

# **Bank Competition and Financial Stability: A Meta-Analysis**

Samangi Bandaranayake

PhD Candidate

University of Canterbury

New Zealand

# Outline of the Presentation

- Theoretical views on bank competition and financial stability
- Research questions
- Meta-Regression-Analysis
- Data
- Results
- Conclusions

# Bank Competition Fragility

- Competitive banks have less market power → less profitable, hence more incentives for taking risk  
(Hellmann, Murdock & Stiglitz, 2000)
- Competitive banking systems can diversify less easily than larger concentrated banks, hence more vulnerable to adverse shocks  
(Beck, Demirgüç-Kunt & Levine, 2006)

# Bank Competition Stability

- ‘Moral hazard’ issues are less when given less market power, hence less risk-taking incentives

(Mishkin, 1999)

- Competitive banks charge lower interest rates → low bankruptcy rates for borrowers; hence increased financial stability

(Boyd and De Nicoló, 2005)

# Research Questions

Does bank competition affect financial stability?  
If it does, is the effect positive or negative?  
And how large is the effect?

# Meta-Regression-Analysis

- It is a framework that can be used to:
  - summarize and qualify estimates
  - correct these estimates for publication bias
  - test economic theories
  - explain heterogeneity.

Stanley & Doucouliagos (2012)

# Meta-Analyses in Economics

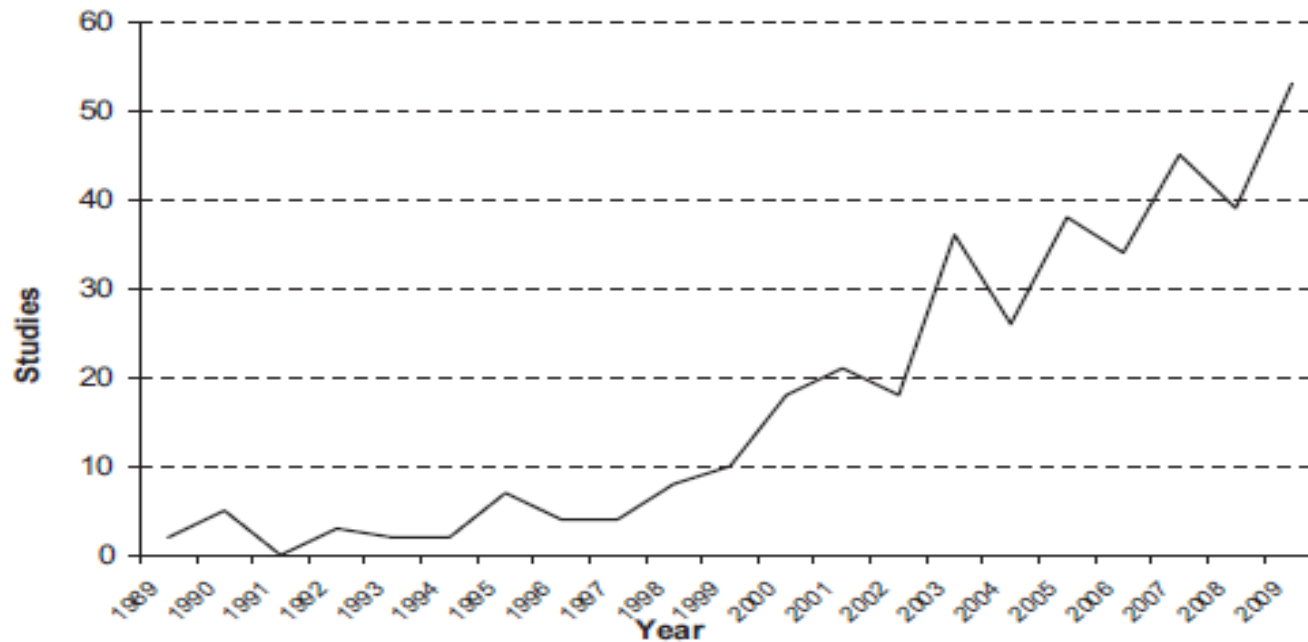


Figure 1.1 Meta-analysis in economics over time

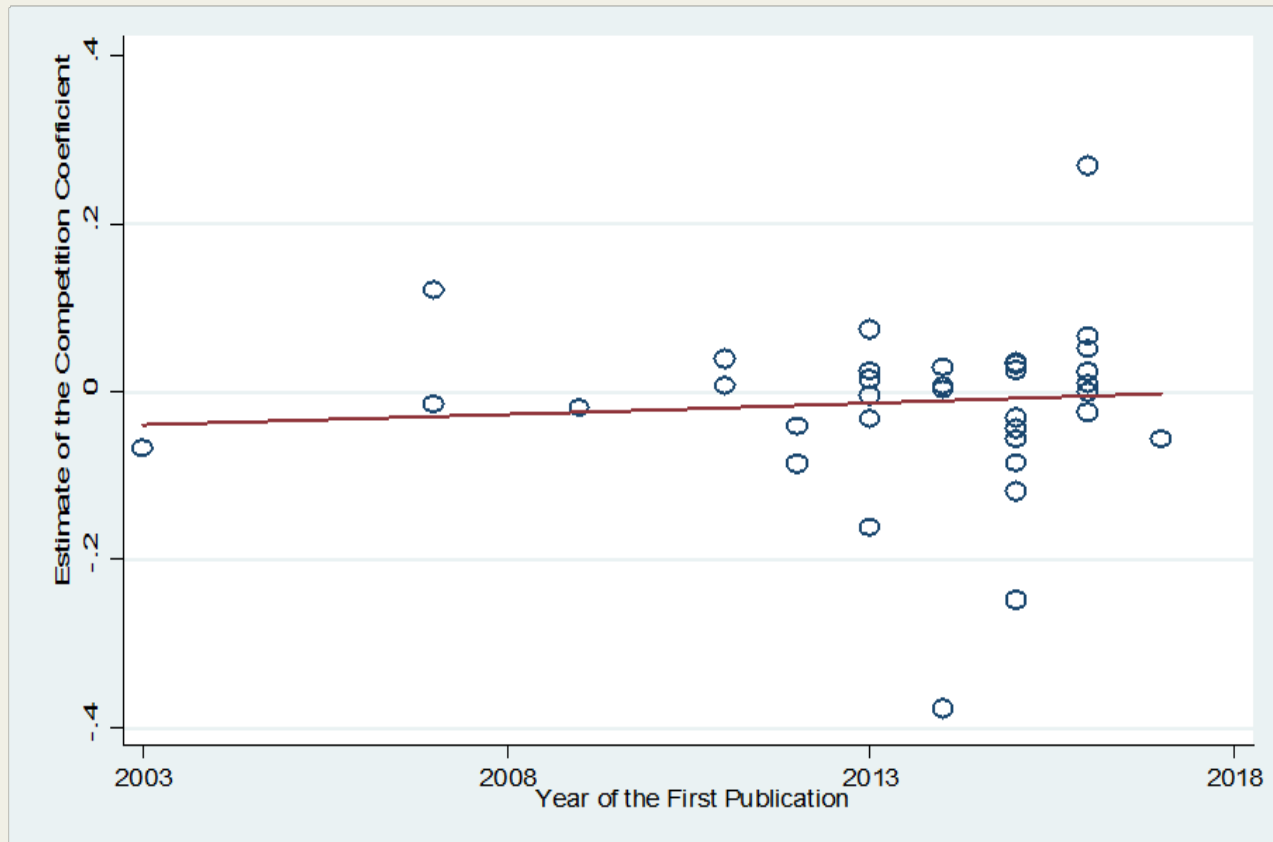
Source: Stanley, T.D., and Doucouliagos, H. (2012). *Meta-regression analysis in economics and business*. London: Routledge

# Data

- Replication of Zigrainova and Havranek (2016)
  - Push-button replication
  - Re-coding 598 estimates from 31 studies employed by Zigrainova and Havranek (2016)
- 762 estimates from a list of additional studies on bank competition and financial stability



# Estimates of the Bank Competition



# Measures of Bank Competition and Financial Stability

- Financial Stability
  - Z-score
  - NPLs
  - Profitability
  - Capitalization
  - Distance-to-default
- Bank Competition
  - H-statistic
  - Lerner index
  - Boone indicator
  - Concentration ratio

# Partial Correlation Coefficient

- Transform the reported estimates into partial correlation coefficients (PCCs).
- The PCC is a unitless measure of the strength and direction of the association between competition and stability, while holding other variables constant.

$$PCC = \frac{t}{\sqrt{t^2 + df}}$$
$$SEPCC = \sqrt{\frac{(1 - PCC^2)}{df}}$$

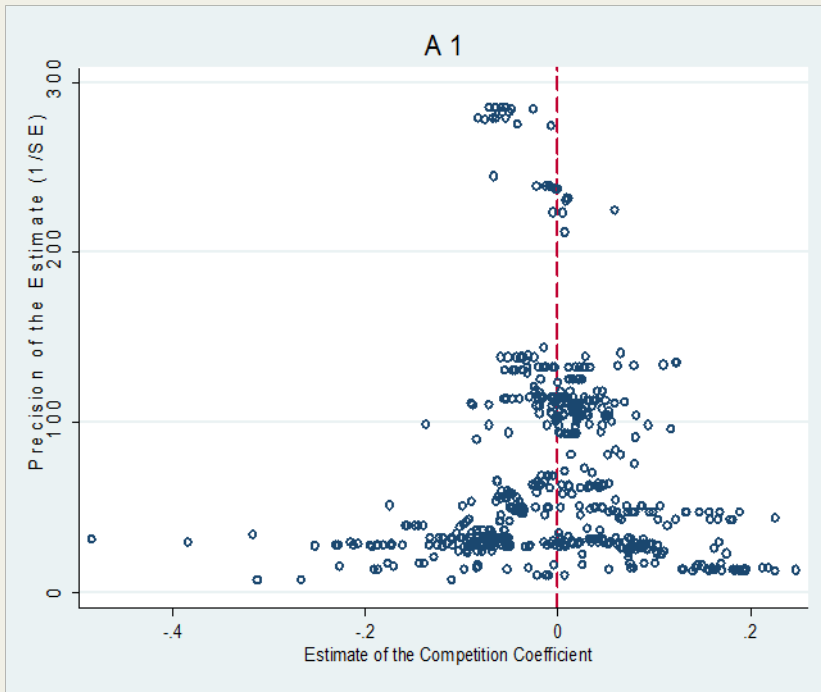
where  $t$  is t-statistic of the estimated coefficient and  $df$  is the degrees of freedom of the estimation.

# PCCs for Different Country Groups

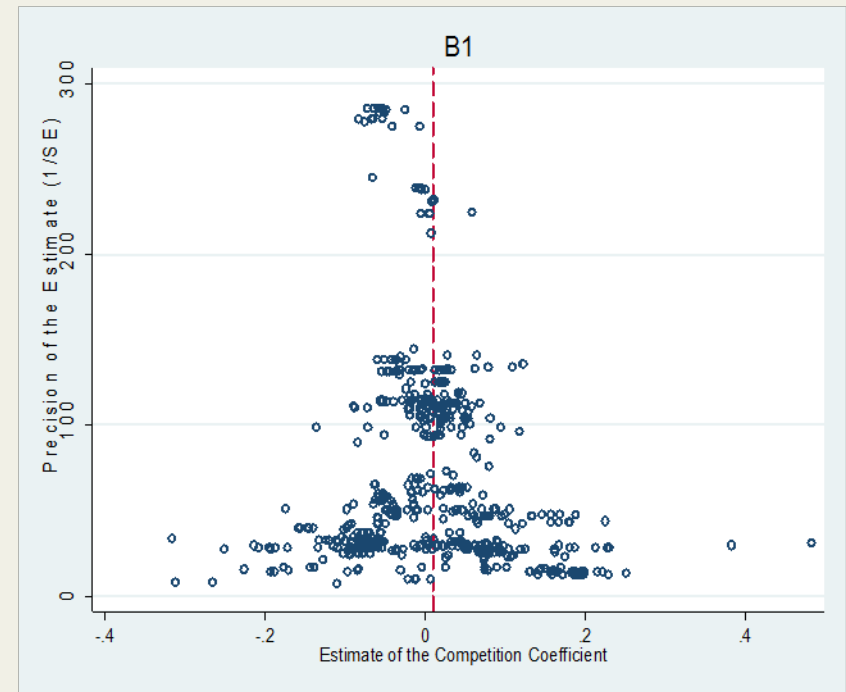
Country Group	Unweighted		Weighted				No of estimates
	Mean	95% CI	Mean	95% CI			
<b>Panel A</b>							
<b>All</b>	-0.001	-0.025	0.023	-0.012	-0.035	0.011	598
<b>Developed</b>	0.020	-0.032	0.073	0.011	-0.030	0.052	201
<b>Developing and transition</b>	0.001	-0.022	0.023	-0.019	-0.051	0.012	194
<b>Panel B</b>							
<b>All</b>	0.009	-0.015	0.033	-0.001	-0.025	0.023	598
<b>Developed</b>	0.025***	0.007	0.043	0.020**	0.003	0.038	149
<b>Developing and transition</b>	0.006	-0.023	0.035	-0.012	-0.054	0.030	154
<b>Panel C</b>							
<b>All</b>	-0.009	-0.029	0.010	-0.016	-0.052	0.019	762
<b>Developed</b>	-0.006	-0.033	0.021	-0.006	0.036	0.024	333
<b>Developing and transition</b>	0.001	-0.037	0.039	-0.024	-0.118	0.069	185

# Testing for Publication Bias

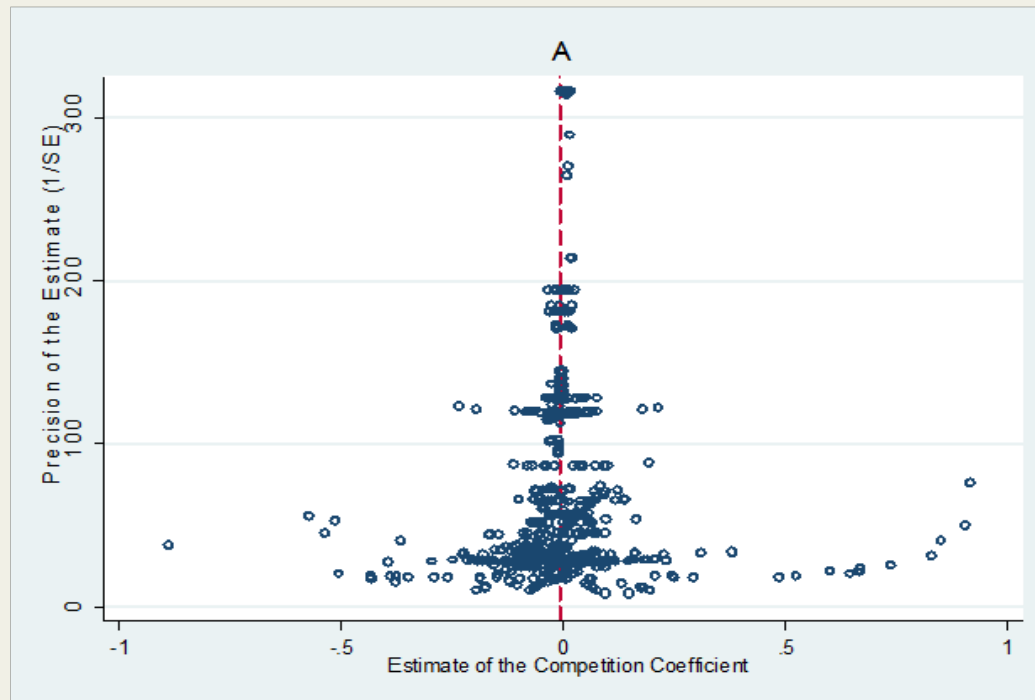
## Push-button



## Verification



# Testing for Publication Bias (Cont...)



# Funnel Asymmetry Test

- It examines the relationship between the coefficient estimates and their standard errors.
- When there is no publication bias, there is no correlation between the PCC and standard errors of PCC.

$$PCC = \beta_0 + \beta_1 SE_{PCC} + \varepsilon$$

$$\beta_1 = 0$$

# Funnel Asymmetry Test (Cont...)

	FE	FE_Published	Instrument	Instrument_Published
<b>Panel A</b>				
SE (publication bias)	-1.671**	-1.898**	-1.614***	-2.291***
Constant (effect beyond bias)	0.044**	0.073**	0.043***	0.086***
No of estimates	598	376	598	376
No of studies	31	21	31	21
<b>Panel B</b>				
SE (publication bias)	-1.7443**	-1.8586**	-1.561***	-2.218***
Constant (effect beyond bias)	0.055***	0.071**	0.050***	0.083***
No of estimates	598	376	598	376
No of studies	31	21	31	21
<b>Panel C</b>				
SE (publication bias)	-1.837	-2.249	0.023	-0.112
Constant (effect beyond bias)	0.044	0.060	-0.010	-0.005
No of estimates	762	598	762	598
No of studies	35	27	35	27



# Precision Effect Test

- It tests for the significance of the overall effect.
- The estimation equation of FAT divided by the standard error of PCC.

$$t = \beta_1 + \beta_0 \left( \frac{1}{SE_{PCC}} \right) + \mu$$
$$\beta_0 = 0$$

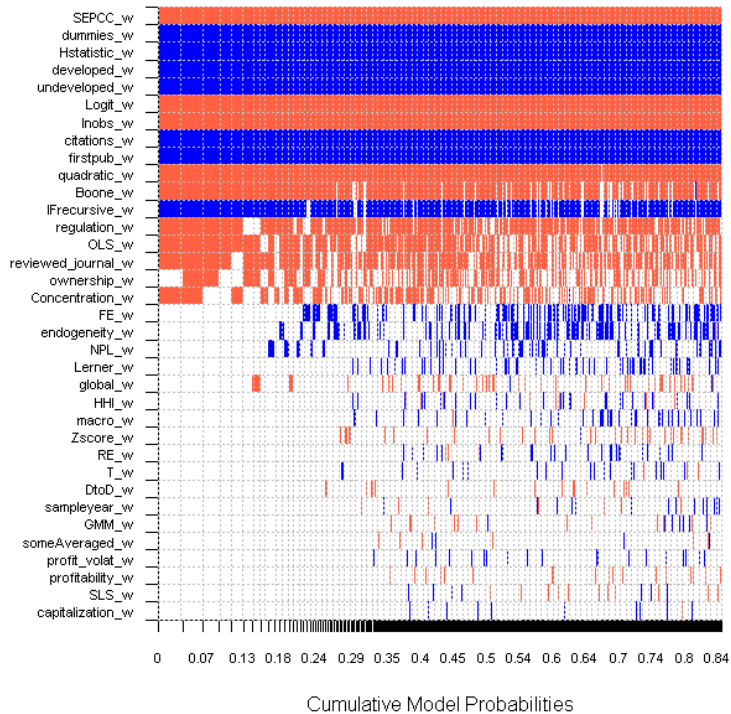
# Precision Effect Test (Cont...)

	FE	FE_Published	Instrument	Instrument_Published
<b>Panel A</b>				
1/SE (effect beyond bias)	0.005	0.065	0.019**	0.053***
Constant (publication bias)	-0.757	-4.000*	-1.706**	-3.344***
No of estimates	598	376	598	376
No of studies	31	21	31	21
<b>Panel B</b>				
1/SE (effect beyond bias)	0.005	0.062	0.018*	0.050***
Constant (publication bias)	-0.491	-3.833	-1.343**	-3.152***
No of estimates	598	376	598	376
No of studies	31	21	31	21
<b>Panel C</b>				
1/SE (effect beyond bias)	0.030	0.025	-0.013	-0.008
Constant (publication bias)	-2.409	-1.918	0.837	0.222
No of estimates	762	598	762	598
No of studies	35	27	35	27

# Bayesian Model Averaging

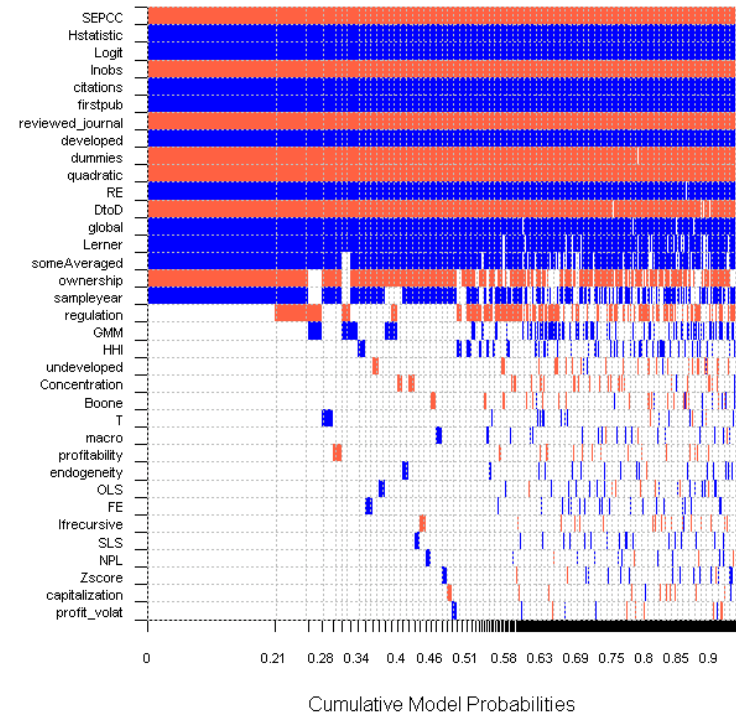
## Push-button

Model Inclusion Based on Best 5000 Models



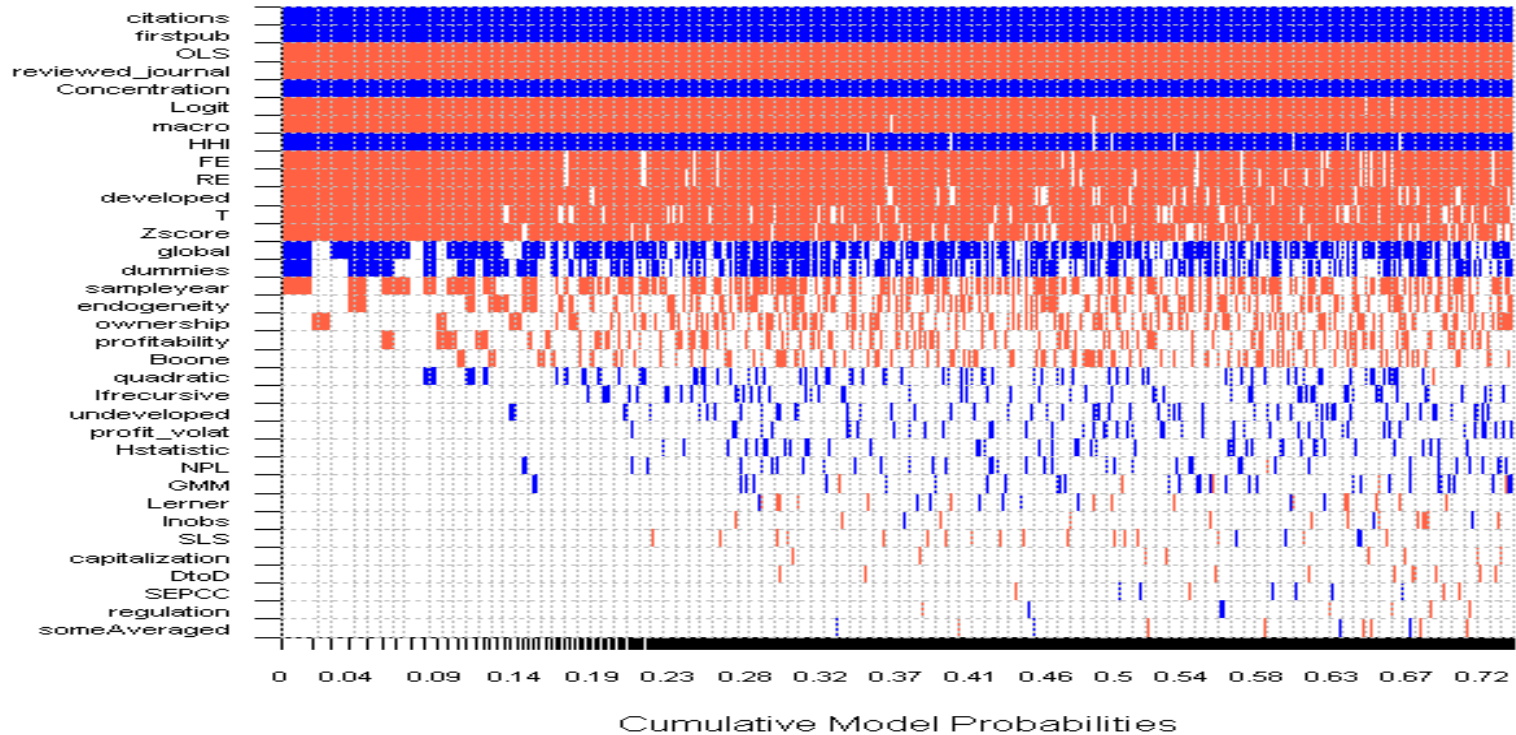
## Verification

Model Inclusion Based on Best 5000 Models



# Bayesian Model Averaging (Cont...)

Model Inclusion Based on Best 5000 Models



# Conclusions

- There is a small mean effect of  $-0.001$  from bank competition on financial stability which is statistically insignificant.
- Re-coding results are not identical. The mean effect of bank competition on stability is  $0.009$ .
- The mean effect of additional estimates is  $-0.009$ .
- The overall conclusion is the same.

# Conclusions (Cont...)

- Heterogeneity in the literature which leads to different results.
- The results vary with the use of proxy measures for competition and stability, country categorisation, and estimation methods.