Highlights of Preliminary Findings

- The model requires little human guidance and by design should be able to assess the 2008 crisis, or any other crisis that might emerge in the future even without strong researcher guidance. In fact, it is not necessary for a crisis to emerge for the regulator to use the methodology to potentially identify emerging risks and use their authority to mitigate or monitor the underlying activities that generate such risk. The methodology also allows the regulator to score risks as they emerge, by ranking on both economic importance and rarity (through p-values indicating how rare a given risk factor's emergence is given past volatilities as a benchmark).

- We find that a set of roughly 20 specific risks emerged among financials as early as 2005 primarily relating to corporate risk management concerns and issues in real estate, and then transitioning to risks relating to capital requirements and mortgage backed securities as early as 2006. These emerging risks are highly statistically significant and illustrate that warning signs underlying financial crises might more generally be present in trading data before a given crisis hits in full severity.

- Our preliminary findings indicate that text-based emerging risks affect the covariance of returns months and sometimes years before standard metrics such as heightened market covariance or volatility (as measured by the VIX or standard deviations of the returns of financial institutions). Further, the text-based indicators of risk contribute significantly to predicting future covariance of returns over and above the predictive ability of industry or standard accounting variables.

- The emerging verbal risk factors are interpretable and are based on the use of combined technologies based on Latent Dirichlet Allocation and Semantic Vectors. Each factor is given a simple title that can be refined by a human, and the refined verbal factor structure can be rerun through the risk models, allowing regulators or researchers to zoom in on more highly granular sources of risk. For example, we find that marketable securities held by banks also emerge as a risk before the 2008 crisis. Using the new tools, we observe that mortgage backed securities, specifically, were a source of risk before 2008, and later we observe that commercial paper is a more refined source of risk before the 2015 episode of volatility.

- There is substantial within-year variation on emerging risk that correlates with economic conditions. Click here for a graphical representation of the yearly trend in emerging risk themes.

- We also find that sample wide, even if we do not condition on crisis periods, that the banks that load most heavily on the emerging risk factors experience ex-post elevated levels of volatility lasting roughly 3 years and periods of future negative stock returns lasting roughly two years.

- We are able to update the data structures through the end of 2015. This allows us to assess what emerging risks are related to current market volatility, its potential sources and it severity. Preliminary results indicate that the intensity of emerging risks among banking stocks is roughly as large as that observed prior to 2008. However, the specific emerging risks also suggest that the current crisis has a different manifestation than the one in 2008, which was based on mortgage backed securities and risk management. The current crisis has roots in risk relating to interest rate risk, sources of funding, deposit risk, and commercial paper. In all, this echoes concerns among investors about a possible negative interest rate scenario, low growth, and difficulty for banks in raising capital. We also note that the current episode of volatility in early 2016 and late 2015 is predicted by the model strongly during 2014. Once again, this indicates the model’s success in noting emerging risk factors substantially before other indicators such as VIX or aggregate measures of volatility indicate that problems might exist.