

Lending Concentration, Bank Performance and Systemic Risk: Exploring cross-country variation

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Importance of credit risk (concentration)

- Historical experience shows that concentration of credit risk in asset portfolios has been one of the major causes of bank distress.
- This is true both for individual institutions as well as banking systems at large.
 - According to a 2004 Basel committee study, credit concentration caused nine of the 13 major banking system crises around the world in the twentieth century. (*BIS Studies on credit risk concentration: an overview of the issues and a synopsis of the results from the Research Task Force project*)
 - Post 2004: subprime mortgages, sovereign debt,
- Sources of credit risk concentration:
 - Single name concentration, overexposures to certain asset classes, regional exposures, sectoral exposures,

Sectoral concentration matters!

- Hand-collected data of sectoral exposure data based on annual reports
- Banks active in 2013; publicly traded; total assets > 10b USD;
- 317 banks across 57 countries; for 2007 to 2011

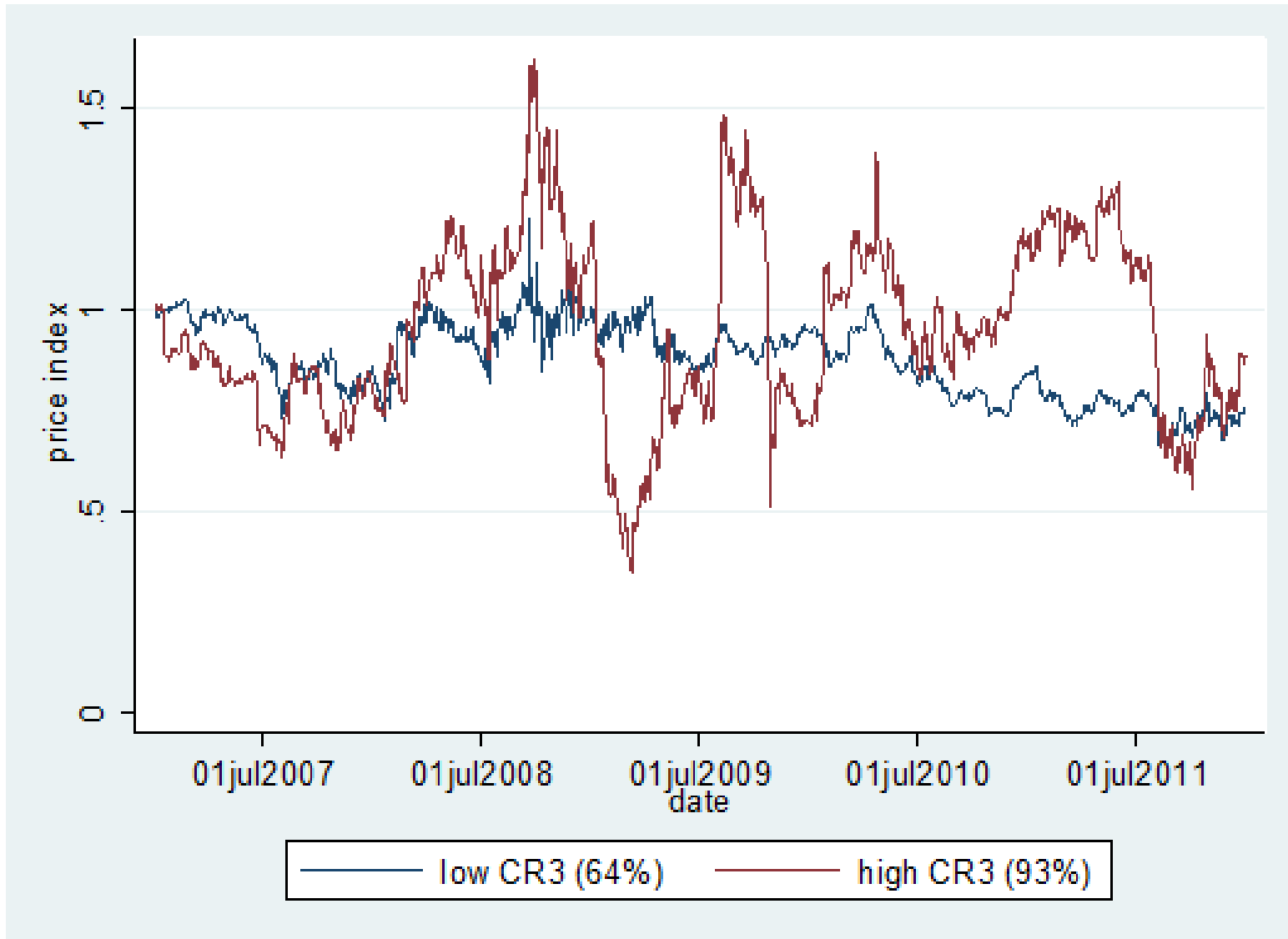
Panel A: Sectoral Allocation of Corporate Loans

variable	mean	sd	p5	p50	p95
S1 "Agriculture, Forestry and Fishing"	0.023	0.042	0.000	0.006	0.100
S2 "Mining & Construction"	0.070	0.069	0.000	0.055	0.215
S3 "Manufacturing"	0.165	0.112	0.019	0.146	0.374
S4 "Transportation, communication, Electric, Gas and Sanitary service"	0.083	0.079	0.000	0.059	0.239
S5 "Wholesale trade and Retail trade"	0.136	0.103	0.000	0.118	0.346
S6 "Finance and Insurance"	0.091	0.108	0.000	0.051	0.319
S7 "Real estate"	0.129	0.140	0.000	0.095	0.441
S8 "Services"	0.109	0.101	0.000	0.094	0.314
S9 "Public administration"	0.044	0.076	0.000	0.009	0.183
S10 "Other industries"	0.149	0.164	0.000	0.091	0.466

Panel B: Sectoral Specialization Indicators

	mean	sd	p5	p50	p95
Dispersion (accounting)	0.113	0.037	0.068	0.105	0.184
Sectoral CR3	0.697	0.125	0.529	0.674	0.961
Sectoral HHI	0.227	0.088	0.142	0.199	0.404
Differentiation (accounting)	0.263	0.136	0.090	0.240	0.547

Sectoral concentration affects performance



Sectoral concentration affects performance

Correlation between performance measures and Sectoral Specialization Indicators based on Accounting Data (small sample: 1392 obs.)

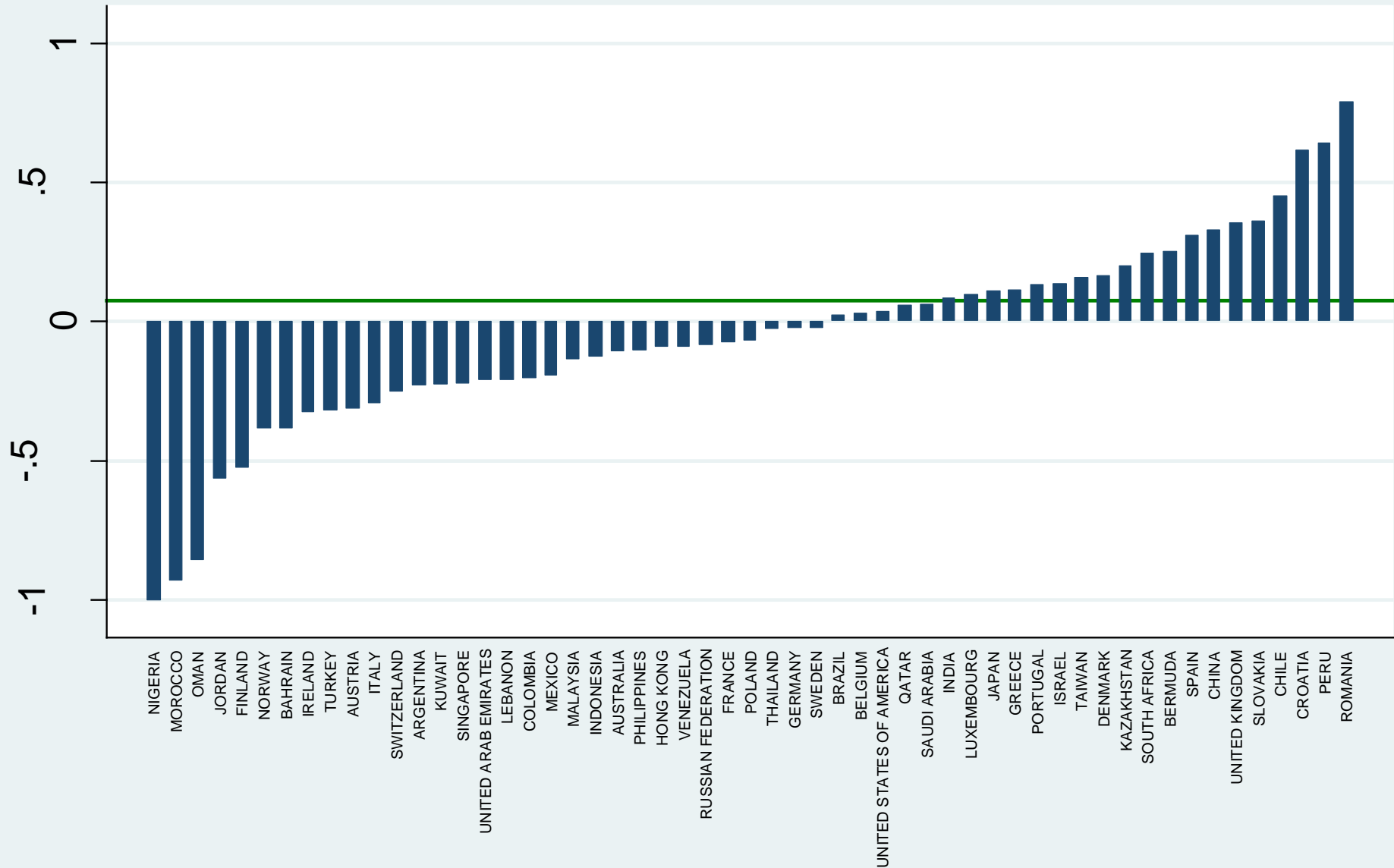
Variables	B1	B2	B3	B4	B5	B6	B7	B8
Return (=B1)	1.000							
Volatility (=B2)	-0.327 (0.000)	1.000						
Franchise Value (=B3)	-0.082 (0.002)	0.066 (0.013)	1.000					
MES (=B4)	-0.406 (0.000)	0.746 (0.000)	0.109 (0.000)	1.000				
Dispersion (accounting) (=B5)	-0.008 (0.752)	0.060 (0.025)	0.073 (0.007)	0.094 (0.000)	1.000			
Sectoral CR3 (=B6)	-0.003 (0.896)	0.068 (0.011)	0.080 (0.003)	0.080 (0.003)	0.923 (0.000)	1.000		
Sectoral HHI (=B7)	-0.012 (0.646)	0.054 (0.044)	0.069 (0.010)	0.097 (0.000)	0.983 (0.000)	0.875 (0.000)	1.000	
Differentiation (accounting) (=B8)	-0.051 (0.056)	0.099 (0.000)	0.202 (0.000)	0.109 (0.000)	0.586 (0.000)	0.569 (0.000)	0.606 (0.000)	1.000

Related literature

- Two opposing theories:
 - Diversification benefits, according to traditional portfolio theory
 - Benefits of specialization: better screening and monitoring capacity leads to lower default risk, ex-ante and ex-post (Winton, 2000)
- Empirical evidence:
 - country-specific papers based on credit registries (or other proprietary datasources)
 - Germany: Duellmann and Maschelein (2007), Hayden et al. (2007), Boeve et al. (2010), Jahn et al. (2014)
 - Brazil: Tabak et al., 2011)
 - Italy: Acharya et al. (2006)
- Absolute and relative specialization (or herding)
 - (Limited) Multiple-country work with syndicated lending data (not cross-country!)
 - Cai, Saunders and Steffen, 2013

Corr(Sector-CR3 , Total Volatility) by Country

317 banks across 57 countries; for 2007 to 2011



This paper: two contributions

- 1. (How) Does the lending concentration-performance relationship vary across countries, banks and over time?**
 - Rationalize/reconcile different results in literature?
 - Sectoral concentration only covered in second, not first pillar of Basel 2 (3)
 - Supervising/regulating concentration?
 - Different best practice (given constraints) for single-country supervisors
 - Flexibility for cross-country supervisors
- 2. Caveat: data!**
 - Cross-country data on banks' sectoral exposures (accounting data)
 - Compute sectoral exposure with stock return data

Measuring banks' sectoral exposures

Our initial approach

- **Account-based measures of sectoral concentration:**
 - Banks active in 2013; publicly traded; total assets > 10b USD;
 - 317 banks across 57 countries; for 2007 to 2011
 - Sectoral exposure data based on annual reports

Limitations

- Some subjective calls on assigning lending
- Large scope for sample selection issues
- Most importantly: ignores hedging of credit risk or other non-lending sectoral exposures

(Credit) Risk Concentration

(from Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework - Comprehensive Version)

- Risk concentrations can arise in a bank's assets, liabilities, or off-balance sheet items..., or through a combination of exposures across these broad categories.
- Concentration risk arises in both direct exposures to obligors and may also occur through exposures to protection providers.
- Credit risk concentrations are based on common or correlated risk factors, which have an adverse effect on the creditworthiness of each of the individual counterparties making up the concentration.

Our approach: a factor model

Return-based indicators of sectoral specialization

$$r_{i,t} = c + \beta r_t^M + \sum_{s=1}^S \beta^s r_t^s + \varepsilon_t^i$$

- (i) Return-based style analysis
 - (i) Mutual funds and hedge funds
 - (ii) Agarwal and Naik (RFS, 2004)

- (ii) Deviation from ASRF (Basel II)

- (iii) Similar to Acharya and Steffen (JFE, 2014)
 - banks' exposure to GIPSI debt and German debt

Return-based measures of sectoral concentration

- Our sample
 - 2,005 listed banks across 77 countries; 2002 to 2011
 - 12,689 bank-year observations
 - Sectoral exposure data based on return data
- Our indicators
 - Significant sectoral factors (t-stat $>$ one)
 - Sectoral contribution to R²
 - Dispersion of factors (SD in betas)
 - Differentiation – Euclidean distance between a bank's estimated exposures and country average

An out-of-sample interludium: S&P500

- Are banks/financials different? Which factors to include?

	adj R2 (market)	adj R2 (full)	Δ adjR2 +finance	Δ adjR2 +own	Δ adjR2 +FF	Δ adjR2 + sectors	I(Δ adjR2>0) w/wo sectors	F-test (5%) sectors
(1) Oil & Gas	0.26	0.53	0.05	0.15	0.02	0.05	0.95	0.84
(2) Basic Materials	0.30	0.45	0.02	0.03	0.03	0.07	0.99	0.88
(3) Industrials	0.28	0.41	0.01	0.01	0.03	0.08	0.97	0.86
(4) Consumer Goods	0.18	0.31	0.01	0.01	0.03	0.08	0.96	0.86
(5) Health Care	0.18	0.32	0.01	0.09	0.02	0.03	0.87	0.53
(6) Consumer Services	0.20	0.36	0.01	0.10	0.02	0.03	0.90	0.61
(7) Telecommunications	0.21	0.33	0.00	0.02	0.02	0.08	0.97	0.80
(8) Utilities	0.20	0.43	0.01	0.12	0.03	0.08	0.96	0.86
(9) Technology	0.24	0.43	0.03	0.13	0.01	0.02	0.89	0.54
(10) Financials	0.27	0.44	0.03	0.00	0.05	0.09	0.98	0.89
All S&P500 firms	0.23	0.40	0.02	0.06	0.03	0.06	0.94	0.77

An out-of-sample interludium: S&P500

- Impact on estimated sectoral exposures when FF factors are (not) included

Correlation between sectoral factor exposures with and without FF (winsor 0.5%)										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Oil & Gas	.94	.94	.95	.95	.89	.93	.92	.94	.93	.93
(2) Basic Materials	.95	.96	.95	.94	.9	.94	.92	.93	.94	.9
(3) Industrials	.96	.95	.97	.95	.94	.96	.95	.94	.95	.84
(4) Consumer Goods	.94	.93	.95	.94	.93	.97	.93	.93	.94	.83
(5) Health Care	.96	.96	.96	.97	.93	.95	.94	.94	.93	.67
(6) Consumer Services	.97	.96	.97	.96	.95	.98	.96	.95	.96	.82
(7) Telecommunications	.96	.96	.96	.96	.94	.96	.97	.96	.93	.78
(8) Utilities	.87	.88	.94	.92	.93	.92	.87	.98	.93	.81
(9) Technology	.96	.92	.95	.96	.92	.95	.95	.95	.95	.93
(10) Financials	.93	.85	.9	.88	.91	.94	.9	.9	.9	.75

Bank sample:

Return-based indicators of sectoral specialization

variable	mean	sd	p5	p50	p95
1= Oil & gas (OILGS)	0.002	1.012	-1.445	-0.011	1.498
2= Basic materials (BMATR)	-0.006	0.856	-1.229	0.014	1.092
3= Industrials (INDUS)	0.008	0.587	-0.788	0.000	0.843
4= Consumer goods (CNSMG)	0.005	0.647	-0.904	0.004	0.890
5= Healthcare (HLTHC)	-0.007	0.740	-1.132	-0.004	1.106
6= Consumer services (CNSMS)	0.006	0.612	-0.876	0.007	0.875
7= Telecommunications (TELCM)	-0.009	0.469	-0.757	-0.001	0.694
8= Utilities (UTILS)	0.021	0.443	-0.631	0.025	0.652
9= Technology (TECNO)	0.009	0.957	-1.361	-0.000	1.384
10= Financials(FINAN)	0.095	0.308	-0.235	0.038	0.604

Panel C: Sectoral Specialization Indicators based on Factor Loadings

	mean	sd	p5	p50	p95
Significant Sectoral Factors	3.956	3.117	0.000	3.000	9.000
Sectoral Contribution to R ²	0.076	0.061	0.016	0.053	0.214
Dispersion (factors)	0.315	0.221	0.082	0.257	0.774
Differentiation (factors)	1.434	1.286	0.299	1.034	4.021

Note: 12689 observations, on 2005 banks from 77 countries, 2002-2011

Sector specialization and performance: pairwise correlations

Correlation between performance measures and Sectoral Specialization Indicators based on Factor Loadings (large sample: 12634 obs.)

Variables	A1	A2	A3	A4	A5	A6	A7	A8
Return (=A1)	1.000							
Volatility (=A2)	-0.398 (0.000)	1.000						
Franchise Value (=A3)	0.071 (0.000)	-0.212 (0.000)	1.000					
MES (=A4)	-0.269 (0.000)	0.406 (0.000)	-0.146 (0.000)	1.000				
Significant Sectoral Factors (=A5)	0.010 (0.247)	0.026 (0.004)	-0.001 (0.918)	0.129 (0.000)	1.000			
Sectoral Contribution to R ² (=A6)	-0.036 (0.000)	-0.011 (0.220)	-0.034 (0.000)	0.378 (0.000)	0.289 (0.000)	1.000		
Dispersion (factors) (=A7)	-0.065 (0.000)	0.437 (0.000)	-0.168 (0.000)	0.229 (0.000)	0.507 (0.000)	0.205 (0.000)	1.000	
Differentiation (factors) (=A8)	-0.093 (0.000)	0.330 (0.000)	-0.114 (0.000)	0.049 (0.000)	0.413 (0.000)	-0.017 (0.053)	0.777 (0.000)	1.000

Sector specialization and performance: regression set-up

$$Performance_{i,j,t} = \beta_1 \cdot Specialization_{i,t-1} + X_{i,t-1} \beta_{controls} + u_i + v_{j,t} + \varepsilon_{i,t}$$

- Explanatory variables lagged by one period, Bank and country-year fixed effects, Standard errors clustered at bank-level
- No positive effect of specialization on banks' returns
- More specialized banks have higher stock return volatility
- More specialized banks have lower franchise value
- More specialized banks have higher MES
- AND: robust to cutting the sample across the median of :
 - corporate loan share
 - Trading income

Lending specialization and bank performance – return-based indicators

Return

	Significant Sectoral Factors	Sectoral Contribution to R ²	Dispersion (factors)	Differentiation (factors)
Coeff	-0.010	-2.195***	-0.027	0.069
t-statistic	-0.028	-3.418	-0.050	0.143
Observations	12639	12639	12639	12638
Adjusted R-squared	0.555	0.556	0.555	0.555

Volatility

	Significant Sectoral Factors	Sectoral Contribution to R ²	Dispersion (factors)	Differentiation (factors)
Coeff	0.106	-0.095	2.624***	1.884***
t-statistic	0.695	-0.339	9.507	7.262
Observations	12639	12639	12639	12638
Adjusted R-squared	0.712	0.712	0.719	0.716

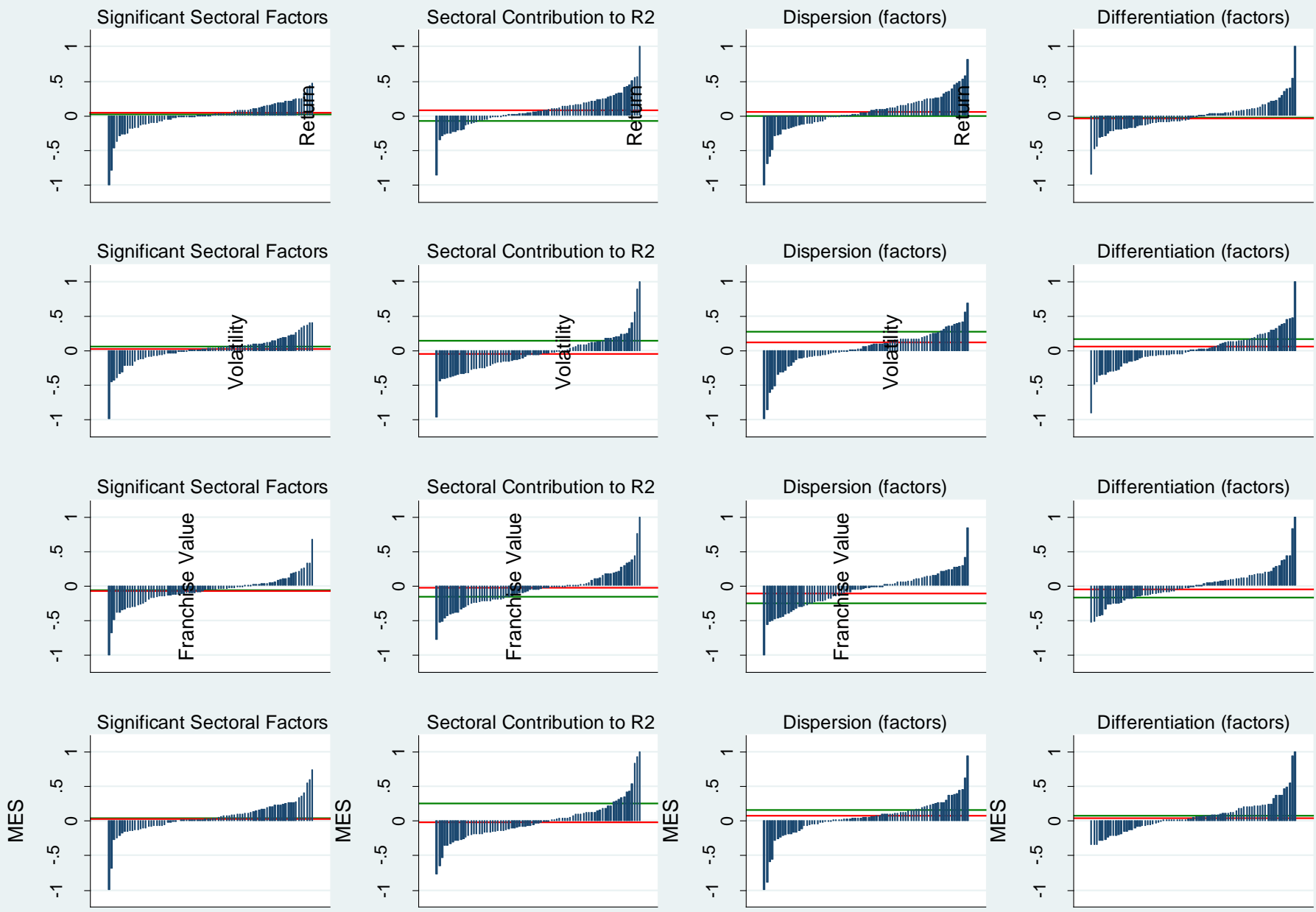
Franchise Value

	Significant Sectoral Factors	Sectoral Contribution to R ²	Dispersion (factors)	Differentiation (factors)
Coeff	-0.015***	-0.008	-0.043***	-0.025***
t-statistic	-2.692	-0.754	-5.334	-3.509
Observations	12634	12634	12634	12633
Adjusted R-squared	0.839	0.839	0.839	0.839

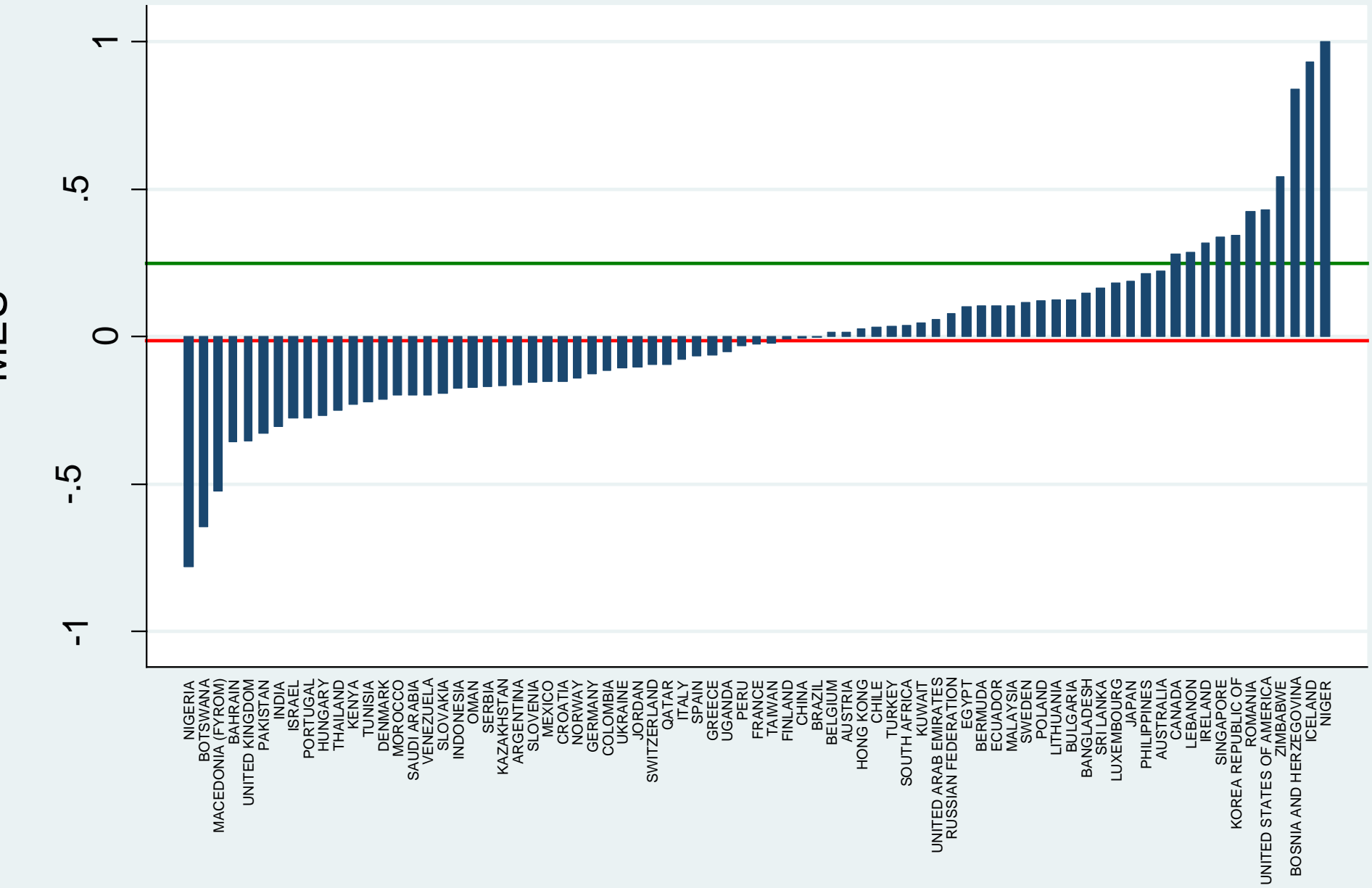
MES

	Significant Sectoral Factors	Sectoral Contribution to R ²	Dispersion (factors)	Differentiation (factors)
Coeff	0.030***	0.505***	0.238***	0.070***
t-statistic	2.091	17.057	10.635	3.615
Observations	12639	12639	12639	12638
Adjusted R-squared	0.689	0.705	0.695	0.690

However, substantial variation across countries!



Sectoral Contribution to R2



Exploiting sample heterogeneity

- Pre- and post-crisis
- Regulation on diversification vs. no regulation
- Developing vs. developed countries
- Large vs. small banks
- Banks with vs. without market power
- Traditional vs. non-traditional business models
 - Loan-asset ratio
 - Non-interest income share

Pre- vs. post-crisis (but also post Basel II)

	Return	Volatility	Franchise Value	MES
Significant Sectoral Factors				
baseline	-0.010	0.106	-0.015***	0.030**
below median	0.077	-0.096	-0.003	-0.100***
above median	-0.092	0.295	-0.026***	0.152***
<i>p-value(below=above)</i>	<i>0.806</i>	<i>0.234</i>	<i>0.065</i>	<i>0.000</i>
Sectoral Contribution to R²				
baseline	-2.195***	-0.095	-0.008	0.505***
below median	-2.754***	0.711***	-0.017	0.043
above median	-1.933**	-0.547	-0.003	0.774***
<i>p-value(below=above)</i>	<i>0.307</i>	<i>0.008</i>	<i>0.407</i>	<i>0.000</i>
Dispersion (factors)				
baseline	-0.027	2.624***	-0.043***	0.238***
below median	-0.027	0.344	0.007	0.035
above median	-0.026	4.251***	-0.079***	0.382***
<i>p-value(below=above)</i>	<i>0.999</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>
Differentiation (factors)				
baseline	0.069	1.884***	-0.025***	0.070***
below median	0.173	0.007	0.012	0.045**
above median	-0.004	3.127***	-0.050***	0.086***
<i>p-value(below=above)</i>	<i>0.838</i>	<i>0.000</i>	<i>0.000</i>	<i>0.256</i>

Guidelines on diversification

	Return	Volatility	Franchise Value	MES
Significant Sectoral Factors				
baseline	-0.010	0.106	-0.015***	0.030**
below median	0.061	0.262	-0.023***	0.070***
above median	-0.117	-0.130	-0.004	-0.030
<i>p-value(below=above)</i>	<i>0.778</i>	<i>0.178</i>	<i>0.091</i>	<i>0.000</i>
Sectoral Contribution to R²				
baseline	-2.195***	-0.095	-0.008	0.505***
below median	-2.021***	0.371	-0.021	0.697***
above median	-2.861***	-1.362***	0.026	0.032
<i>p-value(below=above)</i>	<i>0.422</i>	<i>0.000</i>	<i>0.023</i>	<i>0.000</i>
Dispersion (factors)				
baseline	-0.027	2.624***	-0.043***	0.238***
below median	-0.527	3.570***	-0.055***	0.325***
above median	0.906	0.910***	-0.020**	0.080***
<i>p-value(below=above)</i>	<i>0.134</i>	<i>0.000</i>	<i>0.007</i>	<i>0.000</i>
Differentiation (factors)				
baseline	0.069	1.884***	-0.025***	0.070***
below median	-0.295	2.564***	-0.033***	0.087***
above median	0.718	0.686**	-0.012*	0.041*
<i>p-value(below=above)</i>	<i>0.246</i>	<i>0.000</i>	<i>0.091</i>	<i>0.189</i>

Rich vs. poor countries

	Return	Volatility	Franchise Value	MES
Significant Sectoral Factors				
baseline	-0.010	0.106	-0.015***	0.030**
below median	-0.314	-0.105	-0.029*	0.028
above median	0.044	0.142	-0.013**	0.032**
<i>p-value(below=above)</i>	<i>0.690</i>	<i>0.561</i>	<i>0.345</i>	<i>0.903</i>
Sectoral Contribution to R²				
baseline	-2.195***	-0.095	-0.008	0.505***
below median	-1.299	-1.454**	-0.028	-0.027
above median	-2.388***	0.112	-0.006	0.600***
<i>p-value(below=above)</i>	<i>0.469</i>	<i>0.031</i>	<i>0.372</i>	<i>0.000</i>
Dispersion (factors)				
baseline	-0.027	2.624***	-0.043***	0.238***
below median	0.662	0.103	-0.028**	0.044
above median	-0.146	3.161***	-0.046***	0.281***
<i>p-value(below=above)</i>	<i>0.495</i>	<i>0.000</i>	<i>0.295</i>	<i>0.000</i>
Differentiation (factors)				
baseline	0.069	1.884***	-0.025***	0.070***
below median	1.022	0.140	0.011	-0.020
above median	-0.139	2.233***	-0.032***	0.088***
<i>p-value(below=above)</i>	<i>0.306</i>	<i>0.002</i>	<i>0.022</i>	<i>0.022</i>

Small vs. large banks

	Return	Volatility	Franchise Value	MES
Significant Sectoral Factors				
baseline	-0.010	0.106	-0.015***	0.030**
below median	-0.092	-0.027	-0.016*	-0.001
above median	0.104	0.293	-0.013*	0.068***
<i>p-value(below=above)</i>	<i>0.767</i>	<i>0.276</i>	<i>0.775</i>	<i>0.017</i>
Sectoral Contribution to R²				
baseline	-2.195***	-0.095	-0.008	0.505***
below median	-2.788***	-0.452	0.006	0.466***
above median	-1.303	0.449	-0.019	0.504***
<i>p-value(below=above)</i>	<i>0.203</i>	<i>0.052</i>	<i>0.164</i>	<i>0.491</i>
Dispersion (factors)				
baseline	-0.027	2.624***	-0.043***	0.238***
below median	-1.553**	3.655***	-0.057***	0.155***
above median	1.833***	1.391***	-0.026***	0.340***
<i>p-value(below=above)</i>	<i>0.001</i>	<i>0.000</i>	<i>0.030</i>	<i>0.000</i>
Differentiation (factors)				
baseline	0.069	1.884***	-0.025***	0.070***
below median	-0.889	2.712***	-0.038***	0.032
above median	1.392***	0.742***	-0.009	0.125***
<i>p-value(below=above)</i>	<i>0.007</i>	<i>0.000</i>	<i>0.038</i>	<i>0.015</i>

Bank competition

	Return	Volatility	Franchise Value	MES
Significant Sectoral Factors				
baseline	-0.010	0.106	-0.015***	0.030**
below median	-0.072	0.397	-0.016**	0.050**
above median	0.087	-0.154	-0.018***	0.011
<i>p-value(below=above)</i>	<i>0.811</i>	<i>0.074</i>	<i>0.882</i>	<i>0.179</i>
Sectoral Contribution to R²				
baseline	-2.195***	-0.095	-0.008	0.505***
below median	-2.137***	0.688**	-0.018	0.633***
above median	-1.906***	-0.655**	-0.021	0.349***
<i>p-value(below=above)</i>	<i>0.792</i>	<i>0.000</i>	<i>0.800</i>	<i>0.000</i>
Dispersion (factors)				
baseline	-0.027	2.624***	-0.043***	0.238***
below median	-0.188	4.240***	-0.049***	0.266**
above median	0.080	0.706***	-0.029***	0.205***
<i>p-value(below=above)</i>	<i>0.760</i>	<i>0.000</i>	<i>0.095</i>	<i>0.111</i>
Differentiation (factors)				
baseline	0.069	1.884***	-0.025***	0.070***
below median	-0.286	2.882***	-0.030***	0.036
above median	0.423	0.554**	-0.012*	0.111***
<i>p-value(below=above)</i>	<i>0.388</i>	<i>0.000</i>	<i>0.130</i>	<i>0.025</i>

Traditional intermediation (LTA)

	Return	Volatility	Franchise Value	MES
Significant Sectoral Factors				
baseline	-0.010	0.106	-0.015***	0.030**
below median	0.154	-0.180	-0.011	0.020
above median	-0.169	0.376*	-0.019***	0.040**
<i>p-value(below=above)</i>	0.626	0.056	0.522	0.470
Sectoral Contribution to R²				
baseline	-2.195***	-0.095	-0.008	0.505***
below median	-0.422	-1.256***	0.012	0.339***
above median	-3.547***	0.781**	-0.024*	0.633***
<i>p-value(below=above)</i>	0.000	0.000	0.011	0.000
Dispersion (factors)				
baseline	-0.027	2.624***	-0.043***	0.238***
below median	0.903	1.578***	-0.036***	0.194***
above median	-0.896	3.604***	-0.049***	0.279***
<i>p-value(below=above)</i>	0.061	0.000	0.307	0.031
Differentiation (factors)				
baseline	0.069	1.884***	-0.025***	0.070***
below median	0.232	1.222***	-0.026***	0.070***
above median	-0.076	2.489***	-0.024**	0.070**
<i>p-value(below=above)</i>	0.728	0.008	0.853	0.998

Summary of sample split results

- Results hold across sample period, but are stronger post-2007
- Results driven by developed economies and stronger for countries with more specialized and traditional banking
- Large banks contribute more to systemic risk if concentrated exposure, while smaller banks suffer more from specialization in terms of volatility and lower franchise value
- Results stronger for banks in more competitive environments
- Robust to:
 - Joint inclusion of characteristics, continuous rather than dichotomic
 - First principal component of four proxies

Summary

- Unique approach to measure banks' exposure to sectoral news,
 - Complemented with accounting data
- To analyze the impact on bank performance and systemic risk
- Effect is mostly on MES and total volatility
 - Supports portfolio diversification argument
- Important cross-country variation in the sectoral specialization-bank risk relationship
 - A first attempt at explaining the variation

BACKUP SLIDES

Bank performance and risk

- Return = average annualized daily stock return
- Volatility = annualized standard deviation of a bank's daily stock return
- Franchise-value = market cap/book equity
- Marginal Expected Shortfall

$$MES_{i,t}(Q) = E[r_{i,t} | r_{m,t} < VaR_{m,t}^Q]$$

Summary statistics

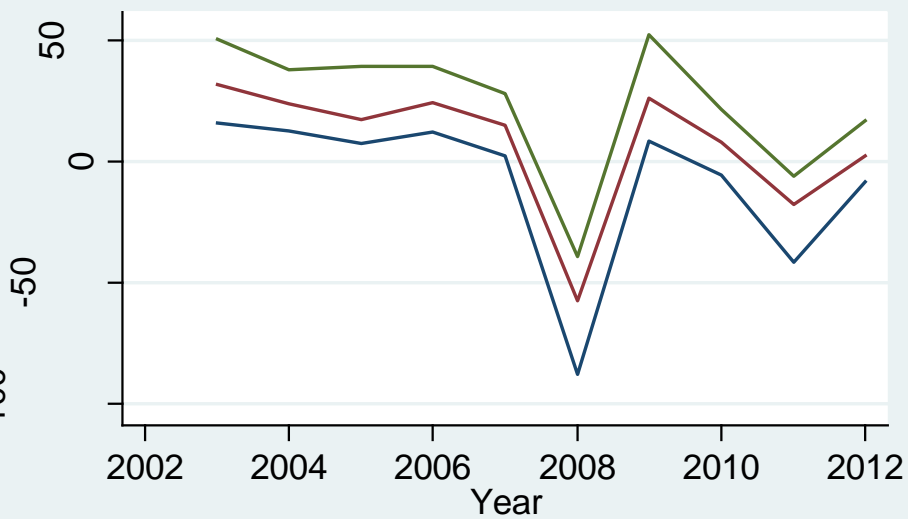
Panel A: Large sample: 12689 observations, on 2005 banks from 77 countries, 2002-2011

variable	mean	sd	p5	p50	p95
Return	-0.29	44.34	-83.24	4.50	62.34
Volatility	39.33	24.35	13.50	32.57	89.48
Franchise Value	1.11	1.23	0.01	0.86	3.10
MES	2.00	2.30	-0.45	1.44	6.77

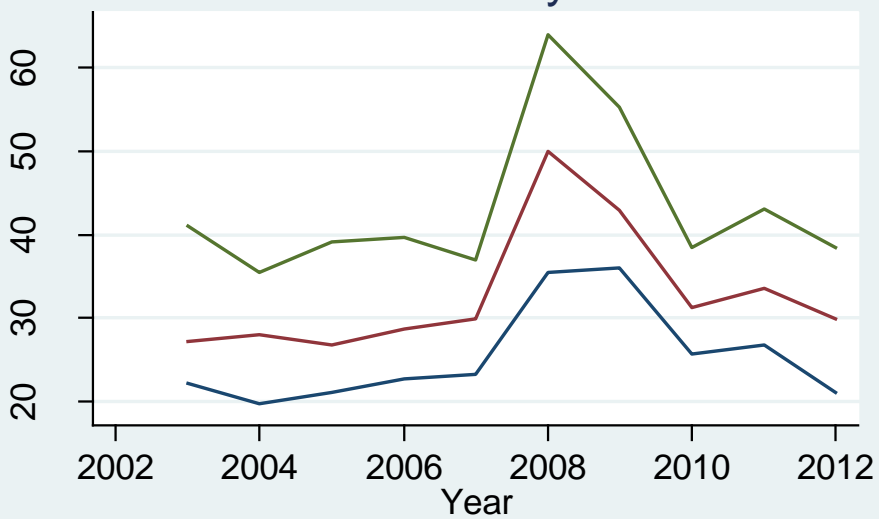
Panel B: Small sample: 1426 observations, on 317 banks from 57 countries, 2007-2011

variable	mean	sd	p5	p50	p95
Return	-5.83	49.06	-98.44	0.00	69.00
Volatility	42.21	20.10	18.25	38.41	80.39
Franchise Value	0.58	1.03	0.00	0.18	2.02
MES	3.94	2.51	0.44	3.53	9.12

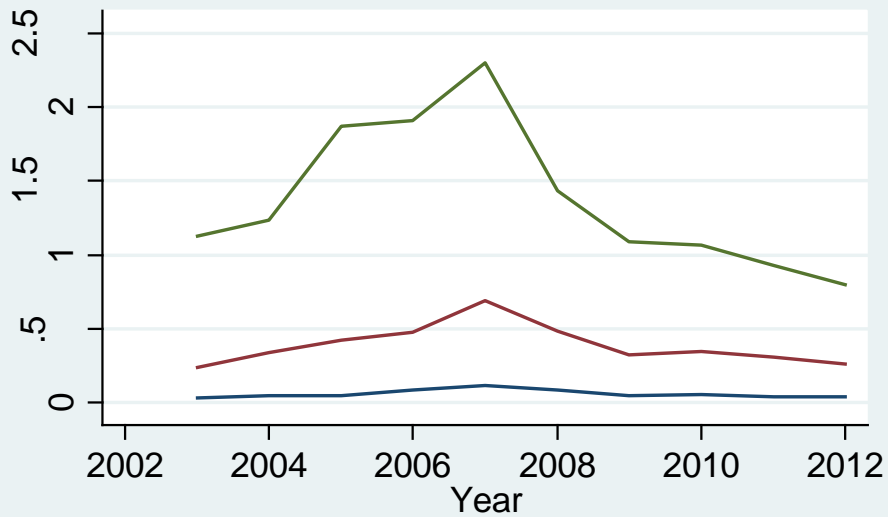
Return



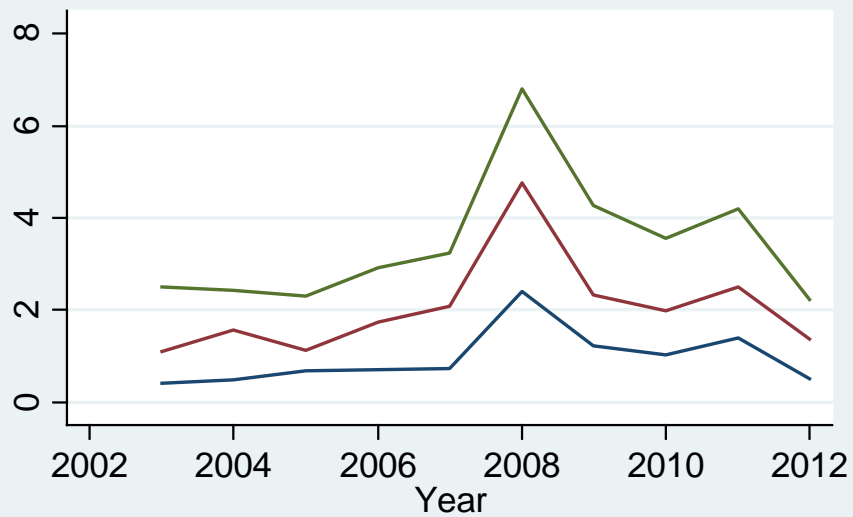
Volatility



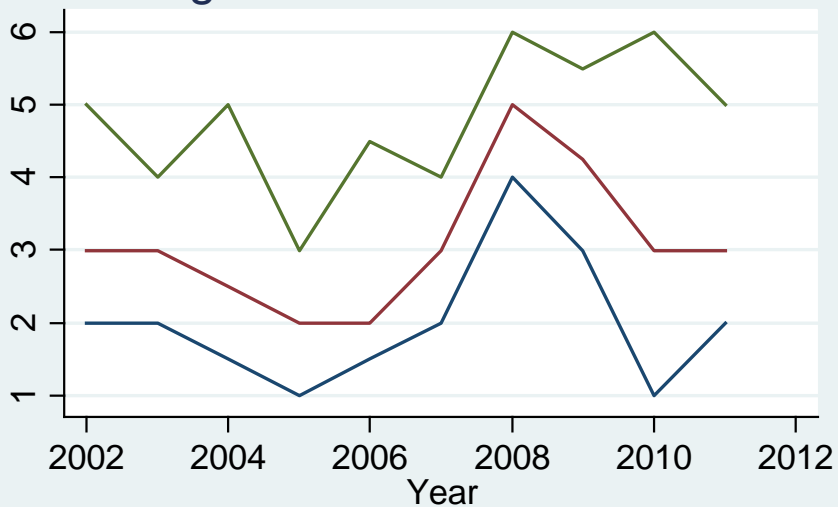
Franchise Value



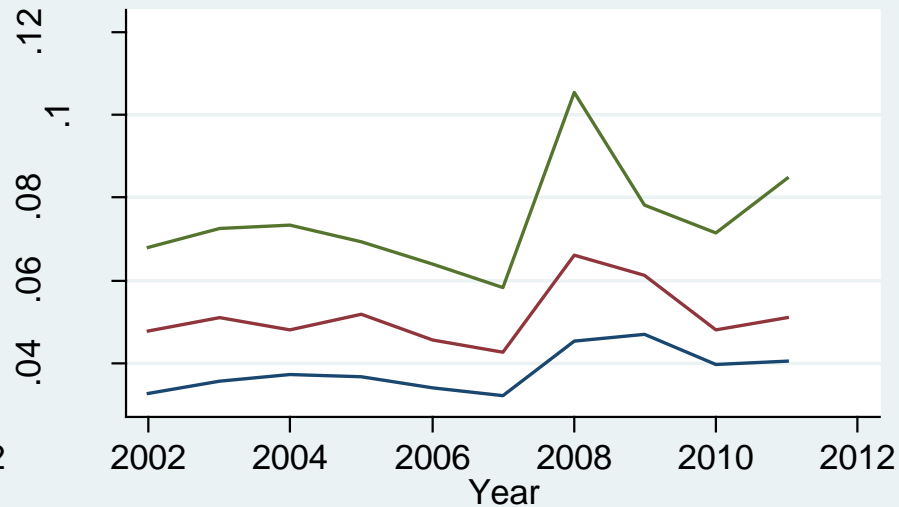
MES



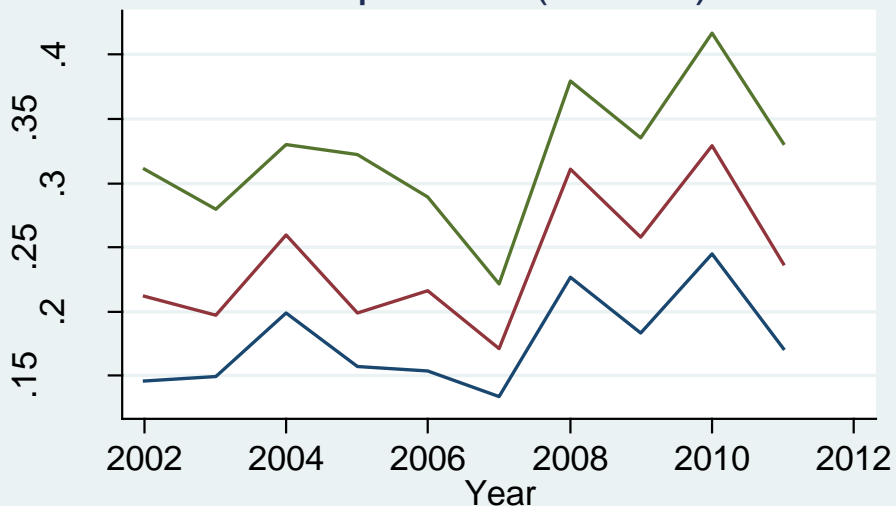
Significant Sectoral Factors



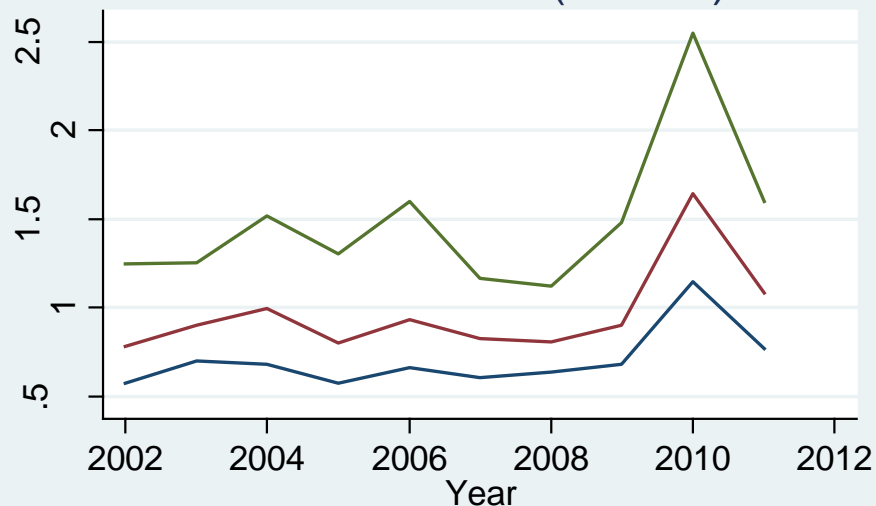
Sectoral Contribution to R2



Dispersion (factors)



Differentiation (factors)



Main results

- No positive effect of specialization on banks' returns
- More specialized banks have higher stock return volatility
- More specialized banks have lower franchise value
- More specialized banks have higher MES

- AND: robust to cutting the sample across the median of :
 - corporate loan share
 - Trading income

- **However, substantial variation across countries!**

	c1	Significant Sect. Factors	Sectoral Contr. to R ²	Dispersion (factors)	Differentiation (factors)			
Crisis Sample split								
2002-2007	6074	3.724	6074	0.068	6074	0.258	6073	1.155
2007-2011	6565	4.171	6565	0.083	6565	0.367	6565	1.692
		0.000		0.000		0.000		0.000
GDP per Capita								
below median (at country-year level)	2520	3.577	2520	0.057	2520	0.319	2519	1.500
above median (at country-year level)	9854	4.061	9854	0.080	9854	0.314	9854	1.422
		0.000		0.000		0.350		0.010
Activity Restrictons								
below median (at country-year level)	6248	3.873	6248	0.078	6248	0.269	6247	1.196
above median (at country-year level)	5407	4.005	5407	0.070	5407	0.363	5407	1.715
		0.022		0.000		0.000		0.000
Guidelines on Asset Diversification								
NO	7121	3.839	7121	0.075	7121	0.337	7120	1.589
YES	4949	4.036	4949	0.072	4949	0.276	4949	1.209
		0.001		0.010		0.000		0.000
Bank Size								
below median	6320	3.689	6320	0.061	6320	0.310	6320	1.523
above median	6319	4.223	6319	0.090	6319	0.320	6318	1.345
		0.000		0.000		0.008		0.000
Size/GDP per Capita								
below median	6187	3.740	6187	0.065	6187	0.314	6187	1.533
above median	6187	4.185	6187	0.086	6187	0.316	6186	1.343
		0.000		0.000		0.584		0.000
Lerner index								
below median	6305	3.820	6305	0.068	6305	0.328	6304	1.530
above median	6305	4.093	6305	0.083	6305	0.302	6305	1.339
		0.000		0.000		0.000		0.000
Loans to Total Assets								
below median	6320	3.961	6320	0.075	6320	0.313	6319	1.419
above median	6319	3.951	6319	0.076	6319	0.317	6319	1.449
		0.855		0.432		0.366		0.182
Non-Interest Income Share								
below median	6453	3.852	6453	0.072	6453	0.322	6453	1.472
above median	6186	4.065	6186	0.079	6186	0.307	6185	1.394
		0.000		0.000		0.000		0.001

	Return		Volatility		Franchise Value		MES	
Crisis Sample split								
2002-2007	6074	12.366	6074	29.069	6072	1.490	6074	1.326
2007-2011	6565	-12.086	6565	48.903	6562	0.766	6565	2.645
		0.000		0.000		0.000		0.000
GDP per Capita								
below median (at country-year level)	2520	9.571	2520	39.836	2519	0.385	2520	2.715
above median (at country-year level)	9854	-2.911	9854	39.401	9850	1.327	9854	1.796
		0.000		0.357		0.000		0.000
Activity Restrictons								
below median (at country-year level)	6248	-4.353	6248	36.464	6246	1.245	6248	2.105
above median (at country-year level)	5407	3.906	5407	43.307	5404	1.095	5407	1.791
		0.000		0.000		0.000		0.000
Guidelines on Asset Diversification								
NO	7121	-7.054	7121	44.119	7118	1.248	7121	1.970
YES	4949	9.205	4949	33.161	4947	1.032	4949	2.037
		0.000		0.000		0.000		0.105
Bank Size								
below median	6320	-3.947	6320	41.300	6318	1.488	6320	1.103
above median	6319	3.278	6319	37.442	6316	0.740	6319	2.919
		.000		0.000		0.000		0.000
Size/GDP per Capita								
below median	6187	-4.600		41.675	6185	1.504	6187	1.150
above median	6187	3.862	6187	37.304	6184	0.766	6187	2.815
		0.000		0.000		0.000		0.000
Lerner index								
below median	6305	-5.741	6305	45.276	6300	0.966	6305	1.960
above median	6305	5.027	6305	33.489	6305	1.255	6305	2.061
		0.000		0.000		0.000		0.014
Loans to Total Assets								
below median	6320	5.775	6320	36.805	6318	1.086	6320	2.175
above median	6319	-6.445	6319	41.938	6316	1.142	6319	1.847
		0.000		0.000		0.010		0.000
Non-Interest Income Share								
below median	6453	-4.921	6453	42.675	6450	1.054	6453	1.776
above median	6186	4.450	6186	35.925	6184	1.177	6186	2.256
		0.000		0.000		0.000		0.000

Universal vs. specialized banking

	Return	Volatility	Franchise Value	MES
Significant Sectoral Factors				
baseline	-0.010	0.106	-0.015***	0.030**
below median	0.080	0.649*	0.001	0.065*
above median	0.388	-0.234	-0.011	0.074***
<i>p-value(below=above)</i>	<i>0.752</i>	<i>0.044</i>	<i>0.551</i>	<i>0.821</i>
Sectoral Contribution to R²				
baseline	-2.195***	-0.095	-0.008	0.505***
below median	-3.333	-1.563**	0.060	-0.007
above median	-4.411***	-2.985***	0.017	0.430***
<i>p-value(below=above)</i>	<i>0.637</i>	<i>0.103</i>	<i>0.422</i>	<i>0.000</i>
Dispersion (factors)				
baseline	-0.027	2.624***	-0.043***	0.238***
below median	0.819	1.276***	-0.031**	0.147***
above median	0.483	2.814***	-0.060***	0.254***
<i>p-value(below=above)</i>	<i>0.815</i>	<i>0.027</i>	<i>0.161</i>	<i>0.070</i>
Differentiation (factors)				
baseline	0.069	1.884***	-0.025***	0.070***
below median	1.223	0.796*	-0.034**	0.088**
above median	0.881	2.330***	-0.042***	0.070**
<i>p-value(below=above)</i>	<i>0.768</i>	<i>0.012</i>	<i>0.652</i>	<i>0.709</i>