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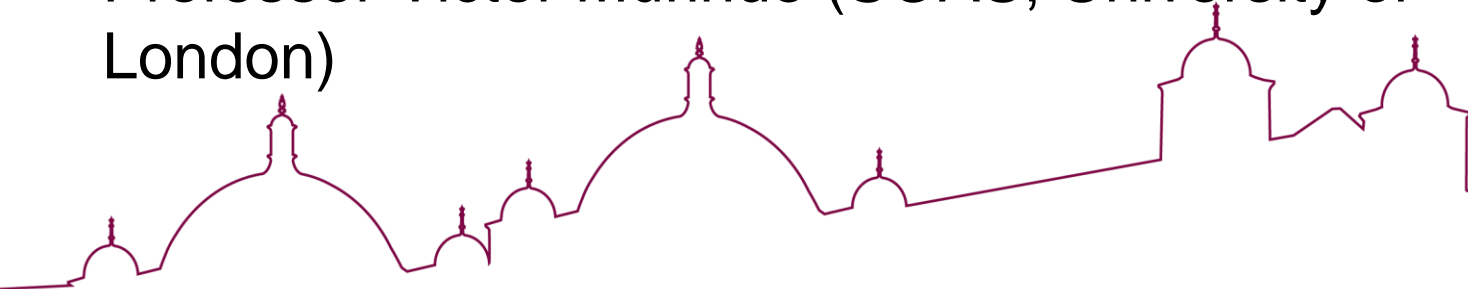
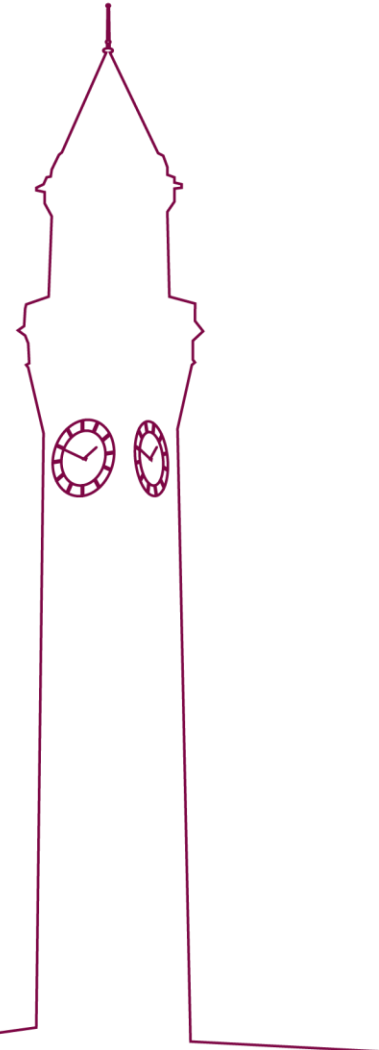
COLLEGE OF
SOCIAL SCIENCES

Bank Capital Structure and the Impact of National Culture and CEO Power on Bank Risk

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Introduction

- Banks are excluded from capital structure studies:
 - Because capital adequacy regulation dictates their capital structure.
 - Their balance sheets are very different from the other firms because of their typically very high leveraging and deposit taking.



Capital Ratio

Do the theories relating to capital structure that hold for industrial firms also hold for banks?

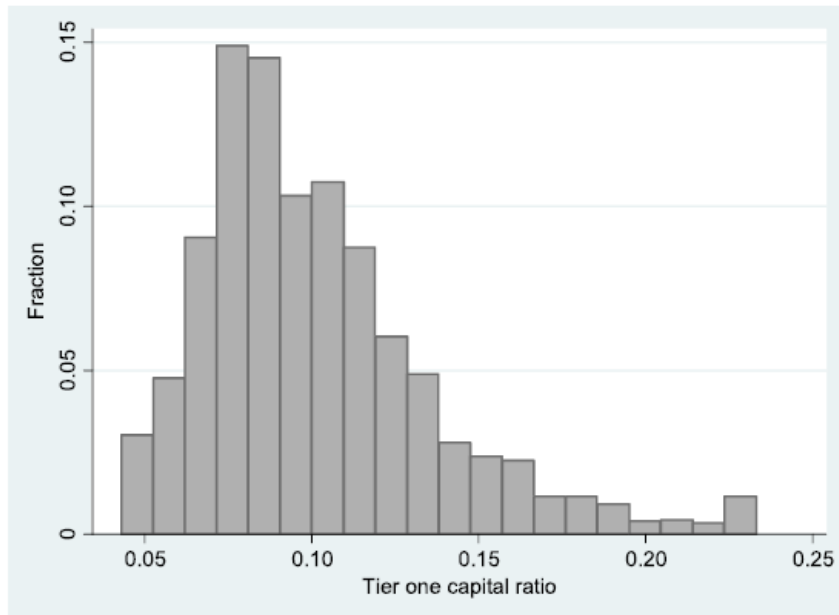


FIGURE 1 This figure plots the Tier 1 capital ratio as risk-weighted assets across 57 countries over 1998–2012 period

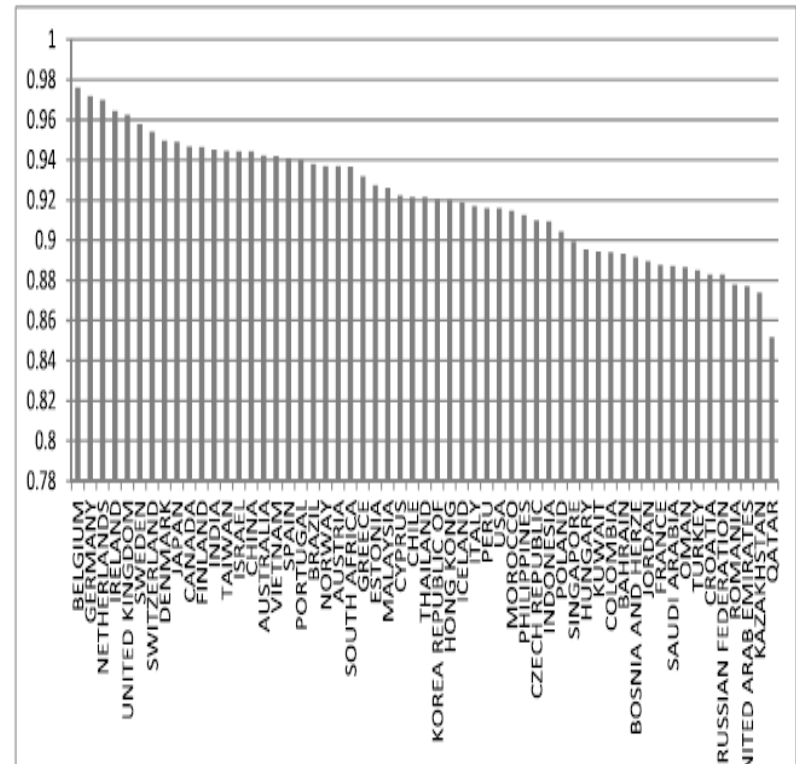


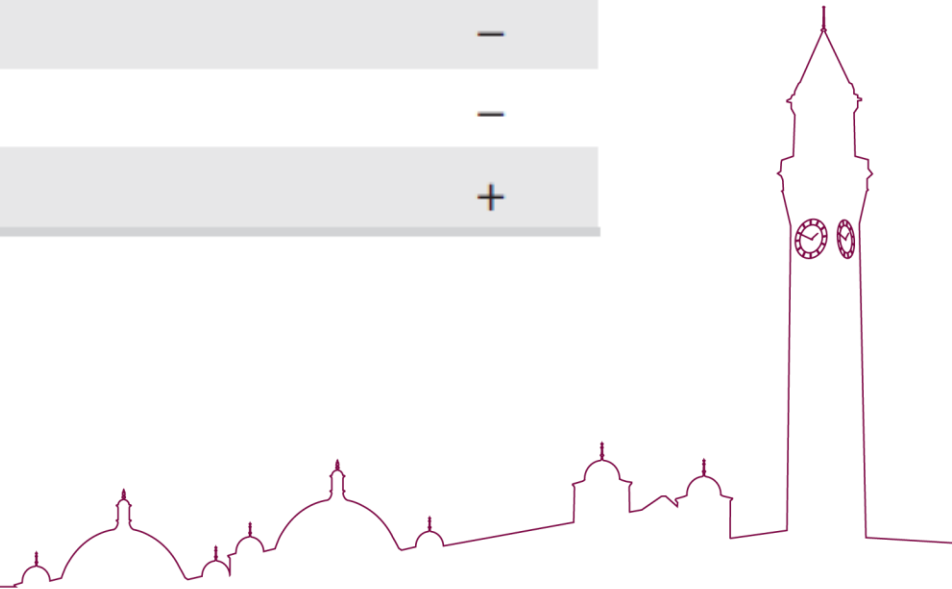
FIGURE 2 Median book leverage of sample banks (1998–2012).

Bank- and Country- Level Determinants

- Buffer and corporate finance view:
 - Banks are required to hold capital buffers above the regulatory minimum to avoid the cost of issuing equity at short notice (e.g., Ayuso et al., 2004; Peura & Keppo, 2006).
 - It is expected that banks that face a higher cost of issuing equity at short notice are less levered because they keep buffers supporting the buffer view (Gropp & Heider, 2010).
 - Alternatively, corporate finance theories that are developed from Modigliani and Miller (1958) propositions determine firms capital structure;
 - Trade-off and pecking order theories

Buffer and Corporate Finance View

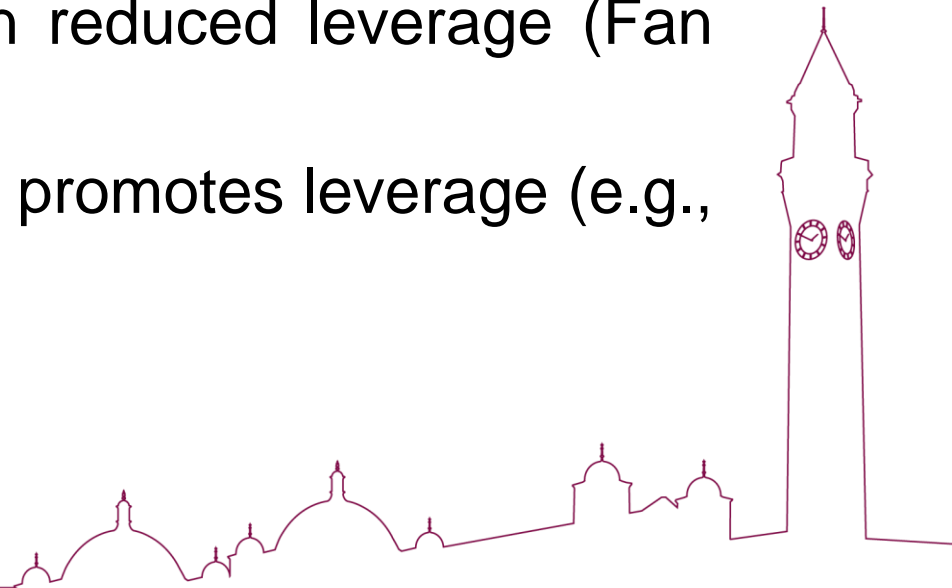
	Buffer view	Corporate finance
M/B	+	-
ROAA	+	-
Log (size)	-/+	+
Dividends	+	-
Risk	-	-
Collateral	+	+



Governance and Institutions

1) Legal systems:

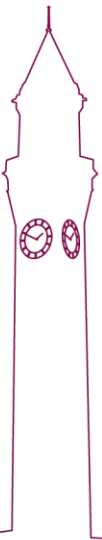
- Better legal systems in common-law and developed countries reduces the agency conflict between insiders and external investors (La Porta, 1998). Hence, more equity will be used having lower leverage.
- Higher level of corruption reduced leverage (Fan et al., 2012).
- Explicit bankruptcy codes promotes leverage (e.g., Claessens et al., 2001).



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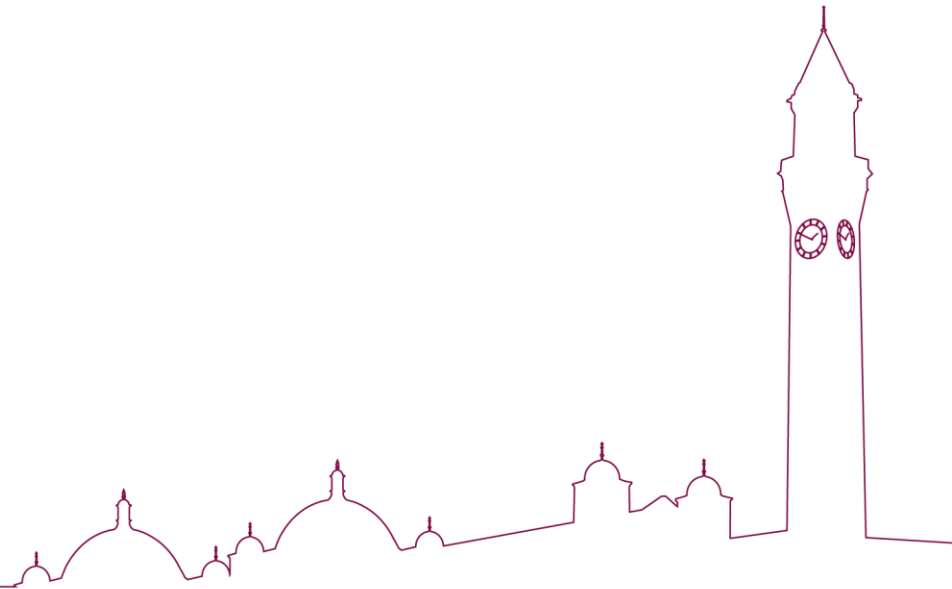
2) Tax systems:

- Tax is one of the factors that have been recognized to be important in firms capital structure since the irrelevance propositions of Modigliani and Miller (1958).
- Accordingly, we expect that tax possibly determines banks capital structure if they optimize their capital structure like nonfinancial firms.
- The tax gain from leverage is zero under a full dividend imputation tax system, in which shareholders pay taxes on the personal level of distributed income but receive full tax credit for the corporate taxes paid on this distributed income.
- In the classical tax system, in which shareholders pay personal taxes on distributed income in addition to the corporate taxes paid on this income, the tax gain from leverage is positive.



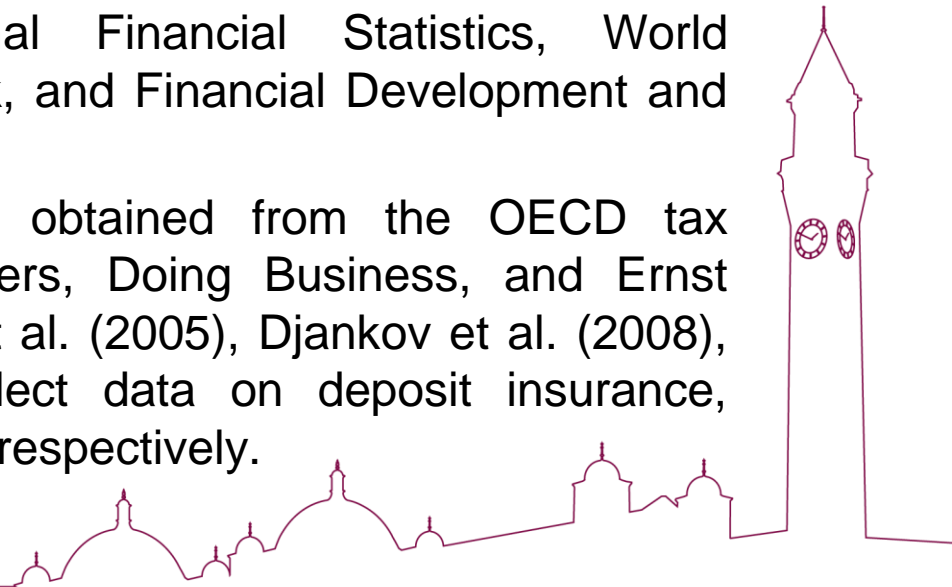
Continuous

- We control for country-level factors:
 - Bond and equity market development,
 - Deposit insurance is in use in many countries to protect depositors, which reduces the risk of bank runs,
 - Financial crisis,
 - Inflation, and
 - GDP growth.



Data and Sample

- We collected data for the largest 350 banks from Bankscope. As we required stock price and dividend data from DataStream, we could not identify three banks in other databases. Our final sample therefore included 347 global banks, for which we had accounting, share price, and other data.
- The primary source of our bank level data is Bankscope, which we used to obtain data on banks' consolidated balance sheets and income statements.
- The country-level data were collected from five sources: Economic and Social Data Service, International Financial Statistics, World Development Indicators, World Bank, and Financial Development and Structure Dataset.
- The information about taxes was obtained from the OECD tax database, Price Waterhouse Coopers, Doing Business, and Ernst Young. We follow Demirgüç -Kunt et al. (2005), Djankov et al. (2008), and Djankov et al. (2007) to collect data on deposit insurance, bankruptcy code, and creditor rights, respectively.



Sample

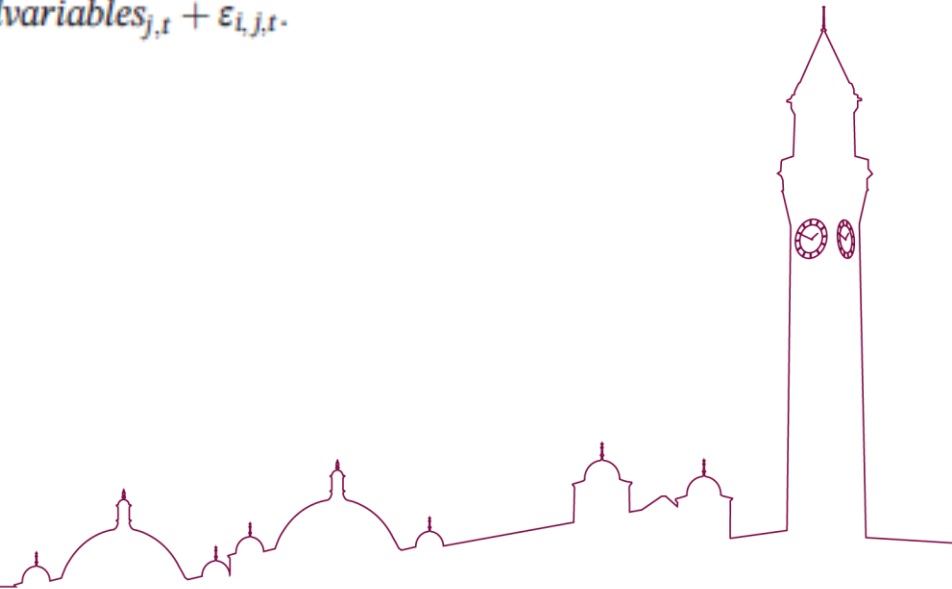
Country	Bank	Bank years	Country	Bank	Bank years
Australia	6	90	Kazakhstan	1	15
Austria	4	60	Korea republic of	3	45
Bahrain	2	30	Kuwait	2	30
Belgium	1	15	Malaysia	3	45
Bosnia and Herzegovina	2	30	Morocco	3	45
Brazil	4	60	Netherlands	2	30
Canada	9	135	Norway	2	30
Chile	5	75	Oman	1	15
China	16	240	Peru	1	15
Colombia	3	45	Philippines	1	15
Croatia	2	30	Poland	9	135
Cyprus	1	15	Portugal	4	60
Czech republic	1	15	Qatar	2	30
Denmark	3	45	Romania	1	15
Estonia	1	15	Russian federation	5	75
Finland	2	30	Saudi Arabia	6	90
France	16	240	Singapore	2	30
Germany	6	90	South Africa	2	30
Greece	6	90	Spain	12	180
Hong Kong	4	60	Sweden	4	60
Hungary	1	15	Switzerland	4	60
Iceland	1	15	Taiwan	3	45
India	28	420	Thailand	6	90
Indonesia	6	90	Turkey	8	120
Ireland	3	45	United Arab emirates	6	90
Israel	5	75	United kingdom	10	150
Italy	17	255	United states of America	17	255
Japan	69	1035	Vietnam	2	30
Jordan	1	15	Total	347	5,205

Note. This table provides the number of banks and bank-year observations for each country. The sample consists of 347 banks across 57 countries from 1998 to 2012, resulting in 5,205 bank-year observations.

Methodology

$$\text{Leverage}_{i,j,t} = \alpha + \beta M/B_{i,j,t-1} + \gamma ROAA_{i,j,t-1} + \delta \log(\text{Size})_{i,j,t-1} + \theta \text{Collateral}_{i,j,t-1} + \\ \vartheta \text{Risk}_{i,j,t-1} + \mu \text{Tierone}_{i,j,t-1} + \Omega \text{Countrylevelvariables}_{j,t} + \varepsilon_{i,j,t}.$$

$$\text{Financingsource}_{i,j,t} = \alpha + \beta M/B_{i,j,t-1} + \gamma ROAA_{i,j,t-1} + \delta \log(\text{Size})_{i,j,t-1} + \theta \text{Collateral}_{i,j,t-1} \\ + \vartheta \text{Risk}_{i,j,t-1} + \mu \text{Tierone}_{i,j,t-1} + \Omega \text{Countrylevelvariables}_{j,t} + \varepsilon_{i,j,t}.$$



Determinants of Leverage- Country Effects

Dependent variable	Market leverage				Book leverage			
	(1)		(2)		(3)		(4)	
	Coef.	<i>t</i>	Coef.	<i>t</i>	Coef.	<i>t</i>	Coef.	<i>t</i>
Banks' variables								
M/B	0.433***	3.20	0.478***	3.31	0.710***	23.65	0.725***	22.59
ROAA	-3.443***	-6.53	-3.156***	-5.41	-0.082	-1.10	-0.225***	-3.42
Log (size)	0.007***	3.51	0.006***	2.60	0.001***	5.18	0.002***	4.11
Collateral	0.015	0.55	0.027	1.05	0.027***	6.29	0.019***	4.99
Risk	0.014***	2.61	0.006	1.12	0.000	-0.20	-0.001	-0.94
Tierone	-0.460***	-3.85	-0.444***	-3.74	-0.247***	-8.52	-0.205***	-7.81
Countries' variables								
Developed	0.002	0.26	-0.010	-0.91	-0.001	-0.57	-0.001	-0.80
Inflation	0.058	0.34	0.261	1.43	-0.005	-0.29	0.012	0.53
Corruption index	-0.126**	-2.05	-0.117	-1.58	-0.006	-0.68	-0.013	-1.27
Creditor rights	0.000	-0.02	0.002	0.34	0.002***	3.18	0.002**	2.50
Bankruptcy code	0.023**	2.55	0.015	1.54	0.003**	2.42	0.002	1.23
Miller tax	0.060**	2.51	0.040**	2.02	0.012***	3.25	0.010***	2.18
Common law	-0.025***	-2.69	-0.015	-1.30	-0.005***	-4.00	-0.006***	-3.87
Deposit insurance	-0.019	-1.59	-0.032**	-2.10	0.002**	2.13	0.003*	1.68
GDP growth	-0.154***	-2.68	-0.273***	-5.12	0.026***	2.59	0.034***	3.39
Crisis	0.042***	6.33	0.036***	5.45	0.001	0.70	0.002**	2.26
Log listed companies			-0.033***	-3.36			0.002	1.36
Log (GDS bil)			0.037***	3.62			-0.003**	-2.17
Public bond/GDP			0.018**	2.31			0.001	0.60
Cons	0.447***	3.46	0.437***	3.09	0.259***	8.47	0.243***	7.28
<i>N</i>	5,205		5,205		5,205		5,205	
Adj <i>R</i> ²	0.58		0.57		0.87		0.86	

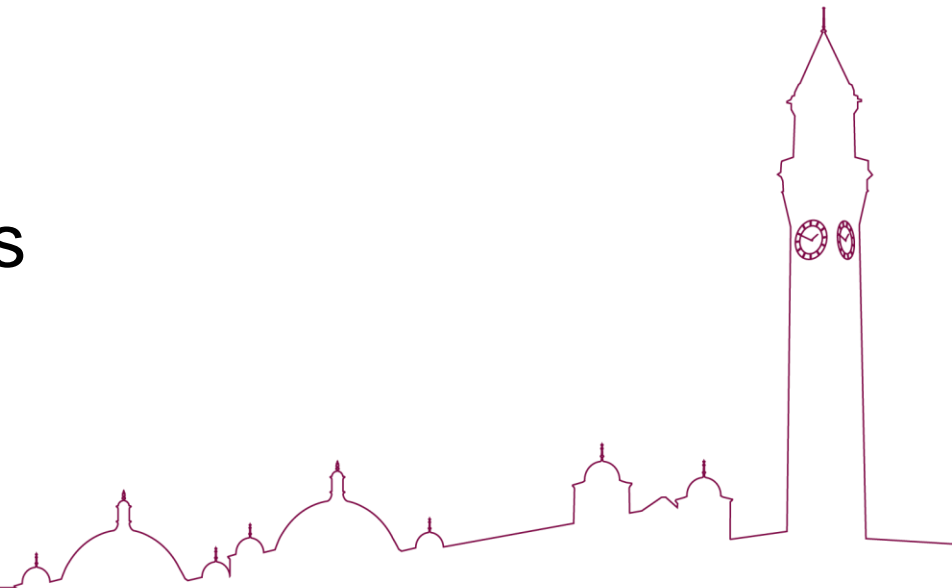
Tax systems and Leverage

- We did not differentiate explicitly between different tax systems: the classical, the partial, and the full dividend imputation.
- We expect that banks located in countries with the classical tax system, where the tax gain from leverage is positive, would use more debt compared with countries with other tax systems.
- Results:
 - The full imputation system does not significantly relate to the leverage,
 - In the classical tax countries, creditor rights and bankruptcy codes are positive and significant. This means that suppliers of credit weigh the benefit of tax more positively in the presence of the higher investor protection environments.

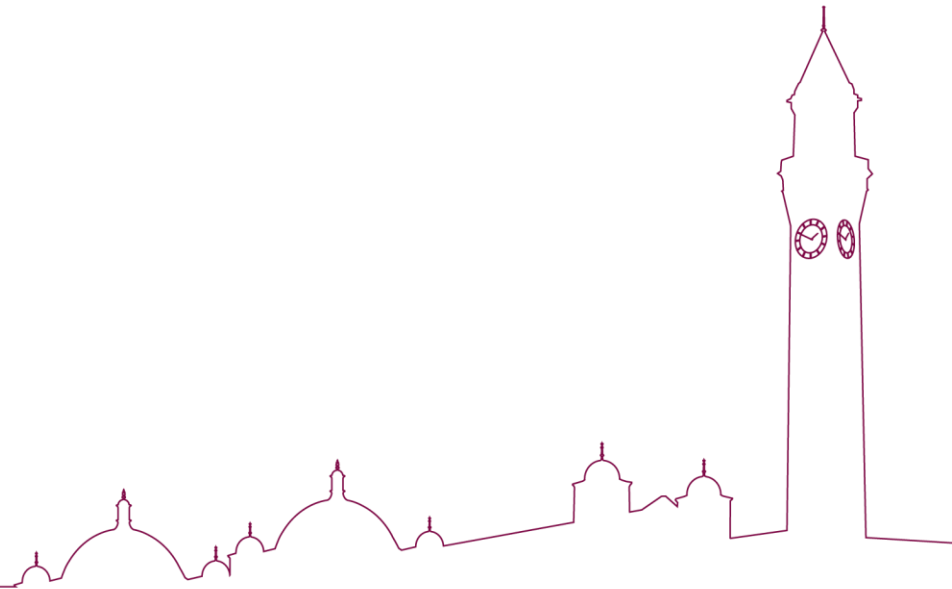


Other Results

- Source of finance (deposits and non-deposit liabilities):
 - The results are more pronounced for non-deposit liabilities.
 - The impact of regulations.
- Robustness Checks:
 - Pre-crisis period
 - Fixed and year effects

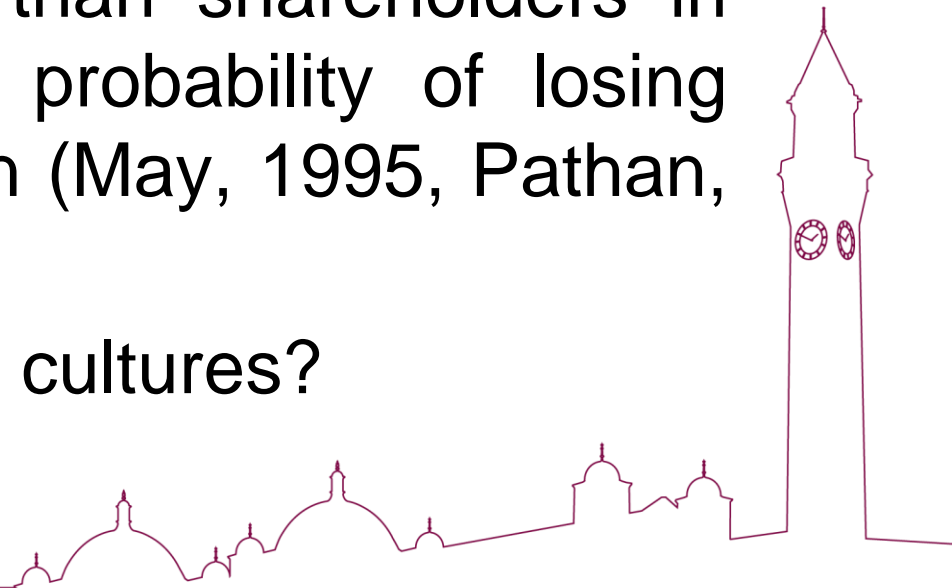


National Culture, CEO Power, and Bank Risk



Bank Risk-taking, CEO, & National Culture

- The concentration of decision making power (CEOs) makes bank vulnerable to financial crisis (Ho et al., 2016)
- By contrast, consistent with agency theory, CEOs prefer less risk than shareholders in order to minimise the probability of losing their jobs and reputation (May, 1995, Pathan, 2009).
- It is because of different cultures?



Continues

- Our paper is the first to examine whether national culture can mediate the relationship between CEO power and bank risk-taking.
- We use two dimensions (Hofstede, 2001):
 - Uncertainty avoidance
 - Individualism
- We disentangle national cultures into:
 - Tight
 - Loose



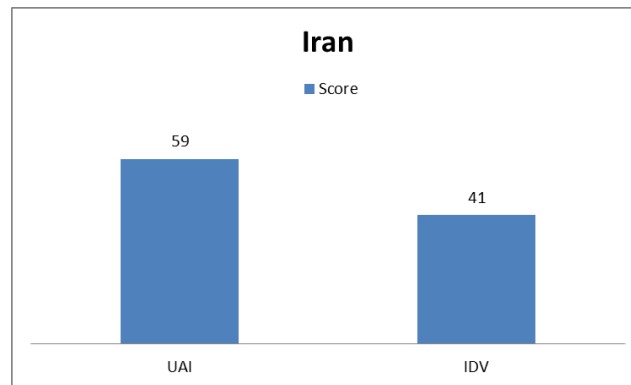
National Culture, CEO power and Bank Risk

- Individualistic (IDV) societies:
 - Emphasis is on self-interest needs
 - More autonomous and independent
 - More overconfident
- We expect that the negative relationship between CEO power and bank risk is expected to be less pronounced in cultures high on individualism.
- Uncertainty (UAI) avoiding societies:
 - Uncomfortable in unstructured situations
 - Avoid unpredictability and ambiguity in innovative projects
 - Asking for higher discount rates
- We postulate that uncertainty avoidance mediates the relationship between CEO power and bank risk-taking.



Sample

Country	UAI	IDV	Country	UAI	IDV
Australia	51	90	Malaysia	56	26
Austria	70	55	Morocco	68	46
Bahrain	68	38	Netherlands	53	80
Brazil	76	38	Norway	50	69
Canada	48	80	Peru	87	16
Chile	86	23	Philippines	44	32
China	30	20	Poland	93	60
Colombia	80	13	Portugal	104	27
Czech Republic	74	58	Qatar	68	38
Denmark	23	74	Romania	90	30
Finland	59	63	Russia	95	39
France	86	71	Saudi Arabia	68	38
Germany	65	67	Singapore	08	20
Greece	112	35	South of Africa	49	65
Hong Kong	29	25	Spain	86	51
Hungary	82	80	Sweden	29	71
India	40	48	Switzerland	58	68
Indonesia	48	14	Taiwan	69	17
Ireland	35	70	Thailand	64	20
Israel	81	54	Turkey	85	37
Italy	75	76	United Arab Emirates	68	38
Japan	92	46	UK	35	89
Jordan	68	38	US	46	91
Korea	85	18	Total	68	52
Kuwait	68	38			



Methodology

$$\ln(\text{Risk})_{i,t} = \alpha + \beta_1 \text{IDV}_j + \beta_2 \text{UAI}_j + \beta_3 \text{CEOpower}_{i,t} + \beta_4 \text{IDV}_j * \text{CEOpower}_{i,t} + \beta_5 \text{UAI}_j$$

$$* \text{CEOpower}_{i,t} + \sum_{k=1}^4 \pi_k \text{Bank Control}_{i,t} + \sum_{k=1}^4 \theta_k \text{Contry Control}_{j,t} + \varepsilon_{i,j}$$

□ Risk

– Total risk: SD daily stock return

– Beta (systematic): $R_{it} = \alpha_i + \beta_{1i} R_{mt} + \varepsilon_{it}$

– Idiosyncratic/ unsystematic: SD of residuals

$$R_{it} = \alpha_i + \beta_{1i} R_{mt} + \varepsilon_{it}$$

– Z-score: $[\text{Average (returns)} + \text{Average (Equity/total assets)}] / \text{Std (Equity/total assets)}$

□ GLS

Culture, CEO Power, and Bank Risk

		TR	IDIOR	Beta	Z
	Sign	(1)	(2)	(3)	(4)
CEOpower*IDV	+	0.028***	0.058**	-0.019	-0.059*
		(3.10)	(2.40)	(-1.04)	(1.88)
CEOpower*UAI	-	-0.014**	-0.012***	-0.039	0.030*
		(-2.33)	(-3.42)	(-1.44)	(1.91)
CEOpower	-	-0.008**	-0.025*	-0.087	0.010***
		(-1.99)	(-1.87)	(-1.08)	(2.87)
IDV	+	0.985**	1.158	0.651***	-0.954*
		(2.01)	(1.08)	(4.25)	(-1.92)
UAI	-	-0.754***	-0.580**	-0.689***	1.045***
		(-3.58)	(-2.05)	(-2.78)	(8.54)
Controls		Yes	Yes	Yes	Yes
Wald-Chi2		1254.12***	1524.58***	1871.54***	2451.88***
Adjusted R2		0.28	0.35	0.31	0.27
N		2,039	2,039	2,039	1,904

Culture, CEO Power, and Bank Risk

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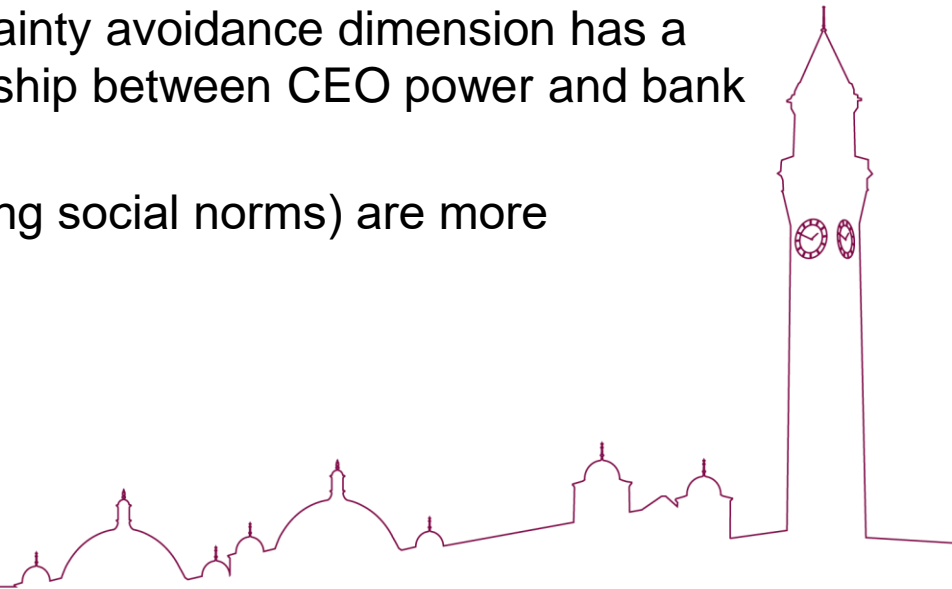
Other Results

- Intra-cultural diversity:
 - We use Gelfand et al. (2011)'s tightness scores and split our sample into tight and loose cultures. A culture is classified as tight (weak) if its tightness score, as reported in Gelfand et al. (2011), is above (below) the mean of tightness score of the broader sample.
 - Our results are more pronounced in tight cultures.
- Robustness checks:
 - House et al. (2004) GLOBE database,
 - Omitted variables, and
 - HLM (*Hierarchical linear model*) regression.

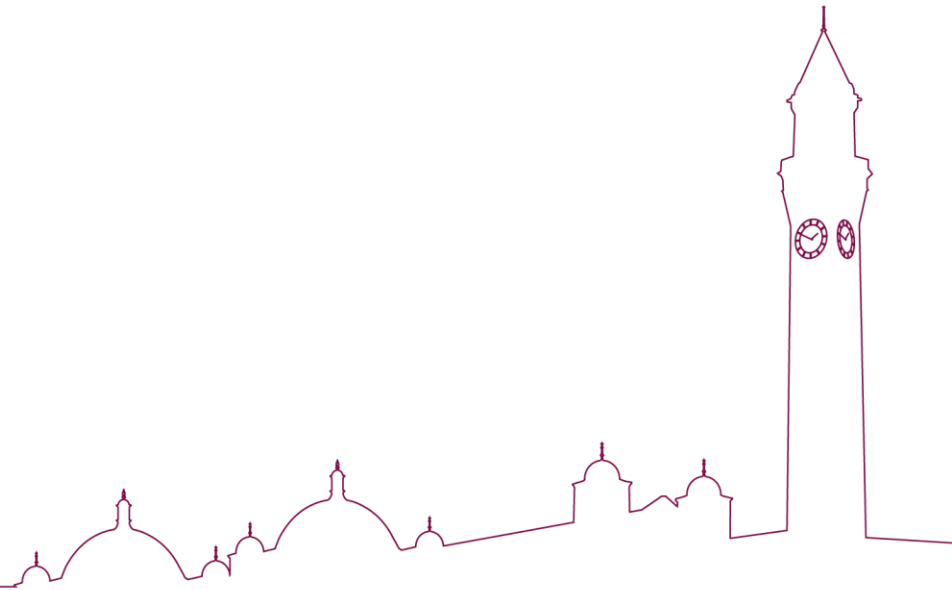


Conclusions

- Capital structure of banks does not evolve only as a result of capital regulations, it is also affected by market forces;
 - It corresponds to corporate finance theories and buffer view.
 - Country-level factors are also important determinants of source of financing.
- Using unique hand-collected data for on CEO traits; we uncover two new findings:
 - First, while the individualism dimension of national culture has a moderating influence, the uncertainty avoidance dimension has a reinforcing effect, on the relationship between CEO power and bank risk-taking.
 - Second, ‘tight’ cultures (e.g. strong social norms) are more pronounced than ‘loose’ cultures



Thank you

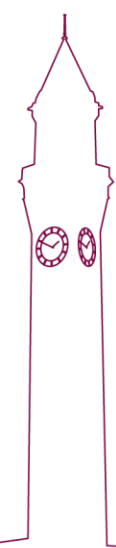


Variables

Variable	Description	Source
Book leverage	$1 - (\text{book value of equity} / \text{book value of assets})$	Bankscope
Market leverage	$1 - (\text{Market value of equity} (= \text{number of shares} \times \text{end of year stock price}) / \text{market value of bank} (= \text{market value of equity} + \text{book value of liabilities}))$	Bankscope
Log (size)	Book value of total assets	Bankscope
Collateral	(Total securities + treasury bills + other bills + bonds + CDs + cash and due from banks + land and buildings + other tangible assets) / book value of assets	Bankscope
ROAA	Net income / book value of average assets	Bankscope
M/B	Market value of assets / book value of assets	Bankscope
	(total securities + treasury bills + other bills + bonds + CDs + cash and due from banks + land and buildings + other tangible assets) / book value of assets	Bankscope
Dividends	Dummy equal to 1 if the bank pays a dividend in a given year	Bankscope
Risk	Annualized standard deviation of daily national stock market index return \times (market value of equity / market value of bank)	
Deposits (Book)	Total deposits / book value of assets	Bankscope
Deposits (Market)	Total deposits / market value of asset (see above)	Bankscope
Nondeposit liabilities (Book)	Book leverage – deposits (book)	Bankscope
Nondeposit liabilities (Market)	Market leverage – deposits (market)	Bankscope

Variable	Description	Source
GDP growth	Annual percentage change of gross domestic product	World Development Indicators, World Bank
Inflation	Annual percentage change in average consumer price index	Economic and Social Data Service, International Financial Statistics
Tierone	Regulatory Tier 1 calculated as Tier 1 capital divided by risk weighted assets	Bankscope
Deposit insurance	Dummy variable equal to 1 if bank deposits are insured by government.	Demirgüç-Kunt et al. (2005)
Bankruptcy code	A proxy for the existence of an explicit bankruptcy code, measured as a dummy variable equal to 1 if an insolvent firm is most likely to undergo a reorganization proceeding	Djankov et al. (2008)
Public bond/GDP		World Development Indicators, World Bank, Financial Development and Structure Dataset
Miller tax	Estimate of the miller tax ratio equal to $(1 - [(after\ tax\ value\ of\ dividends)/(after\ tax\ value\ of\ interest)])$ calculated using statutory tax rates	OECD tax database, Price Waterhouse Coopers, Doing Business, Ernst Young
Classical tax	Dummy equal to 1 if the bank is located in the classical tax system	OECD tax database, Price Waterhouse Coopers, Doing Business, Ernst Young
Crisis	Dummy equals 1 if $t = 2007-2010$ and 0 otherwise	
Log listed companies	Logarithm of a country's number of listed companies	
Log (GDS bil)	Logarithm of a country's domestic savings	
Creditor rights	Creditor rights index	Djankov et al. (2007)
Corruption index	An index ranges from 0 to 10, with larger value indicating more severe corruption	Corruption Perception Index, Transparency International
Developed	Dummy equal to 1 if a country is classified as developed according to the World Bank classification based on countries' gross national income level	World Development Indicators, World Bank
Common law	Dummy equal to 1 if a country adopts the common law system	Treisman (2000) and Djankov et al. (2007)

Variables	Descriptions	Sources
<i>Risk measures:</i>		
TR	Total risk is the standard deviation of the daily bank stock return in each year	DataStream
IDIOR	Idiosyncratic risk is the standard deviation of the error terms in Eq. (1)	DataStream
Beta	Systematic risk is the coefficient of R_{mt} in Eq. (1)	DataStream
Z	Insolvency risk is the Z-score= $[\text{Average (returns)} + \text{Average (Equity/total assets)}] / \text{Std (Equity/total assets)}$	DataStream/ Bankscope
<i>Bank variables:</i>		
Size	Bank size is the natural logarithm of total assets at the end of each fiscal year	Bankscope
Capital	Bank capital is total equity/total assets	Bankscope
ROA	Return on assets is net income/ total assets	Bankscope
Q	Keeley's Q is the sum of the market value of equity plus the book value of liabilities divided by the book value of total assets (Keeley, 1990)	Bankscope
<i>CEO characteristics:</i>		
CEOpower	CEO Power is an index constructed by summing three binary variables: 1) if the CEO is also one of the bank's founders, one, otherwise zero; 2) if the CEO is the only insider on the board, one, otherwise zero; and 3) a dummy variable equal to one which indicates whether the CEO is, either, the chairman and the president, or, is the chairman and the bank has no president or chief operating officer (COO), otherwise zero.	Hand collection
Overconfident	Total confidence is a dummy variable equal to 1 when the number of "confident" and "optimistic" mentions for a CEO in the LexisNexis and The Wall Street Journal searches exceeds the number of "not confident," "not optimistic," and "reliable, cautious, practical, conservative, steady, frugal" mentions	Hand collection
Male	Dummy equal to 1 if the CEO is male, otherwise 0	Hand collection
International Q	Dummy equal to 1 if the CEO has international qualifications, otherwise 0	Hand collection
Internally	Dummy equal to 1 if the CEO is internally appointed, otherwise 0	Hand collection
H.Edu	Dummy equal to 1 if the CEO has a Master's degree or higher, otherwise 0	Hand collection



Ownership	The percentage of a bank's shareholdings	Hand collection
LgTenure	Number of years that a CEO is in the Board	Hand collection
Age	Age of CEOs	Hand collection
<i>Country variables:</i>		
IDV	Hofstede's cultural index on individualism	Hofstede (2001)
UAI	Hofstede's cultural index on uncertainty avoidance	Hofstede (2001)
H-IND	House et al.'s cultural index on individualism	House et al. (2004)
H-UAI	House et al.'s cultural index on uncertainty avoidance	House et al. (2004)
CR	Creditor rights index	Djankov et al. (2007)
CommonLaw	Dummy variable equal to 1 if a country's legal origin is common law, and 0 if the legal origin is French, German, or Scandinavian civil law	Treisman (2002) and Djankov et al. (2007)
Corruption	An index ranges from 0 to 10, with larger value indicating more severe corruption	Corruption Perception Index, Transparency International
LgGDP	Natural logarithm of GDP	World Development Indicators, World Bank
Institution	An arithmetic average of five indicators (indicators: voice, political stability, government effectiveness, regulatory quality, and rule of law)	Kaufmann et al. (2009), World Bank
Deposit.ins	Dummy equal to one where there is explicit deposit insurance	Demirgüç-Kunt et al. (2008)