Municipal Borrowing Costs and State Policies for Distressed Municipalities

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Motivation

- Sovereign credit risk-sharing between countries in Europe has become more prominent since 2008
  - Following the crisis: ECB administered assistance packages to Greece, Ireland, and Portugal
  - March 2015: quantitative easing program in which distressed sovereign bonds would be held by the ECB and European national central banks
- Still unclear: the long-term effects of these risk reallocations on sovereign borrowing costs

Motivation

- The risk-sharing policies of the ECB in many ways parallel those of U.S. states
  - Draghi: “The ECB is ready to do whatever it takes to preserve the Euro” (in the wake of the sovereign debt crisis)
  - Similarly, many U.S. states have policies in place to protect the creditworthiness of the state and its municipalities
    - Edward Rendell, governor of PA in 2010: “(missing a bond payment) would devastate not only the city, but the school district, the county, and central PA” (in the wake of a fiscal crisis in Harrisburg, PA)

Motivation

- This paper examines the implications of intergovernmental risk sharing on government borrowing costs
  - Specifically, the costs and benefits of risk reallocation
- The U.S. municipal bond market provides an ideal setting for examining these implications
  - Significant cross-state variation in risk-sharing policies
  - State policies for its municipalities and ECB policies for its member countries share the same goal to protect the creditworthiness of the region

State Policy for Distressed Municipalities

- "Chapter 9" states allow unconditional Chapter 9 (hands-off)
  - Independence of the local governments from the state
  - Weak creditor protection: Chapter 9 operates advantageously for debtors
- "Proactive" states deal with distressed municipalities directly via state programs (hands-on)
  - Risk transfer from the local governments to the state government
    - Emergency loans and revenue transfers
    - Restructure municipal finances
  - Strong creditor protection
  - Conditional approval of Chapter 9 (last resort)

State Type Classification

	State can restructure: C1	C2	C3	C4	Proactive?
CT	0	1	1	1	
DC	1	0	0	0	
FL	1	0	0	0	
ID	1	0	0	0	
IL	0	1	1	1	
IN	0	0	1	0	
KY	0	1	0	0	
ME	1	1	0	1	Yes
MA	0	1	0	1	
MI	1	1	1	0	Yes
NV	1	1	1	1	Yes
NH	0	0	0	0	
NJ	1	1	0	1	Yes
NM	0	0	0	0	
NY	1	1	1	0	Yes
NC	1	1	0	1	Yes
OH	1	1	0	0	Yes
OR	0	1	0	0	
PA	1	1	1	1	Yes
RI	0	1	0	1	
TN	0	1	0	1	

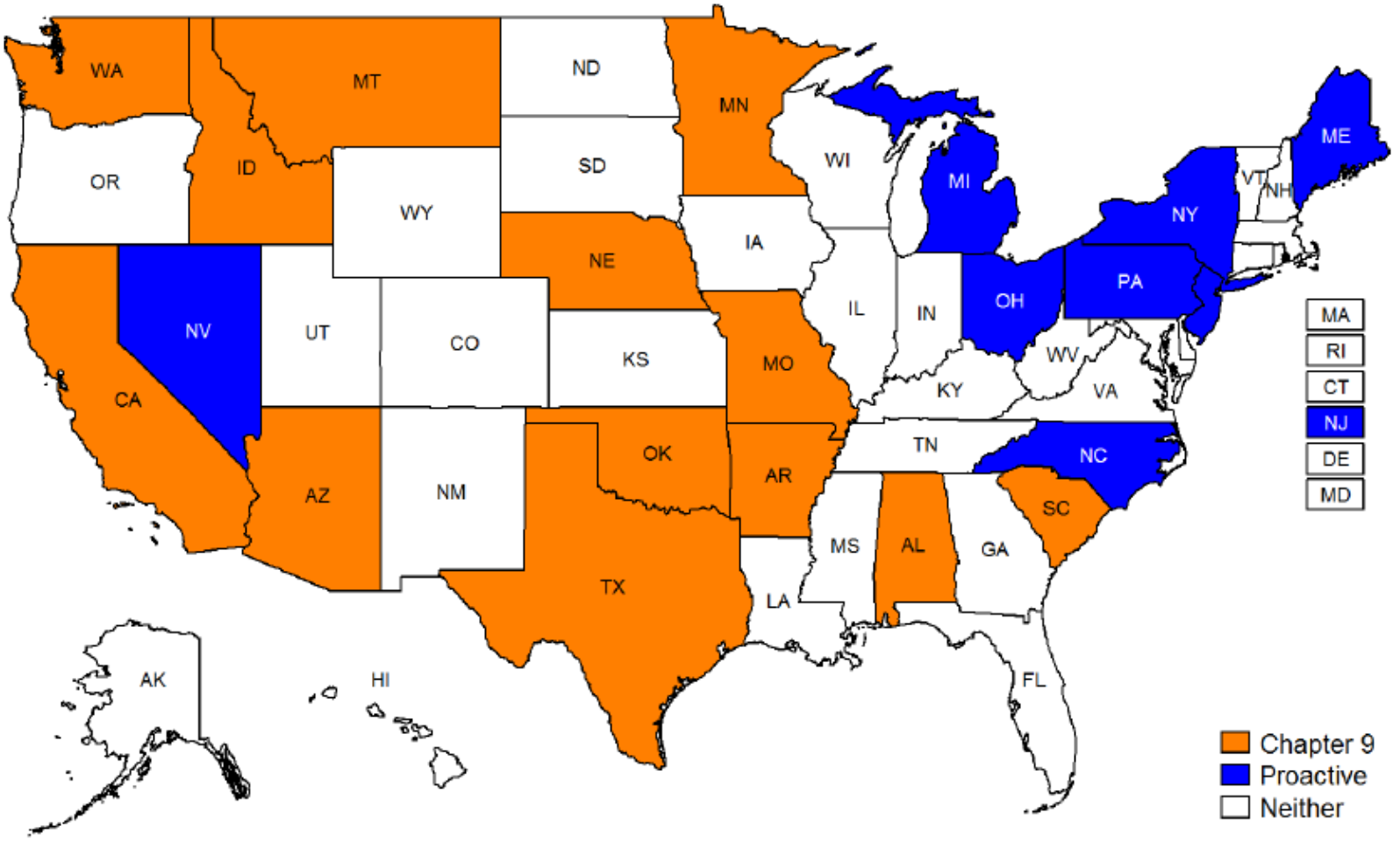
C1: program triggered by default

C2: debt contracts

C3: labor contracts

C4: taxes and fees

Distress Policy by State



Source: Spiotto et al (2012) and Pew Report (2013)

Questions

- For local municipal bonds, does either state policy:
  - … mitigate yield reactions following default?
  - … lead to lower borrowing costs?
  - … reduce cyclicality in yields?
  - … prevent contagion?
- If local municipal bond yields are generally lower under one of these state policies, are there tradeoffs?

Data

- Trade-level data from the Municipal Securities Rulemaking Board (MSRB)
  - Data are aggregated into bond-month observations
  - Yield spread is the main variable of interest: difference between municipal bond-month yields and the duration-matched treasury yield
  - Sample period: 1999 to 2010
- Default data obtained from Bloomberg
- Municipal bond attributes obtained from Mergent

Summary of Data

	Non-Defaulted	Defaulted
N(bonds)	416,643	2,063
N(issuers)	25,554	679
Avg. Bond Par Value ($M)	6.69	9.82
Avg. Bond Maturity (years)	13.82	18.98
Conduit (%)	10	59
Insured (%)	61	27
Inv. Grade (%)	80	22
Non-Inv. Grade (%)	0	9
Unrated (%)	20	69
Gen. Obligation (%)	42	4
Callable (%)	62	78
Puttable (%)	0	1

Summary of Data by State Type

	Chapter 9	Proactive	Neither
N(bonds)	143364	124691	150651
N(issuers)	10064	6317	9568
Avg. Bond Par Value ($M)	7.1	7.1	6.1
Avg. Bond Maturity (years)	14.5	13.5	13.5
Conduit (%)	8	12	12
Insured (%)	61	64	59
Inv. Grade (%)	79	81	79
Non-Inv. Grade (%)	0	1	0
Unrated (%)	21	19	21
Gen. Obligation (%)	40	51	37
Callable (%)	66	60	59

Default Rates by State Type

N(Defaulted Bonds)		
Chapter 9	AL, AR, AZ, CA, ID, MN, MO, MT, NE, OK, SC, TX, WA	443
Proactive	ME, MI, NC, NJ, NV, NY, OH, PA	123
Neither	The Rest	275

Defaulted Bonds (%)		
Chapter 9	AL, AR, AZ, CA, ID, MN, MO, MT, NE, OK, SC, TX, WA	0.379%
Proactive	ME, MI, NC, NJ, NV, NY, OH, PA	0.164%
Neither	The Rest	0.173%

Questions

- For local municipal bonds, does either state policy:
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  - … lead to lower borrowing costs?
  - … reduce cyclicality in yields?
  - … prevent contagion?
- If local municipal bond yields are generally lower under one of these state policies, are there tradeoffs?

Yields, Post-Default and Ex-Ante

	Regular	
Default	5.861***	5.437***
	(8.83)	(6.50)
Default x Chapter 9		1.295
		(1.42)
Chapter 9		0.0189*
		(1.68)
Default x Proactive		-1.267
		(-1.13)
Proactive		-0.0199**
		(-2.30)
Default x Insured	-4.663***	-4.486***
	(-6.34)	(-5.57)
Insured	-0.109***	-0.109***
	(-12.27)	(-12.37)
Ch. 9 - Proactive		0.0388***
p-value		0.006
Def x Ch. 9 - Def x Pro		2.562***
p-value		0.004

The yield change following a default event in a Chapter 9 state is 2.6 percentage points higher (Default x Chapter 9 minus Default x Proactive) than the change in Proactive states.

Ex-Ante: yields in Chapter 9 states are 3.9 basis points higher (Chapter 9 minus Proactive) than those in Proactive states.

Control Variables (for those interested)

	Regular	
General Obligation	-0.0832***	-0.0790***
	(-7.69)	(-7.72)
Callable	0.00616	0.00581
	(0.71)	(0.67)
Puttable	-0.803***	-0.799***
	(-6.33)	(-6.30)
Time to Maturity	0.0187***	0.0184***
	(11.33)	(10.94)
Inverse TTM	0.0935***	0.0934***
	(7.47)	(7.47)
Rated	-0.304***	-0.301***
	(-7.26)	(-7.32)
Rated x Rating	0.0470***	0.0471***
	(6.83)	(6.86)
Equal Tax	0.0544***	0.0440***
	(5.98)	(3.93)
Coincident Index	-0.0390***	-0.0435***
	(-7.12)	(-8.03)
Log(Size)	-0.0317***	-0.0304***
	(-8.86)	(-8.74)
Intercept	-0.220***	-0.221***
	(-6.13)	(-6.37)
Ch. 9 - Proactive		0.0388***
p-value		0.006
Def x Ch. 9 - Def x Pro		2.562***
p-value		0.004
SE Clustering	Issuer-YM	Issuer-YM
Fixed Effects	YM	YM
N	5080589	5080589
R-Squared	0.487	0.488

Offering Yields

	All	Unrated	Uninsured
Chapter 9	0.0457***	0.0836***	0.140***
	(6.55)	(5.88)	(10.39)
Proactive	0.0320***	0.0521***	0.0359***
	(4.74)	(3.74)	(2.64)
Insured	-0.112***	-0.290***	
	(-14.31)	(-20.32)	
Ch. 9 - Proactive	0.0137*	0.0315**	0.1041***
p-value	0.054	0.049	0.000
SE Clustering	Issuer-YM	Issuer-YM	Issuer-YM
Fixed Effects	YM	YM	YM
N	244258	35559	80314
R-Squared	0.651	0.661	0.669

Offering yields in Chapter 9 states are 1.4 basis points higher than those in Proactive states.

This difference is even higher for risky bonds: 3.2 basis points for unrated bonds, 10.4 basis points for uninsured bonds.

Identification

- **Empirical challenge:** are the higher yields in Chapter 9 states actually due to the Chapter 9 policy, or for some different reason that is common to these states?
- **Identification Strategy 1:** examine conduit bonds ("corporate munis"), which are not subject to Chapter 9 or Proactive state policies
- **Identification Strategy 2:** examine municipal bonds issued in the counties on the border of NC and SC

Falsification using Conduit Bonds

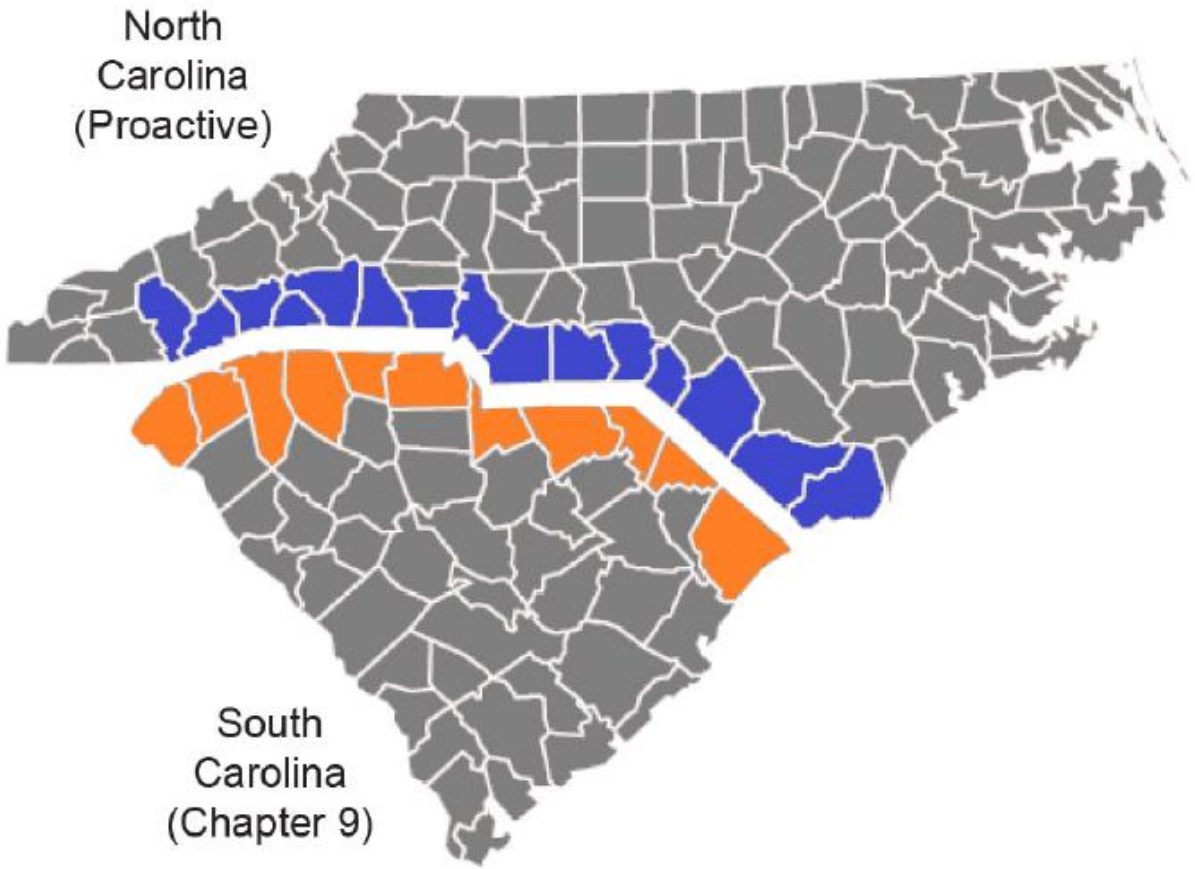
	Conduit	
Default	4.206***	4.285***
	(10.13)	(8.90)
Default x Chapter 9		-0.511
		(-0.73)
Chapter 9		0.0298
		(0.83)
Default x Proactive		0.604
		(0.65)
Proactive		-0.0278
		(-0.82)
Default x Insured	-3.169***	-3.375***
	(-5.73)	(-5.17)
Insured	-0.613***	-0.610***
	(-16.70)	(-16.56)
Ch. 9 - Proactive		0.0576
p-value		0.133
Def x Ch. 9 - Def x Pro		-1.115
p-value		0.261

Conduit bonds are not subject to Proactive state policies and cannot declare Chapter 9.

Yields reactions following default are not significantly different in Chapter 9 states versus Proactive states.

Ex-ante, yields are also not significantly different.

North Carolina vs South Carolina



North Carolina vs South Carolina

	Regular		New Issue	
	(1)	(2)	(3)	(4)
Chapter 9 (SC)	0.0867***	0.0765***	0.0914**	0.0919**
	(2.94)	(3.30)	(2.02)	(2.29)
Intercept	-0.601***	-0.0489	-0.675***	-0.283
	(-10.45)	(-0.03)	(-8.18)	(-0.33)
SE Clustering	County	County	County	County
Fixed Effects	YM	YM	YM	YM
N	39069	39069	1905	1905
R-Squared	0.541	0.541	0.828	0.828

Secondary yields and offering yields are higher in SC border counties than NC border counties.

Questions

- For local municipal bonds, does either state policy:
  - … mitigate yield reactions following default?
  - … lead to lower borrowing costs?
  - … reduce cyclicality in yields?
  - … prevent contagion?
- If local municipal bond yields are generally lower under one of these state policies, are there tradeoffs?

Yields and Economic Conditions

	(2)
Bad Times	0.0142*
	(1.86)
Bad Times x Chapter 9	0.0377**
	(2.36)
Bad Times x Proactive	-0.0261**
	(-2.44)
Good Times x Chapter 9	-0.00998
	(-0.98)
Good Times x Proactive	-0.0117
	(-1.36)
Insured	-0.123***
	(-13.10)
Intercept	-0.211***
	(-5.73)
Bad x Ch. 9 - Bad x Pro	0.0638***
	0.001
Good x Ch. 9 - Good x Pro	0.0017
	0.892

During bad times, yields in Chapter 9 states are 6.4 basis points higher than those in Proactive states.

There is no difference during good times, however.

Questions

- For local municipal bonds, does either state policy:
  - … mitigate yield reactions following default?
  - … lead to lower borrowing costs?
  - … reduce cyclicality in yields?
  - … prevent contagion?
- If local municipal bond yields are generally lower under one of these state policies, are there tradeoffs?

Contagion Effects

- Contagion: negative externality of a municipal default
- What causes contagion in municipal bond markets?
  - Information about individual issues is limited
  - Distress of one locality is perceived as a signal of imminent distress elsewhere
- Kidwell and Trzcinka (1982, 1983) show that the NYC financial crisis in 1975 was not associated with contagion effects
- When Harrisburg, PA was financially distressed in 2010, the state provided emergency lending, with the governor citing contagion concerns

Contagion Effects

	Chapter 9		Proactive		Neither	
$Pctdef_{q-1}$	0.123***	0.131***	0.0008	0.0007	0.0233**	0.0238**
	(4.51)	(4.51)	(0.09)	(0.08)	(2.05)	(2.07)
$Pctdef_{q-2}$		0.123***		-0.0102		0.0252**
		(4.17)		(-1.48)		(2.15)
$Pctdef_{q-3}$		0.140***		-0.0106		0.0262***
		(3.93)		(-1.39)		(2.59)
$Pctdef_{q-4}$		0.132***		0.0008		0.0199**
		(5.06)		(0.12)		(2.03)
SE Clustering	Issuer-YM	Issuer-YM	Issuer-YM	Issuer-YM	Issuer-YM	Issuer-YM
Fixed Effects	YM	YM	YM	YM	YM	YM
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	1718422	1688362	1374025	1346899	1689350	1655254
R-Squared	0.484	0.479	0.509	0.504	0.495	0.489

- Contagion effects are significant in Chapter 9 states, and last for about one year
- No contagion effect in Proactive states at any time horizon

Questions

- For local municipal bonds, does either state policy:
  - … mitigate yield reactions following default?
  - … lead to lower borrowing costs?
  - … reduce cyclicality in yields?
  - … prevent contagion?
- If local municipal bond yields are generally lower under one of these state policies, are there tradeoffs?

Tradeoffs

- Proactive state governments bear some of the credit risk of its municipalities
  - Low-cost emergency loans, grants, credit guarantees, professional/technical assistance
- The prospect of bailout creates moral hazard problems

- We expect that yields on state-issued bonds in Proactive states will be higher than those in Chapter 9 states due to the transfer of credit risk and moral hazard problems

Revenue Transfers

- According to US Census data, we do indeed see higher state-to-local revenue transfers, especially during bad times

	(3)
Proactive x Good	0.0130
	(1.52)
Chapter 9 x Good	-0.00906
	(-0.81)
Proactive x Bad	0.0239***
	(4.93)
Chapter 9 x Bad	-0.0111
	(-1.54)
Bad	-0.0134
	(-1.23)

Pro x Good - Ch. 9 x Good	0.0221*
p-value	0.061
Pro x Bad - Ch. 9 x Bad	0.0350***
p-value	0.000

During good times, state-to-local revenue transfers are 2.2 pct. points higher in Proactive states than Ch. 9 states.

During bad times, this difference increases to 3.5 pct. points.

Moral Hazard

- This creates a moral hazard problem – local municipalities in Proactive states take on more debt, as credit risk is shared with the state

	(3)
Proactive x Good	0.174***
	(6.13)
Chapter 9 x Good	0.0724
	(1.81)
Proactive x Bad	0.181***
	(5.78)
Chapter 9 x Bad	0.0518*
	(1.83)
Bad	0.0716
	(1.29)

Pro x Good - Ch. 9 x Good	0.102***
p-value	0.001
Pro x Bad - Ch. 9 x Bad	0.129**
p-value	0.024

DEPVAR: total local debt divided by total local revenue

Local debt levels are higher in Proactive states than Chapter 9 states in good times and bad times

State-Issued Bonds

- Because Proactive states take on local credit risk, the yields on their state-issued bonds are higher

	Regular	New Issue
Chapter 9	0.0218	0.0298
	(0.79)	(1.28)
Proactive	0.0572**	0.144***
	(2.00)	(3.01)
Insured	0.00495	-0.0207
	(0.25)	(-1.08)
Ch. 9 - Proactive	-0.0354**	-0.1142**
p-value	0.035	0.012
SE Clustering	State-YM	State-YM
Fixed Effects	YM	YM
N	508305	18153
R-Squared	0.602	0.807

Yields on state-issued bonds in Proactive states are 3.5 basis points higher than those in Chapter 9 states. Offering yields are 11.4 basis points higher.

Conclusions

- Local municipal bond yields are higher in Chapter 9 states than Proactive states, particularly following default
  - These yields are also more cyclical and susceptible to contagion
- The lower borrowing costs for the local governments in Proactive states come at the expense of higher borrowing costs for the state government
- Intergovernmental risk-sharing policies clearly have benefits and costs
  - Implications for sovereign debt policies in Europe; do the costs of being Proactive justify the benefits?