Banking Crises and Crisis Dating: Theory and Evidence

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The problem...

- The empirical literature on bank fragility has focused on documenting many empirical regularities in the data (Allen and Gale, 2007)
  - **Yet, what a banking crisis is, when it occurs and how long it lasts has been only loosely informed by or derived from theory**
  - **As a result**, this literature offers many—often contrasting—-findings depending on the samples used and the dating of banking crises

....is measurement without theory

- Many studies use **binary indicators of banking crises** (**BC indicators**) based on an identification of beginning and duration of crises, and whether they are "systemic" or not
  - However, we show that this identification is **based primarily on information on government actions undertaken in response of banking distress**
- **No theory is used to identify the realization of *systemic bank shocks***
- **This is a large literature.**

Four problems with BC indicators

- 1 Different studies produce wildly varying results
- 2 Lagged timing. Record realization of a systemic bank shock too late on average
- **3 Importantly**, using the BC indicators is like studying a disease and dating its onset when the patient is admitted to a hospital .
  - ***Disentangling* a negative shock from the policy response is key to understanding bank fragility**
- **4**. Researchers have interpreted BC indicators as crisis onset indicators. (But, they aren't).

What We Do: Theory

- Formulate a simple banking model in which a **systemic bank shock (SBS)** and a government response to a SBS are explicitly defined
- Use the model to ***identify*** (theory-based) SBS indicators
- ***Construct*** empirical SBS indicators

What We Do: Empirics

- Relate SBS indicators to BC indicators, and examine the determinants of both BC and SBS indicators separately
    - We use two large samples: country-level (used extensively in the literature) and bank-level (novel)
- Set of Logit regressions with binary BC and SBS indicators as dependent variables

Key results

- **1. BC indicators are defined based on regulatory and central bank reports and actions.**

  2. Our SBS indicators consistently predict BC indicators.

  – Implication? BC indicators indeed measure *lagged* government responses to systemic bank shocks.
- **3. Key macroeconomic and structural variables** have effects on the prob of a government response (BC) ***significantly different*** from their effects on the prob of a systemic bank shock (SBS)

Plan

- Theory
- Measurement
- Evidence

The model

Entrepreneurs

- continuum,
- uniformly distributed on the unit interval,
- no initial resources,
- They have access to identical risky projects with fixed initial investment and random yield,
- Bank finances entrepreneurs with simple debt contracts. (Not proved optimal contracts, but could be).

Entrepreneurs

Undertake the project if

$$E_t P_{t+1} \left[Y - R^L \right] \geq a$$

Total demand for loans

$$X_t \equiv F\left[a^* \right] = \int_o^{a^*} f\left[a \right] da$$

Implicit loan demand function

$$R^L \left[X_t, E_t P_{t+1} \right] = Y - \left[E_t P_{t+1} \right]^{-1} X_t$$

Bonds, Deposits, Banks and Government

- one-period government bonds
- Depositors invest all their funds in a bank
- Banks: collect insured deposits, pay flat insurance premium (zero), choose total lending and bond investment amounts
- Government: supplies fixed amount of bonds to the market, guarantees deposits by issuing additional bonds

Systemic Bank Shocks (SBS)

- Occur, by definition, when banking system's total profits are negative.

- Government's response to a SBS is triggered when the government is able to ascertain that the banking system is insolvent by observing bank profits (with a lag)

Sequence of events

Period *t* : banks collect deposits, entrepreneurs demand funds, banks supply funds and invest in bonds. Deposits, bank loans, and investment in bonds are determined.

Period *t+1* : the shock is realized and observed by entrepreneurs and banks.

If bank profits are non-negative, depositors are paid in full.

If profits are negative, this is a systemic bank shock

Sequence of events (cont.)

Period *t+2* : Government respond to the crisis by issuing bonds and paying depositors any claim unsatisfied by banks.

The previous sequence of actions repeats.

Notation

$$p \equiv E_t P_{t+1}$$

Total deposits $Z \equiv \sum_{i=1}^{N} D_i$

Sum of all deposits except bank *i*

$$D_{-i} \equiv \sum_{j \neq i} D_j$$

Sum of all loans except bank *i* $L_{-i} \equiv \sum_{j \neq i} L_j$

Bank problem

$$\max_{L,b,D \in R_+^3} \; pR^L \;\; L_{-i} + L, p \;\; L + rB - R_D \;\; D_{-i} + D \;\; D$$

subject to $L + b = D$

Government's policy function and the bond market

Government policy

$$I_t^G \ \Pi_{t-1} = 1 \quad \text{if} \quad \Pi_{t-1} < 0$$

Government bond market

$$B_t^S = \bar{B} + B_t \ \Pi_{t-1}$$

Where

$$B_t \ \Pi_{t-1} = I_t^G \ \Pi_{t-1} \ \Pi_{t-1}$$

Equilibrium

An **equilibrium** is a sequence of total loans, total bonds, total deposits , bond interest rates, loan rates, deposit rates and a government policy function such that :

- the banking industry is in a symmetric Nash equilibrium
- the bond market is in equilibrium
- the government meets its commitment to deposit insurance

Example: linear loan supply and deposit demand

$$R^L\ \ X, p\ = Y - p^{-1}X$$

$$R^D\ \ Z\ = \alpha Z$$

Comparative Statics

Exogenous variables

	Firm failures increase p decreases	Depositors withdraw funds α increases	Output declines Y decreases
Endogenous variables			
Total loans	**down**	**down**	**down**
Total deposits	**down**	**down**	**down**
Bond interest rate	down	up	down
Loan rate	up	up	up
Deposit rate	up	up	up
Spread	up	up	up
Profits	**down**	**down**	**down**

Theory-based candidate SBS measures

- Sharp decline in total loans
- Sharp decline in total deposits

Sharp decline in bank profits

But, we cannot observe profits for the country sample. Can observe for our individual bank panel.

Evidence

- Two datasets
- A large annual **cross-country** panel dataset used extensively in the literature
  - A representative large sample. Does not exactly replicate any one study.
- A large annual **bank-level** panel dataset used in Boyd, De Nicolò and Jalal (2009) and De Nicolò and Loukoianova (2007)
  - 2000+ banks in ~ 120 non advanced countries

Four (systemic) BC Indicators

- DD: Demirgüç-Kunt and Detragiache (2002, 2005)
- CEA: Caprio et al. (2005) , Systemic
- RR: Reinhart and Rogoff (2008)
- LV: Laeven and Valencia (2008)

Two SBS Indicators

A) Significant decline in real credit growth

- Two measures: lowest 25% (SBSL25) and 10% percentile (SBSL10)

B) Significant decline in growth of deposit to GDP ratio

- Two measures: lowest 25% (SBSD25) and 10% percentile (SBSD10)
  - Later, look at profits decline but with different dataset.

Statistics on BC indicators

Two types:

- "start date": exclude all "crisis" years after the first
- "full": include all crisis years.
  - Both types have been used extensively in this literature.
    - We prefer the full set – including all crisis years.

Table 1. BC Indicators: Pairwise Comparisons

Classifications		Total country years in common	Number of country years A = NO crisis B= crisis	Number of country years A = crisis B=NO crisis	Total country years discrepancies
A	B				
Only first crisis country year					
DD	CEA	1720	14	20	34
DD	RR	1986	15	30	45
DD	LV	1920	15	21	36
CEA	RR	1777	7	18	25
CEA	LV	1769	10	10	20
LV	RR	1976	22	12	34

		Total agreed country years	Total discrepancies as % of common country years	Total discrepancies as % of agreed crisis country years + discrepancies
DD	CEA	55	2.0	38.2
DD	RR	46	2.3	49.5
DD	LV	57	1.9	38.7
CEA	RR	55	1.4	31.3
CEA	LV	67	1.1	23.0
LV	RR	55	1.7	38.2

The crisis-timing dating is quite different across the four studies

- "Where it matters" (around crises) these studies disagree:
  - 38, 49, 39, 31, 23 and 38 percent of the time.
  - This seems enormous disagreement for careful studies, trying to date the same recent events.
    - Not surprising that different studies often reach different conclusions

But the studies are, effectively, all dating the same thing: government recognition and intervention

- We carefully reviewed (a huge task) the criteria used in each study to identify "a banking crisis."
  - Variables, definitions and (especially) sources.
    - Have to read the fine print in all the appendices.

- These overwhelmingly depend on government information sources and consider policy actions. (Discount Window actions, suspensions, bank closings, capital injections, etc.)
  - Estimates of bank losses are occasionally mentioned, but these depend on government (central bank estimates).

In a sense, we could end the study right here!

- Existing work has employed dependent variables that are not robust (vary enormously across different studies).
- Existing work has identified official responses to banking crises -- not crisis onsets.
  - And then interpreted official responses as crisis onsets.
- But it is interesting to go further and see what these problems have produced.

Benchmark specification of Logit model

RHS variables:

a) Real GDP growth

b) Change in Terms of Trade

c) Exchange rate depreciation

d) Real interest rate

e) Inflation

f) Real GDP per capita

g) M2/intern reserves

i) Private credit/GDP

h) Twice lagged real credit growth

rgdpgr

totch

depr

rint

infl

rgdpcp

m2res

privcrd_gdp

rdomcredgr(t-2)

Logit regressions with “start date” BC indicators (Table 2)

- Real GDP growth (-), real interest rate (+) and twice lagged credit growth (+) the only significant variables across ***all*** BC indicators
- Other variables are not significant or results differ according to BC classification
    - We estimate Logits: i. With all available data, and ii. Only with common datapoints

Table 2. Logit Regressions with Start Date BC Indicators

COEFFICIENT	(1) DDs	(2) CEAs	(3) RRs	(4) LVs
rgdpgr	-0.109***	-0.121***	-0.130***	-0.102***
	[0.000214]	[0.000253]	[0.0000366]	[0.00157]
rint	0.000417**	0.000353**	0.000646**	0.000301**
	[0.0116]	[0.0284]	[0.0158]	[0.0361]
L2.rdomcredgr	0.0127**	0.0124**	0.0137**	0.00511
	[0.0453]	[0.0405]	[0.0144]	[0.355]
	(5) DDs	(6) CEAs	(7) RRs	(8) LVs
rgdpgr	-0.139***	-0.139***	-0.150***	-0.144***
	[0.0000169]	[0.0000464]	[0.0000500]	[0.0000136]
rint	0.000452**	0.000469***	0.000607***	0.000389**
	[0.0123]	[0.00883]	[0.00833]	[0.0141]
L2.rdomcredgr	0.0134**	0.00814	0.0142**	0.00953*
	[0.0292]	[0.198]	[0.0295]	[0.0997]

Logit regressions with “full” BC Indicators (Table 3)

- Using these is (arguably) better because they are consistent with theory and statistical problems are avoided
- However, real growth and (to a lesser extent) real interest rate are the only significant variables across regressions

Table 3. Logit Regressions with BC Indicators (all “crisis” years)

COEFFICIENT	(1) DD	(2) CEA	(3) RR	(4) LV
rgdpgr	-0.0674***	-0.0867***	-0.0840***	-0.0839***
	[0.000424]	[0.0000158]	[0.00000208]	[0.0000375]
	(5)	(6)	(7)	(8)
COEFFICIENT	DD	CEA	RR	LV
rgdpgr	-0.139***	-0.139***	-0.147***	-0.144***
	[0.0000169]	[0.0000464]	[0.0000595]	[0.0000136]

Are BC indicators reasonable proxy measures of systemic bank shocks?

- If BC indicators are contemporaneous to systemic bank shock realizations, then SBS indicators **should not predict** BC indicators.
- In this case BC indicators would be reasonable proxy indicators of banking crises
- **But they are not (Table 4)**
  - BC indicators actually track ***lagged*** **government responses to SBSs**

Table 4. SBS *Lending* Indicators predict BC Indicators

	(1)	(2)	(3)	(4)
COEFFICIENT	DD	CEA	RR	LV
rgdpgr	-0.0674***	-0.0871***	-0.0841***	-0.0837***
	[0.000438]	[0.0000149]	[0.00000274]	[0.0000405]
L.SBSL25	**0.412*** **	**0.576*** **	**0.519*** **	**0.428*** **
	[0.00388]	**[0.000126]**	**[0.000126]**	**[0.00733]**
	(5)	(6)	(7)	(8)
COEFFICIENT	DD	CEA	RR	LV
rgdpgr	-0.0672***	-0.0869***	-0.0840***	-0.0837***
	[0.000437]	[0.0000190]	[0.00000325]	[0.0000426]
L.SBSL10	**0.365** **	**0.785*** **	**0.771*** **	**0.632*** **
	[0.0469]	**[0.0000272]**	**[0.0000261]**	**[0.000901]**

SBS deposit indicators have some (but weaker) predictive power...

- **Perhaps not surprising..... (Table 5)**
- Depositors may react to a systemic bank shock with a lag because of informational asymmetries.....
- Or they may not react at all if guarantees are in place or are swiftly introduced.....

Table 5. SBS *Deposit* Indicators (weakly) predict BC Indicators

	(1)	(2)	(3)	(4)
COEFFICIENT	DD	CEA	RR	LV
rgdpgr	-0.0674***	-0.0869***	-0.0840***	-0.0840***
	[0.000431]	[0.0000168]	[0.00000224]	[0.0000390]
L.SBSD25	**0.152**	**0.143**	**0.0542**	**0.128**
	[0.415]	**[0.425]**	**[0.763]**	**[0.485]**
	(5)	(6)	(7)	(8)
COEFFICIENT	DD	CEA	RR	LV
rgdpgr	-0.0674***	-0.0872***	-0.0840***	-0.0842***
	[0.000430]	[0.0000168]	[0.00000234]	[0.0000384]
L.SBSD10	**0.212**	**0.340***	**0.182**	**0.338***
	[0.343]	**[0.0922]**	**[0.482]**	**[0.0949]**

Determinants of SBS indicators (Table 6)

- **Most macro variables are relevant and overall explanatory power stronger, but some explanatory variables have signs opposite to what found with BC indicators**
- **Both these facts make sense:** the two indicators measure different things:
- the **SBS** and the **government response** to it.

- Note that SBS deposit indicators are significantly affected by lagged SBS loan indicators.
  - It appears there are interesting dynamics not captured in our static model.
    - Loan shocks first, affect deposit demand.

Table 6. Logit Regressions with SBS Indicators

	(1)	(2)	(3)	(4)
COEFFICIENT	SBSL25	SBSL10	SBSD25	SBSD10
rgdpgr	-0.119***	-0.0948***	0.0280*	0.0168
	[0.000000706]	[0.00119]	[0.0836]	[0.403]
rint	-0.000308**	-0.000220*	0.0000618	0.0000411
	[0.0226]	[0.0688]	[0.627]	[0.735]
infl	-0.000582**	-0.000566**	-0.000119	-0.000258
	[0.0250]	[0.0225]	[0.660]	[0.400]
totch	0.0118***	0.00720*	0.0116**	0.0178**
	[0.00344]	[0.0658]	[0.0297]	[0.0133]
depr	1.238***	1.615***	0.392	0.876**
	[0.00274]	[0.000224]	[0.291]	[0.0302]
m2res	0.00128**	-0.000229	0.00174**	0.00164*
	[0.0139]	[0.710]	[0.0145]	[0.0971]
rgdpcp	-0.0000527***	0.00000223	-0.0000212**	-0.0000580***
	[0.0000839]	[0.940]	[0.0477]	[0.00149]
privcrd_gdp	-0.000925***	-5.120***	0.000578***	-0.00276**
	[0.000444]	[0.0000900]	[0.00461]	[0.0132]
L2.rdomcredgr	-0.00608	0.00584	-0.0150***	-0.00954**
	[0.151]	[0.213]	[0.000239]	[0.0369]
Constant	-0.692***	-1.126***	-1.242***	-2.287***
	[2.19e-08]	[7.49e-08]	[0]	[0]
Observations	1707	1707	1707	1707
# of countries	91	91	91	91
Pseudo-R2	0.122	0.228	0.0351	0.0712

Let us summarize what we have seen so far

- 1. BC indicators date govt. interventions (original sources).
- 2. BC indicator dating is shockingly “varied”.
- 3. Tests with BC indicators: results heavily depend on which indicator series.
- 4. SBS indicators predict BC indicators.
- 5. Results look stronger and “more sensible” with SBS than with BC indicators.

Implications

- We next treat SBS as banking shock indicators and BC as government response indicators, given a shock.
- With this interpretation, we re-consider results obtained in three streams of existing research:
  a) **Concentration and banking crises**
  b) **Deposit Insurance and banking crises**
  c) **External shocks and banking crises.**

1. Banking Concentration and Banking Crises: Existing Literature

- Consensus. Higher concentration is associated, *cet. par*., with greater probability of a banking crisis.
  - Various studies.

1: What we find interpreting SBS as crisis and BC as govt. response

- The probability of a systemic bank shock ***increases*** with bank concentration (*a la* Boyd-De Nicolo, various)

BUT

- The probability of a government response to banking distress ***does not much depend*** on bank concentration (contradicting most existing literature).
    - This is simply a robustness problem.

2. Deposit insurance and banking crises: the existing literature.

- Concensus. Deposit insurance (or liberal deposit insurance provisions) is associated with greater banking crisis probability.
  - Interpretation? Moral hazard problems due to deposit insurance.

2: Deposit Insurance and banking crises: what we find.

- The probability of a systemic bank shock **does not depend** on an explicit deposit insurance system being in place

BUT

- The probability of a government response is **higher** in countries with an explicit deposit insurance system
  - reported in literature, but misinterpreted.

3. External Shocks and banking crises: existing literature Ignore for NBER Mpls. Fed.

- The probability of a systemic bank shock ***increases*** with a worsening of the terms of trade, currency depreciation and currency crises . Two way dependency, banking and currency crises.

BUT

- The probability of a government response to banking distress ***does not much depend*** on these "external factors".
  - Often found, and misinterpreted in the literature

Concentration and Competition

- **Beck et al. (JBF, 2006 plus others) :** "Crises" are **less** likely in more concentrated banking systems
- **Our results:**
  a) **Government responses to banking distress** (BC indicators) do not depend on bank concentration, but....
  b) **Systemic bank shocks (SBS) are more likely** in more concentrated banking systems, consistent with Boyd, De Nicolo' and Jalal (2006, 2009) and De Nicolo' and Loukoianova (2007)

Table 7. Logit Regressions: BC Indicators and Bank Concentration Measures

	(1)	(2)	(3)	(4)
COEFFICIENT	DD	CEA	RR	LV
concen_mean	**-1.363**	**0.238**	**-0.59**	**-0.183**
	[0.103]	**[0.756]**	**[0.460]**	**[0.799]**
	(5)	(6)	(7)	(8)
COEFFICIENT	DD	CEA	RR	LV
avgherf	**-0.118**	**1.114**	**-0.375**	**0.361**
	[0.848]	**[0.221]**	**[0.635]**	**[0.672]**

Table 8. Logit Regressions: SBS Indicators and Bank Concentration

	(1)	(2)	(3)	(4)
COEFFICIENT	SBSL25	SBSL10	SBSD25	SBSD10
concen_mean	**1.656*** [0.00437]**	**1.917** [0.0310]**	**1.045* [0.0694]**	**1.206 [0.140]**
	(5)	(6)	(7)	(8)
COEFFICIENT	SBSL25	SBSL10	SBSD25	SBSD10
avgherf	**1.460*** [0.0000475]**	**1.562*** [0.00135]**	**0.866** [0.0250]**	**1.587*** [0.00121]**

Deposit Insurance

- **Demirgüç-Kunt and Detragiache (JME, 2002), Barth, Caprio and Levine (JFI, 2004) and Beck et al. (JBF, 2006):** "Crises" are **more** likely if a deposit insurance system is in place
  - Interpretation: result of moral hazard incentives.
- **Our results:**
  a) **the probability of a systemic bank shock is unaffected** by the existence of a deposit insurance system
  b) **Government responses to banking distress** are more likely if a deposit insurance system is in place (is it not obvious?).

Table 9. Logit Regressions: BC Indicators, SBS Indicators, and Deposit Insurance

	(1)	(2)	(3)	(4)
COEFFICIENT	DD	CEA	RR	LV
avgherf	**0.189**	**1.898****	**-0.0661**	**0.986**
	[0.766]	**[0.0298]**	**[0.933]**	**[0.242]**
di	**0.568***	**1.325*****	**0.549**	**1.105*****
	[0.0719]	**[0.00185]**	**[0.203]**	**[0.00423]**
	(5)	(6)	(7)	(8)
COEFFICIENT	SBSL25	SBSL10	SBSD25	SBSD10
avgherf	**1.416*****	**1.731*****	**0.904****	**1.893*****
	[0.000249]	**[0.000589]**	**[0.0273]**	**[0.0000349]**
di	**-0.101**	**0.334**	**0.0775**	**0.584**
	[0.685]	**[0.275]**	**[0.789]**	**[0.164]**

External shocks and currency crises

Skip for Mpls.

***Change of specification*:**

- **Lagged values of explanatory variables**
- **Introduce financial openness (Lane and Milesi-Ferretti, 2005) and degree of flexibility of exchange rate arrangements (Reinhart and Rogoff ,2004)**
- **Compute currency crisis indicators (Frankel and Wei, 2005)**

NBER PRESENTATION. STOP.

Existing literature on this topic is large and with inconsistent results

- Kaminsky and Reinhart (1999). Banking crises predict currency crises (but conjecture 2-way effect).
- Eichengree and Rose (1998) and Arteta and Eichengreen (2002). Exchange rate arrangements do not affect liklihood of banking crises.
- Domac and Martinez-Peira (2003). Banking crises less likely with fixed exchange rates.
- Plus many, many others.

Again, *significantly different impact* on SBS and BC indicators

- **SBS indicators**: the probability of a systemic bank is higher with a worsening of terms of trade, depreciations and currency crises
- **BC Indicators**: not much affected
- Financial openness and the degree of exchange rate flexibility **do not appear relevant for either SBS and or BC indicators**
- **With SBS indicators we find evidence of 2-way effects as conjectured by Kaminsky and Reinhart (1999)**

Table 11. Logit Regressions: BC Indicators, Currency, and Twin Crises

COEFFICIENT	DD	CEA	RR	LV
	(1)	(2)	(3)	(4)
L.finopen	**-0.426***	**-0.246**	**-0.385**	**-0.36**
	[0.0869]	**[0.350]**	**[0.153]**	**[0.176]**
L.erclassrr	**0.0178**	**0.0344**	**-0.0215**	**-0.0138**
	[0.631]	**[0.477]**	**[0.632]**	**[0.692]**
L.totch	**0.00307**	**-0.000513**	**-0.000575**	**0.000662**
	[0.423]	**[0.884]**	**[0.879]**	**[0.864]**
L.crisis25	**0.322**	**0.501***	**0.422***	**0.32**
	[0.196]	**[0.0685]**	**[0.0977]**	**[0.232]**
COEFFICIENT	DD	CEA	RR	LV
	(5)	(6)	(7)	(8)
L.finopen	**-0.429***	**-0.251**	**-0.407**	**-0.361**
	[0.0853]	**[0.309]**	**[0.147]**	**[0.181]**
L.erclassrr	**0.0138**	**0.0181**	**-0.0312**	**-0.0226**
	[0.707]	**[0.719]**	**[0.486]**	**[0.523]**
L.totch	**0.00321**	**-0.000805**	**-0.00165**	**0.000254**
	[0.441]	**[0.823]**	**[0.678]**	**[0.951]**
L.stwins2525	**0.289**	**0.299**	**0.359**	**0.163**
	[0.330]	**[0.318]**	**[0.212]**	**[0.585]**

Table 12. Logit Regressions: SBS Indicators and Lagged Currency Crises Indicators

COEFFICIENT	SBSL25	SBSL10	SBSL25	SBSL10
	(1)	(2)	(3)	(4)
L.finopen	**0.0472**	**0.210****	**-0.0441**	**0.0174**
	[0.519]	**[0.0154]**	**[0.310]**	**[0.712]**
L.erclassrr	**-0.00283**	**0.0245**	**0.00398**	**0.0292**
	[0.909]	**[0.350]**	**[0.862]**	**[0.276]**
L.totch	**-0.0175*****	**-0.0191*****	**-0.0215*****	**-0.0197*****
	[0.00140]	**[0.00219]**	**[0.000523]**	**[0.00247]**
L.crisis25	**1.057*****	**0.760*****		
	[7.73e-10]	**[0.00517]**		
L.stwins2525			**0.999*****	**0.321**
			[0.0000637]	**[0.261]**
COEFFICIENT	SBSD25	SBSD10	SBSD25	SBSD10
	(5)	(6)	(7)	(8)
L.finopen	**0.112**	**0.341*****	**0.0372****	**0.0543**
	[0.313]	**[0.00809]**	**[0.0140]**	**[0.230]**
L.erclassrr	**0.0295**	**0.0721*****	**0.0325**	**0.0817*****
	[0.223]	**[0.00972]**	**[0.180]**	**[0.00375]**
L.totch	**-0.00568**	**-0.0120****	**-0.00815**	**-0.0146****
	[0.270]	**[0.0481]**	**[0.106]**	**[0.0148]**
L.crisis25	**0.253**	**0.448***		
	[0.207]	**[0.0662]**		
L.stwins2525			**1.092*****	**0.909*****
			[0.00000730]	**[0.00216]**

Table 13. Logit Regressions: Currency Crises and Lagged SBS Indicators

COEFFICIENT	crisis35 (1)	crisis35 (2)	crisis25 (3)	crisis25 (4)	crisis15 (5)	crisis15 (6)
L.finopen	**-0.128**	**-0.117**	**0.0834**	**0.0857**	**-0.0938**	**-0.0976**
	[0.567]	**[0.592]**	**[0.495]**	**[0.491]**	**[0.463]**	**[0.459]**
L.erclassrr	**-0.0112**	**-0.00997**	**0.0213**	**0.0216**	**0.0276**	**0.0276**
	[0.811]	**[0.835]**	**[0.560]**	**[0.562]**	**[0.416]**	**[0.423]**
L.totch	**-0.00523**	**-0.0044**	**-0.00376**	**-0.00314**	**-0.00508**	**-0.00482**
	[0.437]	**[0.503]**	**[0.482]**	**[0.559]**	**[0.267]**	**[0.297]**
L.SBSL25	**0.420***		**0.414****		**0.329***	
	[0.053]		**[0.036]**		**[0.076]**	
L.SBSD25		**0.258**		**0.435****		**0.607*****
		[0.249]		**[0.037]**		**[0.009]**

Bank-level Dataset: More Powerful Measures and Tests

- **Two SBS measures capturing extreme adverse realizations of bank profits, taking capitalization into account:**
- FAIL5 and FAIL10 : the 5th and 10th percentile of the entire distribution of the sum of profits + capital divided by assets
- **We account for bank heterogeneity across countries estimating random coefficient Logit regressions**

Note. Dep. variable must be reinterpreted.

Bank-level Dataset: ALL previous *results* are supported

- **Our SBS indicators consistently predict BC indicators (Table 14).**
- **The differential impact of key macroeconomic and structural features of economies on BC and SBS indicators is identical to what found with the country-level dataset (Table 15)**.

Conclusion

- **Many results obtained in a large literature using BC indicators need to be re-assessed or re-interpreted**
- **The issues we raise are relevant to a large body of work besides the few studies we have singled out for attention.**
- **A lot remains to be (re?) done……**

Conclusion: Future work, extensions.

- Getting better theory-based SBS indicators
  - Higher frequency
  - Market data (but be careful…..)
  - Leads and lags in loan/deposit shocks.