcal{A}_h & \text{if } x = 1 \end{cases}$$

- Let x in turn be determined by the pairwise independent random variables i, s and z:

$$x = z\,s + (1 - z)\,i$$

- Denoting the stochastic discount factor with φ, the following stochastic structure is imposed:
  - i and φ are independent
  - s and φ are perfectly correlated.
- Thus, i can be interpreted as an idiosyncratic shock and z as an aggregate shock.

- The bank's exposure to aggregate risk is given by $\mathbb{P}(z = 1) =: \alpha$.

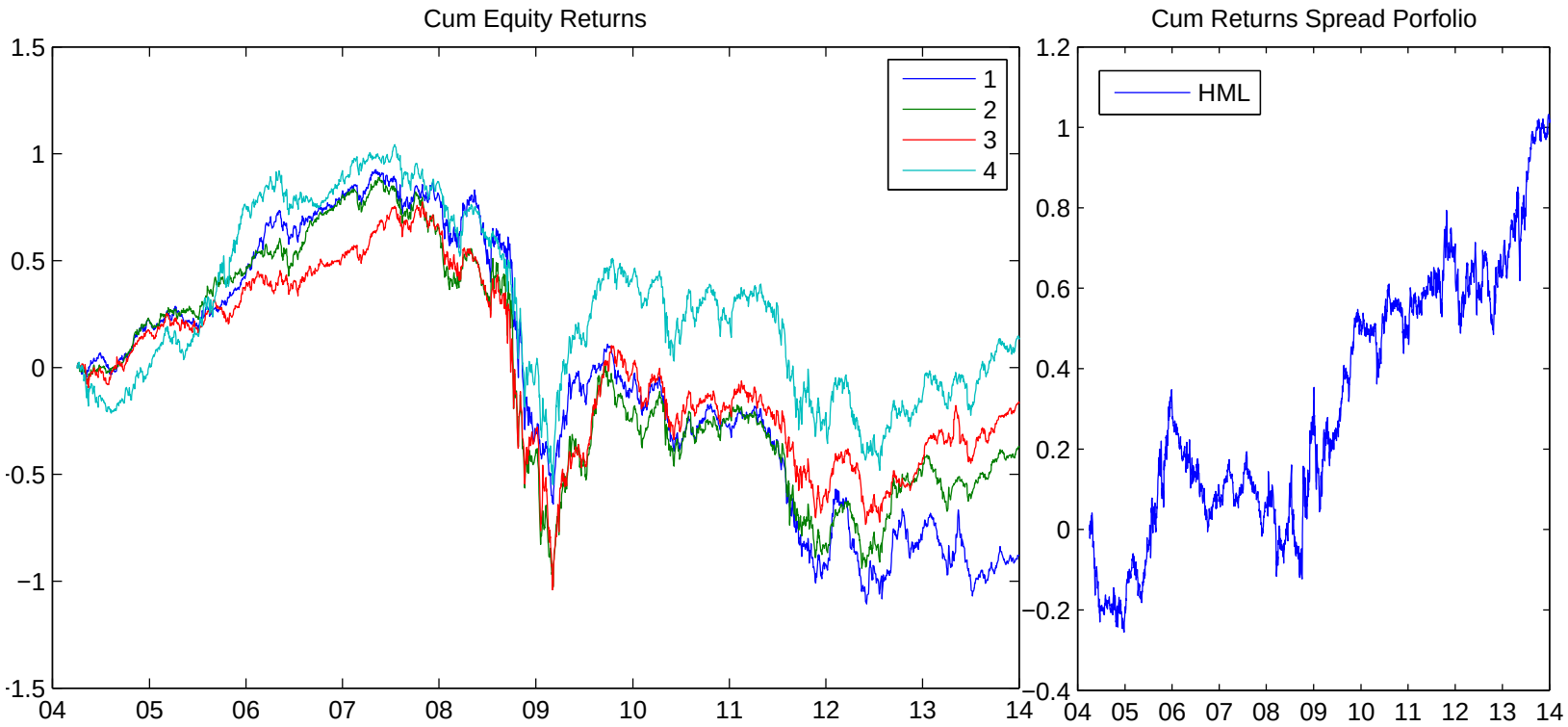
- Cross-sectional asset pricing à la Fama and McBeth applied to equity and debt returns, the latter calculated from CDS premia.
- Banks sorted into portfolios according to
  - the exposition of each bank (i) located in country (j) to sovereign credit risk

$$R^D_{i,j,t} = \alpha_{i,j} + \gamma_{i,j} R^E_{i,j,t} + \beta_{i,j} R^D_{i,t} + \mu_{i,j} X_{i,t} + \epsilon_{i,j,t}$$

  - the degree of expected government support, as measured by the difference between *Deposit Rating* and *Bank Financial Strength*.

Preliminary findings

Cumulative returns



- 1st step (time series): The post ranking betas (quantity of risk) of the N portfolios are estimated from

$$R_{p,t} = \alpha_p + \boldsymbol{\beta}_p' \boldsymbol{Fac}_t + \epsilon_{p,t},$$

where ***Fac*** denote the pricing factors (Market return, Fama-French Factors).

- 2nd step (cross section): Estimate the prices of risk from

$$\mathbb{E}[R_{p,t} - \bar{R}_t] = \boldsymbol{\lambda}' \boldsymbol{\beta}_p + v_p,$$

where $\boldsymbol{\lambda}$ are the prices of risk.

The χ^2 test for zero pricing error reveals whether the standard factors can price the risk premium attached to the EGS. If not we need to look for other factors (SOVX?).