The Role of Dispersed Information in Pricing Default: Evidence from the Great Recession

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Introduction - Motivation

What triggers a bank run?

- **What** is a modern bank run?
  - collapse of markets for short term funding
  - banks cannot refinance maturing debt
- **How** do they happen?
  - Diamond & Dybvig (1983) - multiple equilibria
    - full coordination via sunspots
  - Morris & Shin (2004) - unique equilibrium
    - coordination via precise information

Introduction - Contribution

This paper:

- extend Morris & Shin (2004) to match the model to the data
- **empirically** study the role of **dispersed information** in explaining **default risk** at the bank level
- introduce a novel set of **instruments** for market forecasts

Introduction - Contribution

We find two new empirical regularities:

- **lower dispersion** of beliefs **amplifies** the reaction of default risk to changes in market expectations - - *amplification effect*
- if forecasts about a bank's profitability are bad, **lower dispersion** of beliefs greatly **increases** default risk - - *direct effect*

To sum up,

- **precise information** helps creditors to **coordinate** on a bank run

Introduction

Outline of the talk:

- Model and Testable Implications
- Data
- Empirical Strategy
- Results
- Conclusion

Model

	Success $\psi < \theta$	Failure $\psi \geq \theta$
Rollover	1	0
Run	λ	λ

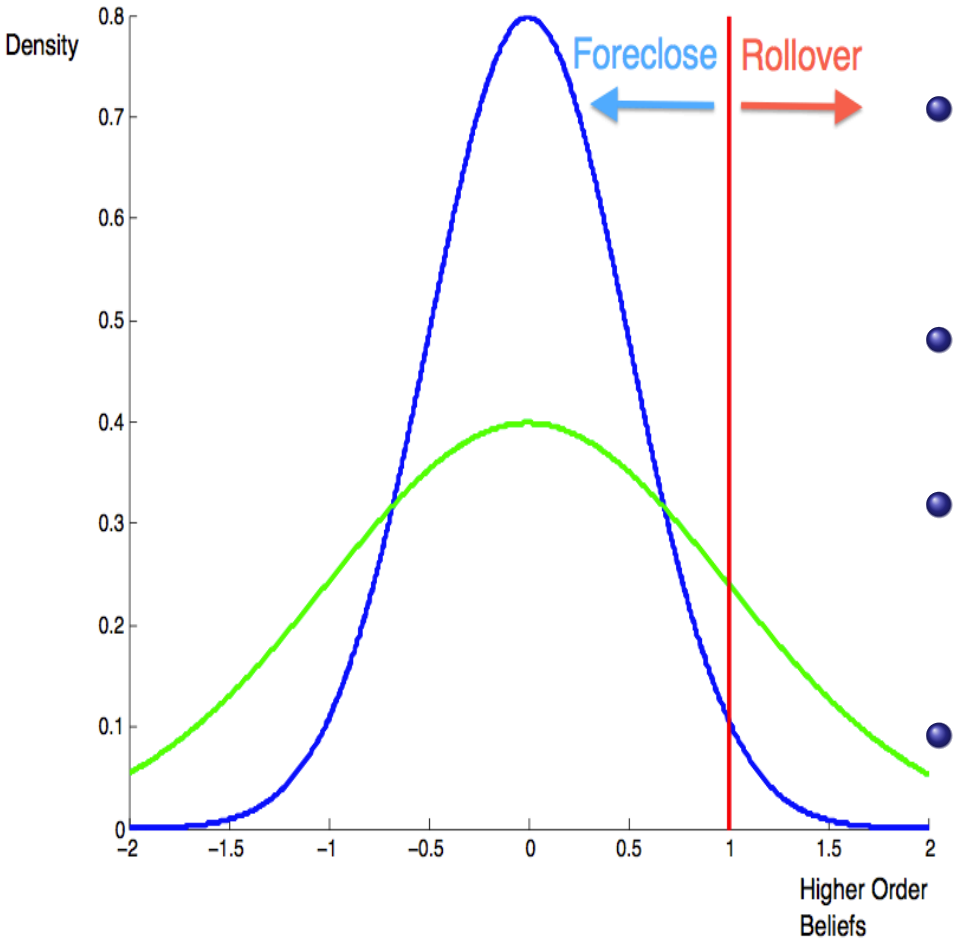
Information:

- common prior $\theta \sim \mathcal{N}(y, 1/\alpha)$
- private signals $x_i = \theta + \varepsilon_i$ where $\varepsilon_i \sim \mathcal{N}(0, 1/\beta)$
- posterior beliefs $\xi_i \sim \mathcal{N}\left(\frac{\alpha y + \beta x_i}{\alpha+\beta}, \frac{1}{\alpha+\beta}\right)$

Equilibrium:

- run iff $x_i < x^*$, where x^* **is the switching signal**
- default iff $\psi \geq \theta$

Model



- in games with **strategic complementarities**, players benefit from coordinated actions
- suppose creditors expect a **poor performance** from a bank
- if **information is precise** they infer that many other creditors received similar bad signals too
- expecting many others to run, each creditor is **more willing to run** as well

Key insight: **precise information helps creditors to coordinate on a bank run**

Good Times

Testable Implications

Proposition (*Amplification Effect*)

The impact of expectations on default risk is ***amplified*** *by more precise signals when beliefs lie in an intermediate range.*

$$\begin{aligned} \frac{dP(def)}{d\xi} &< 0 \\ \frac{d^2P(def)}{d\xi d\beta} &< 0 \qquad \textit{iff } \xi \in [\xi_{L\beta} \ , \ \xi_{H\beta}] \\ \frac{d^2P(def)}{d\xi d\alpha} &< 0 \qquad \textit{iff } \xi \in [\xi_{L\alpha} \ , \ \xi_{H\alpha}] \end{aligned} \tag{1}$$

Proposition (*Direct Effect*)

More precise signals ***increase*** *default risk when expectations are not favorable.*

$$\begin{aligned} \frac{dP(def)}{d\beta} &> 0 \qquad \textit{iff } \xi < \xi_{\beta} \\ \frac{dP(def)}{d\alpha} &> 0 \qquad \textit{iff } \xi < \xi_{\alpha} \end{aligned} \tag{2}$$

Data and Measurement

- Credit Default Swap (CDS) spreads from Markit to measure **default risk**
- **median** (ξ) and **standard deviation** (δ) of forecasts about each bank's future profitability are obtained from I/B/E/S
- banks' balance sheet data are obtained from Bankscope
- we observe 150 banks worldwide from 2005 to 2012 at monthly frequency

Empirical Strategy

Our baseline empirical model is

$$\begin{aligned} CDS_{j,t} = \rho CDS_{j,t-1} &+ \gamma_1 \mathbb{E}_t(ROA_{j,t+1})(Precise_{j,t}) + \\ &+ \gamma_2 \mathbb{E}_t(ROA_{j,t+1})(1 - Precise_{j,t}) + \\ &+ \gamma_3 \delta_{\mathbb{E}_{jt}} + \beta^\top x_{j,t-1} + \eta_j + \lambda_t + e_{j,t} \end{aligned}$$

where $Precise_{j,t} = \mathbb{1}(\delta_{\mathbb{E}_{jt}} \leq p(50)_t)$.

Hypotheses Testing:

- less dispersed beliefs **amplify** the reaction of default risk to forecasts ($\gamma_1 < \gamma_2 < 0$)
- less dispersed beliefs **increase** default risk ($\gamma_3 < 0$)

Empirical Strategy - Identification

Instrumenting current expectations:

- Fundamentals follow AR(1) : $\theta_t = a + b\theta_{t-1} + u_t$, a and b unknown
- Bayes Rule $\Rightarrow E_t[\theta_{t+1}] = a_{t-1} + b_{t-1}\theta_t + \kappa_t FE_t = \sum_{j=0}^{\infty} \kappa_{t,j} FE_{t-j}$
  - Forecast Error $FE_t \equiv \theta_t - E_{t-1}\theta_t$
- $E_t[\theta_{t+1}] \approx \sum_{j=0}^{\infty} \kappa_j FE_{t-j}$ 1st Stage More Details

Instrumenting dispersion of beliefs:

- assume the variance of u_t (ν^2) is also unknown, with diffuse priors
- $E_t[\nu^2] = \frac{t-1}{t} E_{t-1}[\nu^2] + \frac{1}{t}\hat{u}_t^2$
- $\delta_{\mathbb{E}_t}$ depends on variance of both u_t (ν^2) and private signals

Empirical Strategy - Identification

Empirical Specification:

$$\begin{aligned} CDS_{j,t} = \rho CDS_{j,t-1} &+ \gamma_1 \mathbb{E}_t(ROA_{j,t+1})(Precise_{j,t}) + \\ &+ \gamma_2 \mathbb{E}_t(ROA_{j,t+1})(1 - Precise_{j,t}) + \\ &+ \gamma_3 \delta_{\mathbb{E}_{j,t}} + \beta^\top x_{j,t-1} + \eta_j + \lambda_t + e_{j,t} \end{aligned}$$

Endogeneity: $E[\mathbb{E}_t(ROA_{j,t+1})e_{j,t}] \neq 0$ and $E[\delta_{jt}e_{j,t}] \neq 0$

Identification:

- assume $\{FE_{j,t-k}\ ,\ \delta_{jt-k}\ ,\ \mathbb{E}_{t-k}(ROA_{j,t-k+1})\}\ \forall k > 0$ correctly excluded from 2^{nd} stage
- if $e_{j,t}$ serially uncorrel. (testable) the orthogonality conditions hold:
  - $E[e_{jt}FE_{jt-k}] = 0\ ,\ E[e_{jt}\delta_{jt-k}] = 0\ ,\ E[e_{jt}\mathbb{E}_{t-k}(ROA_{j,t-k+1})] = 0$
- identification then requires the instruments to be meaningfully correlated with the endogenous regressors

Results - Amplification Effect

Dependent variable: CDS spread. Sample: Sep 2007 - Dec 2012.

	Precise if $\delta < p(50)$		Precise if $\delta < p(33)$	
	(1)	(2)	(3)	(4)
$\mathbb{1}(\text{Pre}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-9.498**	-26.37***	-11.49**	-25.09***
	[4.772]	[7.515]	[5.336]	[8.516]
$\mathbb{1}(\text{Impr}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-7.492**	-11.53*	-7.455**	-10.33*
	[3.497]	[5.894]	[3.496]	[5.737]
$\delta_{\mathbb{E}_{i,t}}$	-1.282	-11.66**	-1.304	-10.71*
	[2.085]	[5.874]	[2.081]	[5.668]
Bank + Time FE	yes	yes	yes	yes
IV	no	yes	no	yes
# obs.	3343	3052	3343	3052
R^2	0.881	0.880	0.881	0.880
p-val of Hansen stat		0.832		0.502
p-val of Underid. test		0.000		0.000
Kleibergen-Paap F stat		24.76		35.48
p-val of Godfrey test		0.278		0.241

Precise Information:

- amplifies the reaction of default risk to market forecasts $(\gamma_1 < \gamma_2)$
- carries a **multiplier** of 2.5 $(\gamma_1/\gamma_2 \approx 2.5)$

Results - Direct Effect

Dependent variable: CDS spread. Sample: Sep 2007 - Dec 2012.

	Bad_t: $\mathbb{E}_t(\text{ROA}_{i,t+1}) < p(25)$ (1)	Bad_t: $\mathbb{E}_t(\text{ROA}_{i,t+1}) < p(10)$ (2)
$\mathbb{1}(\text{Bad}_t)\delta_{\mathbb{E}_{i,t}}$	-104.89***	-201.04**
	[40.00]	[84.46]
$\mathbb{1}(\text{Good}_t)\delta_{\mathbb{E}_{i,t}}$	-7.952	-12.00**
	[4.965]	[5.597]
$\mathbb{1}(\text{Pre}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-36.07***	-33.78***
	[10.47]	[11.30]
$\mathbb{1}(\text{Impr}_t)\mathbb{E}_t(\text{ROA}_{t+1})$	-20.49**	-18.91*
	[9.058]	[10.05]
Bank + Time FE	yes	yes
IV	yes	yes
# obs	2967	2998
R^2	0.881	0.883
p-val of Hansen stat	0.992	0.988
p-val of Underid. test	0.000	0.000
Kleibergen-Paap F stat	17.55	22.58
p-val of Godfrey test	0.883	0.323

- **less dispersion increases default risk** $(\gamma_3 << 0)$
- consistent with our model, not with "Jensen Inequality" models
- information sensitivity of debt

Model - Qualitative Assessment

Table 11: $P\left(\frac{dP(def)}{d\beta} > 0\right)$

		λ			
		0.5	0.7	0.9	0.95
	0.5	0	0.22	0.99	0.99
z	0.7	0	0.99	0.99	0.99
	0.9	0	0.99	0.99	0.99
	0.95	0	0.99	0.99	0.99

Table 12: $P\left(\frac{dP(def)}{d\alpha} > 0\right)$

		λ			
		0.5	0.7	0.9	0.95
	0.5	0	0	0.05	0.06
z	0.7	0	0	0.29	0.31
	0.9	0	0.31	0.69	0.69
	0.95	0	0.55	0.77	0.77

Table 13: $P\left(\frac{d^2P(def)}{d\xi d\beta} < 0\right)$

		λ			
		0.5	0.7	0.9	0.95
	0.5	0.01	0.12	0.56	0.56
z	0.7	0.01	0.75	0.86	0.86
	0.9	0.02	0.92	0.86	0.86
	0.95	0.02	0.89	0.81	0.81

Table 14: $P\left(\frac{d^2P(def)}{d\xi d\alpha} < 0\right)$

		λ			
		0.5	0.7	0.9	0.95
	0.5	0	0	0.47	0.58
z	0.7	0	0	0.91	0.87
	0.9	0	0.91	0.82	0.86
	0.95	0	0.59	0.76	0.80

Table 15: $P\left(\frac{d^2P(def)}{d\xi dz} < 0\right)$

		λ			
		0.5	0.7	0.9	0.95
	0.5	0.99	0.99	0.95	0.94
z	0.7	0.99	0.99	0.71	0.70
	0.9	0.99	0.70	0.31	0.31
	0.95	0.99	0.49	0.23	0.22

Table 16: P(Default)

		λ			
		0.5	0.7	0.9	0.95
	0.5	0.01	0.02	0.16	0.18
z	0.7	0.01	0.04	0.37	0.38
	0.9	0.01	0.38	0.62	0.62
	0.95	0.01	0.51	0.67	0.68

Conclusions

We have established **two new results**:

- the sensitivity of default risk to market expectations is **amplified** by **more precise** information
  - precise information raises banks' vulnerability by more than standard measures of banks' fragility
- **less dispersion** of beliefs largely **increases** default risk, especially when forecasts are not favorable

Policy implications:

- more transparency during financial turmoil may harm less profitable banks
- less transparency during panics can reduce fragility
  Gorton (1985) on U.S. clearinghouses

Thank you!

Additional Results - Amplification Effect

Dependent variable: CDS spread. Sample: Sep 2007 - Dec 2012.

	Fragility		
	Leverage	Customer dep.	Interbank
	(1)	(2)	(3)
$\mathbb{1}(\text{Fragile}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-17.62***	-13.91**	-13.75**
	[6.742]	[6.417]	[5.721]
$\mathbb{1}(\text{Sound}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-6.065	-10.09*	-8.284
	[6.085]	[5.190]	[6.095]
$\delta_{\mathbb{E}_{i,t}}$	-12.25**	-7.517	-9.546*
	[5.261]	[5.213]	[5.383]
# obs	3017	3017	3017
R^2	0.880	0.879	0.880
p-val of Hansen stat	0.646	0.532	0.612
p-val of Underid. test	0.000	0.000	0.000
Kleibergen-Paap F statistic	20.77	46.53	88.67
p-val of Godfrey test	0.282	0.344	0.342

Measures of fragility:

- carry **multipliers** ranging from 1.3 to 2.8
- these multipliers are never different from 1 at 5% confidence level

Additional Results - Amplification Effect

Dependent variable: CDS spread. Sample: Sep 2007 - Dec 2012.

	Fragility		
	Leverage	Customer dep.	Interbank
	(1)	(2)	(3)
$\mathbb{1}(\text{Fragile}_t, \text{Pre}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-36.63***	-36.86***	-30.88***
	[10.02]	[10.88]	[10.48]
$\mathbb{1}(\text{Fragile}_t, \text{Impr}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-10.47	-6.750	-7.813
	[7.781]	[7.620]	[6.826]
$\mathbb{1}(\text{Sound}_t, \text{Pre}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-15.75**	-14.26*	-14.10*
	[6.961]	[7.972]	[8.188]
$\mathbb{1}(\text{Sound}_t, \text{Impr}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-8.396	-5.084	-4.000
	[6.516]	[6.116]	[6.950]
$\delta_{\mathbb{E}_{i,t}}$	-12.47**	-10.77*	-11.41*
	[6.252]	[6.065]	[6.058]
Bank + Time FE	yes	yes	yes
IV	yes	yes	yes
# obs.	3017	3052	3052
R^2	0.880	0.880	0.881
p-val of Hansen stat	0.520	0.736	0.740
p-val of Underid. test	0.000	0.000	0.000
Kleibergen-Paap F stat	12.36	20.53	24.32
p-val of Godfrey test	0.365	0.357	0.352

- precise info: **conditional multipliers** range from 3.5 to 5.5
- fragility measures: **conditional multipliers** range from 2 to 2.5
- all significantly different from 1 at 5% confidence level

Additional Material - More on the Model

Information structure and Timing:

- Stage 1:
  - common prior $\theta \sim \mathcal{N}(y, 1/\alpha)$
  - private signals $x_i = \theta + \varepsilon_i$ where $\varepsilon_i \sim \mathcal{N}(0, 1/\beta)$
  - posterior beliefs $\xi_i \sim \mathcal{N}\left(\frac{\alpha y + \beta x_i}{\alpha+\beta}, \frac{1}{\alpha+\beta}\right)$
  - creditors decide whether to roll over or foreclose the loan
- Stage 2:
  - $\tau \sim \mathcal{N}(0, 1/\gamma)$ is realized and the bank defaults if $zl \geq \theta + \tau$

Equilibrium is a couple (x^*, ψ) such that:

- creditor forecloses iff $x_i < x^*$ which implies that $l = \Phi(\sqrt{\beta}(x^* - \theta))$
- bank defaults if $\psi \geq \theta + \tau$, where ψ is the equilibrium size of the attack

Additional Material - More on the Model

- Find ψ for a given x^*:
  - at stage 1 there is a critical level of θ that in expectation makes the bank indifferent between defaulting or not

$$0 = \mathbb{E}[\theta + \tau - z\Phi(\sqrt{\beta}(x^* - \theta)) \mid \theta] = \theta - z\Phi(\sqrt{\beta}(x^* - \theta)) \tag{3}$$

  - this critical level of θ is the fixed point ψ of (3):

$$\psi = z\Phi(\sqrt{\beta}(x^* - \psi)) \tag{4}$$

- Find x^* for a given ψ:
  - creditor receiving x^* is indiff between rolling over and foreclosing the loan:

$$\lambda = Pr(\theta + \tau > \psi \mid x^*) = 1 - \Phi\left(\frac{\sqrt{\gamma(\alpha+\beta)}}{\sqrt{\alpha+\beta+\gamma}}(\psi - \xi^*)\right) \tag{5}$$

  - rearranging (5) yields

$$x^* = \frac{\alpha+\beta}{\beta}\left(\psi + \Phi^{-1}(\lambda)\frac{\sqrt{\alpha+\beta+\gamma}}{\sqrt{\gamma(\alpha+\beta)}}\right) - \frac{\alpha}{\beta}y \tag{6}$$

- Combining (4) and (6) implicitly determines ψ:

$$\psi = z\Phi\left(\frac{\alpha}{\sqrt{\beta}}(\psi - y) + \frac{\sqrt{\alpha+\beta}\sqrt{\alpha+\beta+\gamma}}{\sqrt{\beta\gamma}}\Phi^{-1}(\lambda)\right) \tag{7}$$

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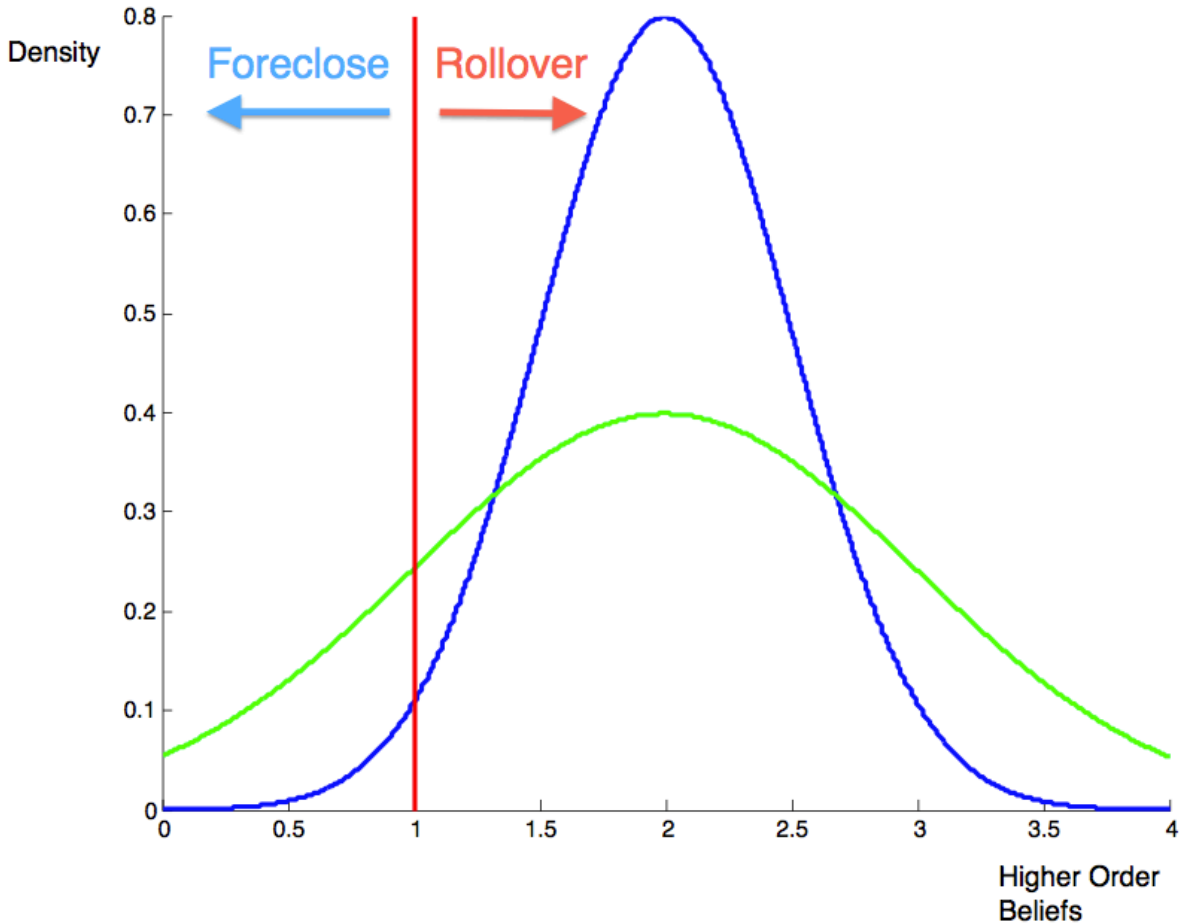
Additional Material - Figures

Figure: Good Forecasts and Dispersion



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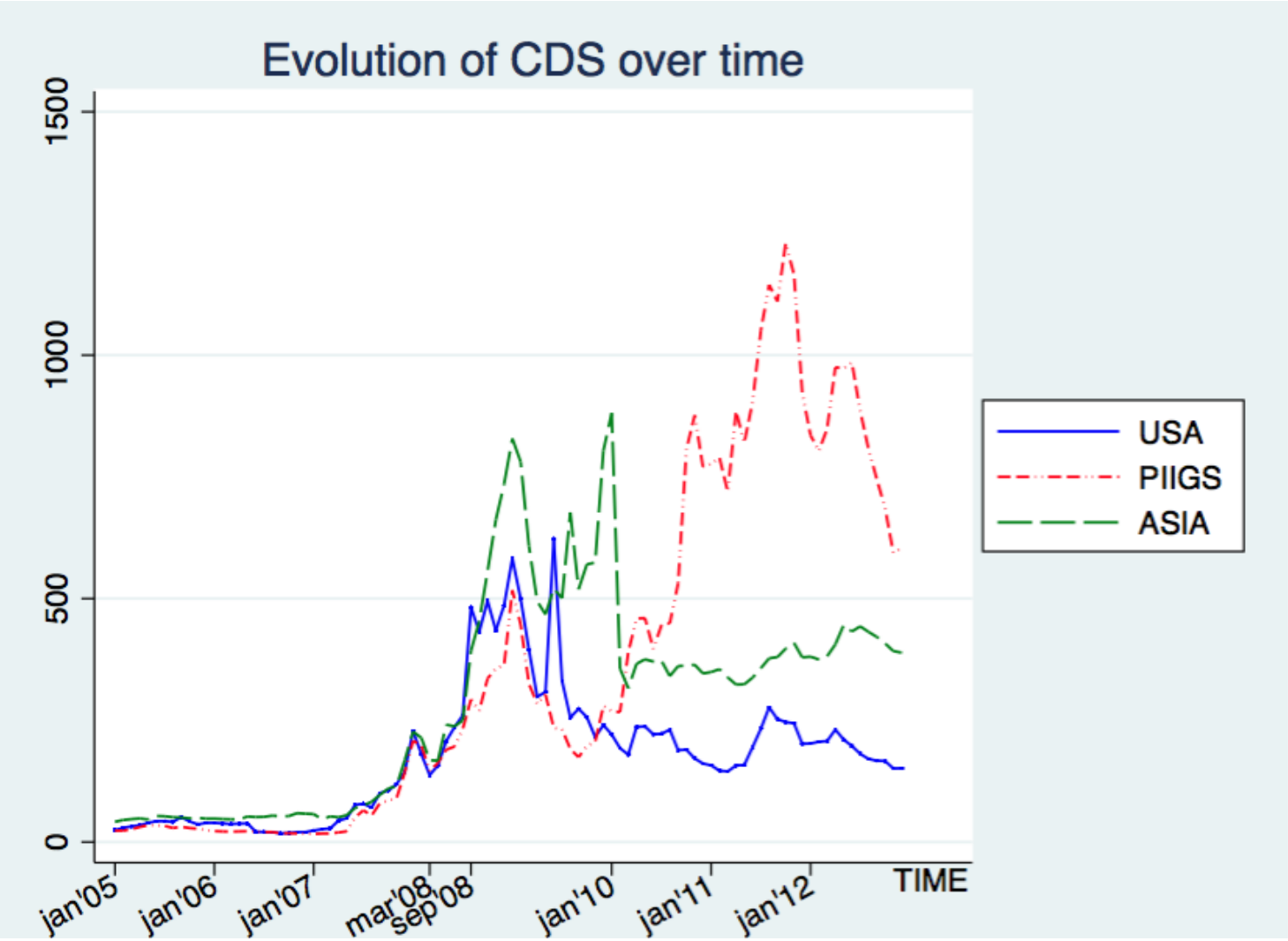
Additional Material - Graphs



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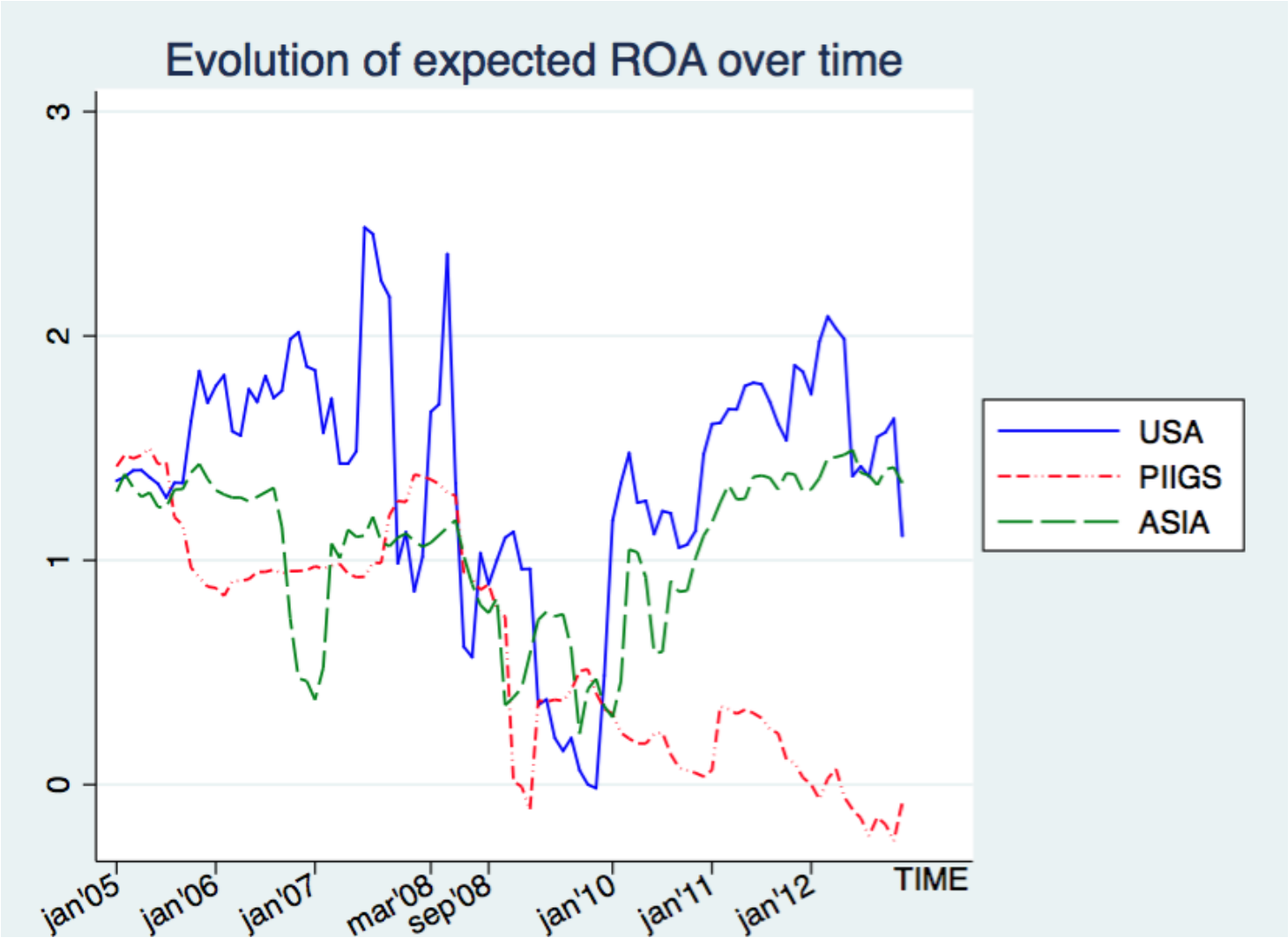
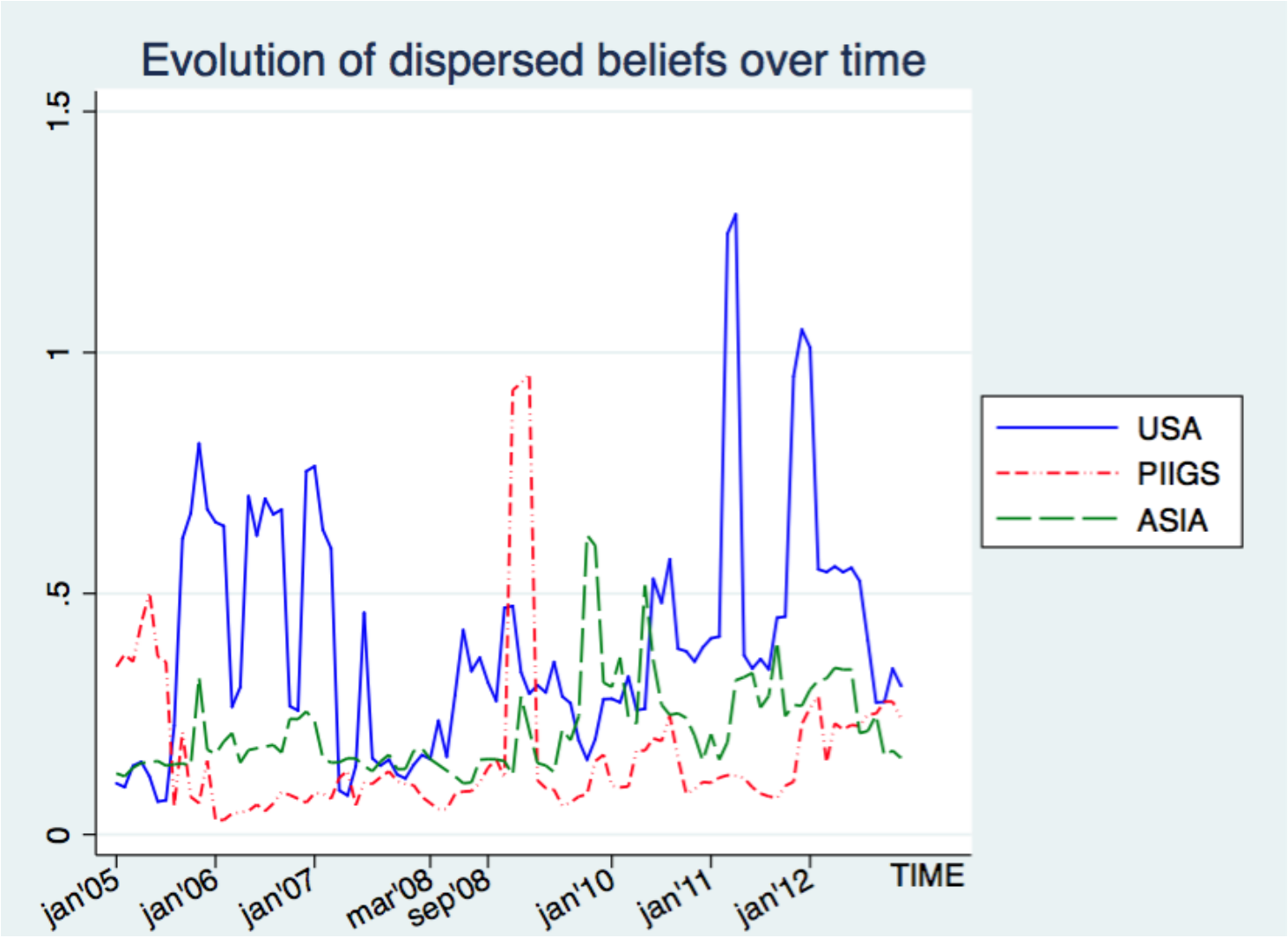


Additional Material - Graphs



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Additional Material - Pseudo First Stage

	$\mathbb{E}_t(\text{ROA}_{i,t+1})$ (1)	$\delta_{\mathbb{E}_{i,t}}$ (2)
Crisis		
$\mathbb{E}_{t-1}(\text{ROA}_{i,t})$	0.801*** [0.021]	
FE_{t-1}	0.0648** [0.028]	-0.0849*** [0.027]
$\delta_{\mathbb{E}_{i,t-1}}$		0.649*** [0.117]
FE^2_{t-1}		0.00344 [0.005]
Pre-crisis		
$\mathbb{E}_{t-1}(\text{ROA}_{i,t})$	0.909*** [0.087]	
FE_{t-1}	0.275* [0.152]	-0.102*** [0.029]
$\delta_{\mathbb{E}_{i,t-1}}$		0.715*** [0.099]
FE^2_{t-1}		0.00823*** [0.003]
Bank + Time FE	yes	yes
# obs.	4551	3688
R^2	0.83	0.72

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Additional Material - Bayesian Learning

Forecast Errors as Valid Instruments:

- Fundamentals follow AR(1) : $\theta_t = a + b\theta_{t-1} + u_t$, a and b unkwown
- Prior $\phi_0' = (a_0 \ b_0) \sim N(\mu_0, \Omega_0)$
- $\theta_t \mid \Theta_{t-1}, \phi_{t-1} \sim N(a_{t-1} + b_{t-1}\theta_{t-1}, \nu^2)$
- Bayes Rule $\Rightarrow f(\phi \mid \Theta_t) = N(\mu_t, \Omega_t)$, where
  - $\mu_t = \Omega_t \left(\Omega_0^{-1}\phi_0 + \nu^{-2}(Z_t'\Theta_t)\right)$
  - $\Omega_t = \left(\Omega_0^{-1} + \nu^{-2}(Z_t'Z_t)\right)^{-1}$
  - where $z_t = (1 \ \theta_{t-1})'$
- $E_t\theta_{t+1} = z_{t+1}'\mu_t = z_{t+1}'\mu_{t-1} + z_{t+1}'\Omega_t\nu^{-2}z_t(\theta_t - z_t'\mu_{t-1})$
  - $\theta_t - z_t'\mu_{t-1}$ is last period's forecast error

Additional Material - Bayesian Learning

Forecast Errors as Valid Instruments:

- $E_t\theta_{t+1} = z'_{t+1}\sum_{j=0}^{\infty}\Omega_{t-j}\nu^{-2}z_{t-j}(\theta_{t-j} - z'_{t-j}\mu_{t-j-1})$
- take a linear approximation around its **unbiased stochastic** steady state
- $dE_t\theta_{t+1} \approx \sum_{j=0}^{\infty}\bar{c}_{-j}df e_{t-j} + \sum_{j=0}^{\infty}dc_{t-j}\bar{fe}$
  - $fe_{t-j} \equiv (\theta_{t-j} - z'_{t-j}\mu_{t-j-1})$
  - $c_{t-j} \equiv z'_{t+1}\Omega_{t-j}\nu^{-2}z_{t-j}$
- $dE_t\theta_{t+1} \approx \sum_{j=0}^{\infty}\bar{c}_{-j}df e_{t-j}$

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Additional Material - Before the Crisis

Dependent variable: CDS spread. Sample: Jan 2005 - Aug 2007.

	Bad_t: $\mathbb{E}_t(\text{ROA}_{i,t+1}) < p(25)$		Bad_t: $\mathbb{E}_t(\text{ROA}_{i,t+1}) < p(10)$	
	(1)	(2)	(3)	(4)
$\mathbb{1}(\text{Bad}_t)\delta_{\mathbb{E}_{i,t}}$	1.708	2.173	-3.038	-25.92**
	[4.171]	[9.672]	[3.943]	[12.81]
$\mathbb{1}(\text{Good}_t)\delta_{\mathbb{E}_{i,t}}$	-3.259	-8.737	1.091	23.2*
	[6.824]	[9.998]	[5.935]	[13.80]
$\mathbb{1}(\text{Pre}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	2.576	2.276	1.599	-3.762
	[1.642]	[4.166]	[1.716]	[4.080]
$\mathbb{1}(\text{Impr}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	2.904*	2.387	1.734	-5.388
	[1.533]	[3.402]	[1.708]	[3.363]
Bank + Time FE	yes	yes	yes	yes
IV	no	yes	no	yes
# obs	581	444	581	444
R^2	0.832	0.838	0.832	0.829
p-val of Hansen stat		0.757		0.877
p-val of Underid. test		0.324		0.011
Kleibergen-Paap F stat		1.138		2.874
p-val of Godfrey test		0.668		0.148

- before the crisis, debt is less informationally sensitive
- for favorable forecasts, **more dispersion increases default risk**

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Additional Material - Before and During the Crisis

Dependent variable: CDS spread. Sample: Jan 2005 - Dec 2012.

	Fragility		
	Leverage	Customer dep.	Interbank
	(1)	(2)	(3)
Crisis			
$\mathbb{1}(\text{Fragile}_t, \text{Pre}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-39.50***	-36.82***	-28.71***
	[10.36]	[10.27]	[9.169]
$\mathbb{1}(\text{Fragile}_t, \text{Impr}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-9.903	-10.59	-10.96*
	[8.073]	[6.516]	[6.028]
$\mathbb{1}(\text{Sound}_t, \text{Pre}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-15.60**	-13.95**	-15.79**
	[6.718]	[6.852]	[7.273]
$\mathbb{1}(\text{Sound}_t, \text{Impr}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-7.900	-7.352	-7.416
	[6.074]	[5.163]	[5.866]
$\delta_{\mathbb{E}_{i,t}}$	-11.61*	-9.795*	-10.82*
	[6.187]	[5.905]	[5.915]
Pre-crisis			
$\mathbb{1}(\text{Fragile}_t, \text{Pre}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-50.06***	-32.88**	-21.25**
	[16.12]	[13.39]	[9.771]
$\mathbb{1}(\text{Fragile}_t, \text{Impr}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-17.01*	-23.47**	-5.637
	[9.003]	[11.50]	[6.125]
$\mathbb{1}(\text{Sound}_t, \text{Pre}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	-5.827	1.901	-6.591
	[6.467]	[8.047]	[8.121]
$\mathbb{1}(\text{Sound}_t, \text{Impr}_t)\mathbb{E}_t(\text{ROA}_{i,t+1})$	0.497	4.657	-2.566
	[5.481]	[5.600]	[6.974]
$\delta_{\mathbb{E}_{i,t}}$	-45.89	18.09	-4.761
	[28.75]	[23.46]	[20.31]
Bank + Time FE	yes	yes	yes
IV	yes	yes	yes
# obs.	3552	3552	3552
R^2	0.903	0.903	0.903
p-val of Hansen stat	0.427	0.350	0.335
p-val of Underid. test	0.000	0.000	0.000
Kleibergen-Paap F stat	12.21	11.45	12.75
p-val of Godfrey test	0.243	0.269	0.275
	Tests (p-values)		
Pre-crisis: $\mathbb{1}(\text{Fragile}_t, \text{Pre}_t) = \mathbb{1}(\text{Fragile}_t, \text{Impr}_t)$	0.003	0.378	0.079
Pre-crisis: $\mathbb{1}(\text{Fragile}_t, \text{Pre}_t) = \mathbb{1}(\text{Sound}_t, \text{Pre}_t)$	0.001	0.014	0.148
$\mathbb{1}(\text{After,Frag}_t, \text{Pre}_t) = \mathbb{1}(\text{Before,Frag}_t, \text{Pre}_t)$	0.525	0.784	0.505