

STATE OF ILLINOIS: CREDIT RISK AND BOND RATINGS

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ABFM Conference, Grand Rapids, October 2014



Illinois Bonds: Perceived to be Risky

Ratings

- Moody's: A3 with Negative Outlook
- Standard and Poor's: A- with Negative Outlook
- These ratings are six notches below each agency's maximum

Spreads

- Long term Illinois bonds yield about 1.5% more than those issued by AAA-rated municipal bond issuers
- State is buying insurance from S&P AA-rated Assured Guaranty on selected maturities to reduce borrowing costs

Illinois credit risk generally attributed to pension underfunding



Some things to consider

- No default on state general obligation bonds since 1933.
- Investors obtained full recoveries on Depression-era defaulted bonds.
- Due to balanced budget requirements and borrowing restrictions, most states have low debt burdens. Illinois' Debt/GSP ratio is about 6% and interest expense accounts for less than 3% of total revenue.
- These levels are nowhere near those witnessed during Depression-era defaults by major sub-sovereigns. For example, Arkansas (1933) , Alberta (1936) and New South Wales (1931) all reached 30% interest/revenue ratios before defaulting. I (very roughly) estimate that Arkansas' debt/GSP ratio was 60% when it defaulted.
- Underfunded pension and defaults do not equate. Indiana's Teacher Pension Fund was fully pay-as-you-go between 1921 and 1996, with no adverse consequences to bondholders.



Discriminatory State Bond Ratings?

Dodd Frank and new SEC Regulation 17g(8) require that ratings symbol have the same meaning (in terms of default risk) across asset classes.

However:

- Thousands of AAA/Aaa-rated mortgage backed securities defaulted during the financial crisis.
- AAA-rated Texaco filed for bankruptcy after an adverse legal decision in 1987. Illinois' ratings are equivalent to those of Worldcom in late 2000 – less than two years before it filed for bankruptcy. Finally, two AAA municipal bond insurers – Ambac and FGIC – went bankrupt during the financial crisis.
- The Canadian province of Ontario, with a 38% debt/GDP ratio, has higher ratings than Illinois (with a 6% debt/GDP ratio).

Thus, there is evidence that credit ratings for US states such as Illinois are harsher than those for other types of issuers – despite laws to the contrary.



An Alternative to Biased Ratings

- Use models to estimate default probabilities and then map default probabilities to letter ratings across asset classes
- Make model inputs and calculations transparent
- Transparent model-based rating approach has been pioneered for corporate bonds by the National University of Singapore's Risk Management Institute
- My challenge to the US public finance community is to develop and operate transparent rating models for state and local governments
- Because credit ratings are a public good requiring intellectual inputs, the academic community is well positioned to offer them



An Alternative Approach to Rating States

Multi-year fiscal simulation

- Demographic, macroeconomic, policy variables and historic revenue, expenditure and debt levels as inputs
- Calculate revenue and expenditure distributions
- Then derive a distribution of deficits, debt levels and interest burdens

Establish a “default” point expressed as a fiscal ratio

- In my analysis I used interest expense *plus* pension contributions as a percentage of total revenues as the ratio
- My default threshold was 30% - on the basis of the Depression-era experience
- My pension contribution is not ARC – it is the amount needed to pay retirees minus a percentage of simulated pension fund assets
- Model can and does capture the possibility of pension fund exhaustion



Model Result for Illinois

Focus ratio was 9.76% in 2012

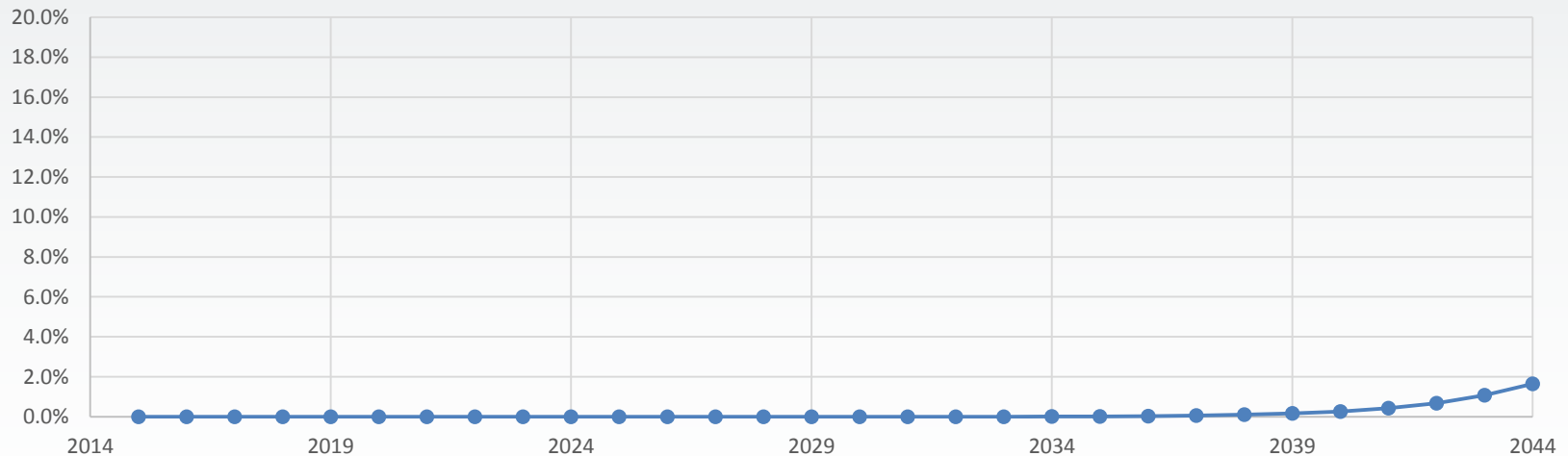
No trial reaches default threshold until 2030

In 2030, 4 trials of 1,000,000 have ratios $> 30\%$

In 2044, about 17,000 trials have ratios $> 30\%$

Conclusion: State should be rated AA or AAA depending on time period used

State of Illinois: Estimated Annual Default Probabilities



Further Information

Paper available at <http://mercatus.org/publication/modeling-state-credit-risks-illinois-and-Indiana>.

Related Bloomberg op-ed: <http://www.bloombergtview.com/articles/2013-06-20/relax-bondholders-illinois-won-t-default>.

Open source simulation model framework:

- Excel add-in and C executable:

<http://www.publicsectorcredit.org/pscf.html>

- Illinois model (Excel):

http://www.publicsectorcredit.org/illinois_v2.xlsm

- All source code: <http://www.github.com/joffemd/pscf.html>



Public Sector Credit Framework

What's Wrong with Government Bond Ratings?

- Stale / Lagging the Market
- Pro-cyclical
- Subject to Bias

For more, see:

Gaillard, Norbert (2013). Credit rating agencies and the Eurozone Crisis: What is the value of sovereign ratings? *VoxEU*. <http://www.voxeu.org/article/credit-rating-agencies-and-eurozone-crisis-what-value-sovereign-ratings>

Gärtner, Manfred & Björn Griesbach & Florian Jung (2011). PIGS or Lambs? The European Sovereign Debt Crisis and the Role of Rating Agencies. *International Advances in Economic Research*, 17, 288-299.

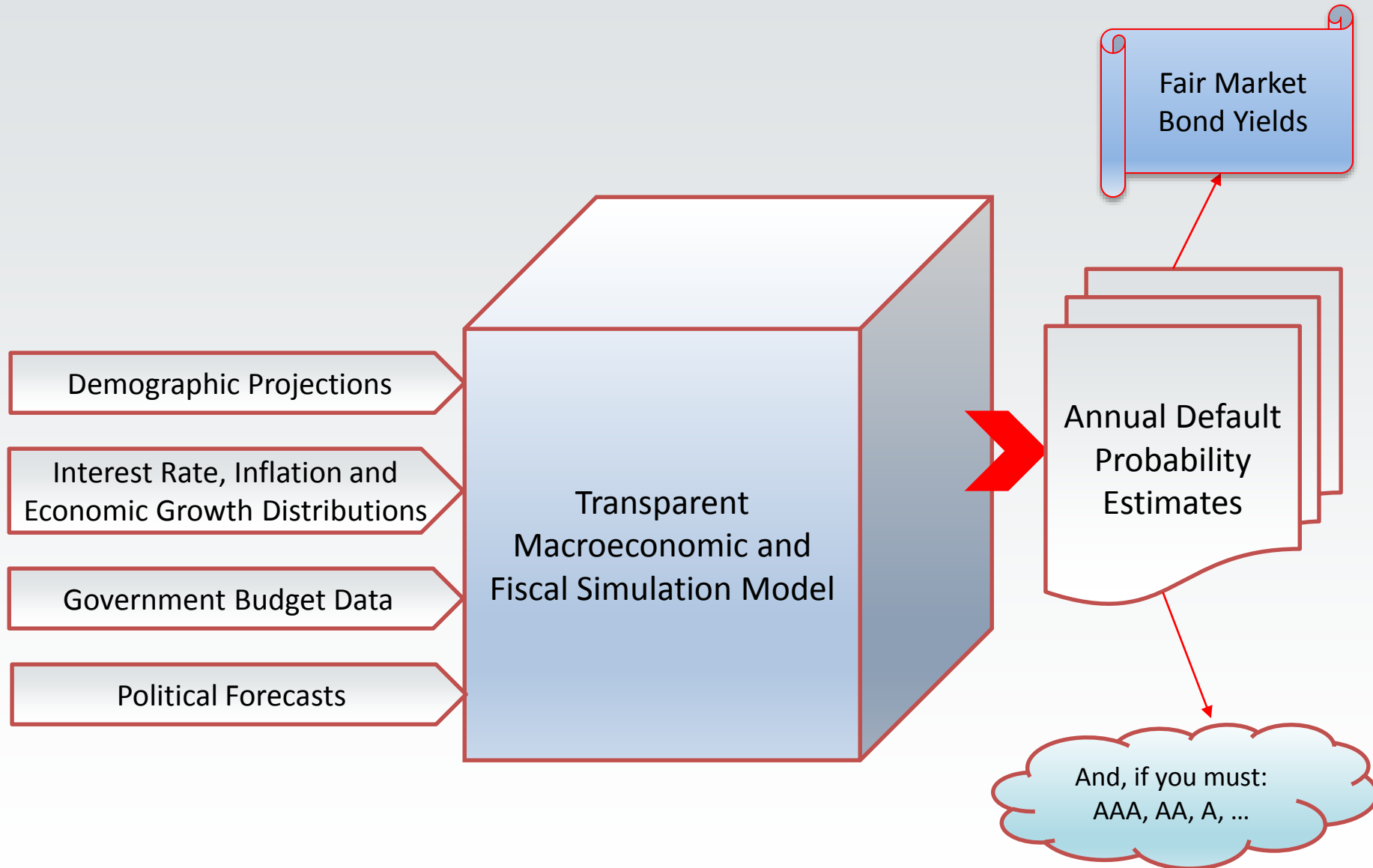
Nate Silver (2011), Why S.&P.'s Ratings Are Substandard and Porous. *New York Times Five Thirty Eight Blog*. <http://fivethirtyeight.blogs.nytimes.com/2011/08/08/why-s-p-s-ratings-are-substandard-and-porous/>

Structured vs. Sovereign/Muni Ratings

- Sharpest criticism of rating agencies relates to mortgage backed securities, collateralized debt obligations and other structured assets.
- Observers should avoid generalizing criticisms of structured ratings to all rating activities; different critiques apply

Structured	Sovereign/Muni
High revenue	Minimal revenue
Substantial investment in technology and rating methodology development	Inadequate staffing; limited technology
Competition for rating assignments; rating shopping; rating inflation	Less competition and inflation; ratings depressed relative to those for structured

A New Sovereign/State Rating Approach



PSCF Principles

Public Sector Credit Framework is:

- Quantitative – To decrease the likelihood that unconscious biases will affect the analysis and to take advantage of the computer's ability to rapidly perform large numbers of calculations.
- Transparent – So that other analysts can examine and update assumptions.
- Open Source – In the hope that a community of developers will form to enhance the tool.

The open source release is only a framework. Users or vendors would have to build their own issuer-specific models.



PSCF Solution Overview

Quantitative methodology based on:

- Multi-Year Budget Projections for Each Public Sector Issuer
 - Can rely in part on estimates published by the government itself
- Monte Carlo Simulation of economic variables such as GDP growth, inflation and interest rates
 - Forecasts and historical data are available from a number of vendors including IHS Global Research
- Default point stated in terms of a fiscal ratio
 - Debt to GDP
 - Interest Expense to Revenue
 - Debt to Assessed Valuation
 - Others?
- Annual default probabilities calculated as the percentage of simulation trials resulting in ratios surpassing the default point; DPs can be mapped to ratings within the framework



Technology Overview

- User interface implemented as an Excel add-in
- User enters simulation data in two tabs of the spreadsheet and then runs the simulation from a control panel
- Excel inputs are converted to a C program, the program is compiled and then executed. Results are written to text file(s) and loaded into Excel tab(s)
- C program is compiled with the GNU C++ compiler and is thus compatible with Linux and other operating systems. GNU compiler is installed with the framework
- We also install the Boost C++ library which we use for random number generation
- C language and compiling are used in order to maximize speed enabling the user to run complex simulations and large numbers of trials
- We hope that programmers participating in the open source community will port the capabilities to other environments



Walkthrough Part 1: Model Sheet

sample_usa - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Team

Clipboard Font Alignment Number Styles Cells Editing

Parameter Name

Parameter Name	Parameter Value
Government Entity	United States
Model Description	US Federal Budget Sample
Currency	USD
Initial Year	2012
Projection Years	30
Number of Trials	10
Threshold Label	Default
Show Projection Details	Y

Description	Expression	Threshold Level	Relation to Threshold Signifying Default
Metric 1 Interest Expense/Total Revenue	netinterest[y]/totrev[y]	0.3	>
Metric 2 Debt/GDP	debt[y]/GDP[y]		
Metric 3 Debt/Total Revenue	debt[y]/totrev[y]		
Metric 4 Absolute Increase in Debt	debt[y]-debt[y-1]		
Metric 5 Total Rev / Total Exp	totrev[y]/totexp[y]		

Default Probability Code

PSCF Control Panel

documentation model series adjustments ratingmap projection results

Ready 100%

First metric used to establish the default point

Additional metrics can be calculated and viewed in Projection Details

Part 2: Series Sheet / Random Numbers

Series Name	Series Description	Series Type	Type/Format	Minimum	Maximum	RandomMean	RandomStdDevOrSigma
normrandom_lfp	Random Draws for Labor Force Participation	Random Numbers	double(8,6)			0	0.5
normrandom_prod	Random Draws for Productivity	Random Numbers	double(8,6)			0	0.5
normrandom_infl	Random Draws for Inflation	Random Numbers	double(8,6)			0	0.5
normrandom_oil	Random Draws for Oil Prices	Random Numbers	double(8,6)			0	0.5
normrandom_int	Random Draws for Interest Rates	Random Numbers	double(8,6)			0	0.5
normrandomBirths	Random Draws for Births	Random Numbers	double(8,6)			0	0.5
normrandomDeathRates	Random Draws for Death Rates	Random Numbers	double(8,6)			0	0.5
unirandom_inctaxcuttop2	Random Draws for Extending Bush Tax Cuts for Top 2 Brackets	Random Numbers	double(8,6)	0	1		
unirandom_inctaxcutalloth	Random Draws for Extending Other Bush Tax Cuts and AMT Patch	Random Numbers	double(8,6)	0	1		
unirandom_estatetaxcut	Random Draws for Extending Lower Estate Taxes	Random Numbers	double(8,6)	0	1		
unirandom_docfix	Random Draws for Extending Medicare Doc Fix	Random Numbers	double(8,6)	0	1		

- Create any number of random series.
- One random number generated per series per trial.
- Three random number distributions supported:
 - Uniform / Normal / Cauchy-Lorenz (allowing fat tails)
- User can impose maxima and minima on generated numbers

Part 3: Series Sheet / Macro Variables

Series Name	Series Description	Series Type	Type/Format	Year 2
retiredpop	Population Eligible for Social Security	Macroeconomic	double(12,0)	seniorpop[y]
age16to64pop	Population Aged 16-64	Macroeconomic	double(12,0)	workingagepop[y] - seniorpop[y]
yr	Year Number	Macroeconomic	double(2,0)	65
age16to64participation	Aged 16-64 Labor Force Participation Rate	Macroeconomic	double(8,6)	$0.017360 + 0.977893 * \text{age16to64participation}[y-1] + 0.051402 * \text{normrandom_lfp}[y]$
seniorparticipation	Senior Labor Force Participation Rate	Macroeconomic	double(8,6)	$-0.016204 + 0.000229 * \text{yr}[y] + 1.019063 * \text{seniorparticipation}[y-1] + 0.047795 * \text{normrandom_lfp}[y]$
laborforcepart	Overall Labor Force Participation Rate	Macroeconomic	double(8,6)	$(\text{seniorparticipation}[y] * \text{seniorpop}[y] + \text{age16to64participation}[y] * \text{age16to64pop}[y]) / \text{workingagepop}[y]$
laborforce	Size of Labor Force	Macroeconomic	double(12,0)	$\text{workingagepop}[y] * \text{laborforcepart}[y]$
productivitygrowth	Productivity Growth	Macroeconomic	double(8,6)	$0.018880 - 0.153876 * \text{productivitygrowth}[y-1] + 0.029456 * \text{normrandom_prod}[y]$
GDPgrowth	Real GDP Growth	Macroeconomic	double(8,6)	$(\text{laborforce}[y] / \text{laborforce}[y-1] - 1) + \text{productivitygrowth}[y]$
realGDP	Real GDP	Macroeconomic	double(20,0)	$\text{realGDP}[y-1] * (1 + \text{GDPgrowth}[y])$
inflation	General Inflation	Macroeconomic	double(8,6)	$0.012515 + 0.640595 * \text{inflation}[y-1] + 0.029558 * \text{normrandom_infl}[y]$
priceIndex	Consumer Price Index	Macroeconomic	double(10,6)	$\text{priceIndex}[y-1] * (1 + \text{inflation}[y])$
GDP	Nominal GDP	Macroeconomic	double(20,0)	$\text{realGDP}[y] * \text{priceIndex}[y] * .01$

- Inflation, GDP and interest rates can be modeled using any combination of constants, functions of random numbers and functions of other variables or prior year values
- Any C-compliant expression may be used
- Minima and maxima also supported
- Can use different formulae for different years

Part 4: Series Sheet / Revs & Exps.

Series Name	Series Description	Series Type	Type/Format	Year 12
indinctax	Individual Income Tax	Revenue	double(15,0)	$GDP[y] * indinctax[11] / GDP[11]$
socinscont	Social Insurance Contributions	Revenue	double(15,0)	$GDP[y] * socinscont[11] / GDP[11]$
corpinctax	Corporate Income Tax	Revenue	double(15,0)	$GDP[y] * corpinctax[11] / GDP[11]$
othrev	Other Revenues	Revenue	double(15,0)	$GDP[y] * othrev[11] / GDP[11]$
totrev	Total Revenues	Revenue	double(15,0)	$indinctax[y] + socinscont[y] + corpinctax[y] + othrev[y]$
socialsec	Social Security	Expenditure	double(15,0)	$socialsec[y-1] * retiredpop[y] / retiredpop[y-1] * (1 + inflation[y])$
medicare	Medicare	Expenditure	double(15,0)	$medicare[y-1] * retiredpop[y] / retiredpop[y-1] * (1 + healthinflation[y])$
medicaid	Medicaid	Expenditure	double(15,0)	$medicaid[y-1] * totpop[y] / totpop[y-1] * (1 + healthinflation[y])$
othermandatory	Other Mandatory	Expenditure	double(15,0)	$GDP[y] * othermandatory[11] / GDP[11]$
defense	Defense	Expenditure	double(15,0)	$GDP[y] * defense[11] / GDP[11]$
domesticdiscr	Domestic Discretionary	Expenditure	double(15,0)	$domesticdiscr[y-1] * (1 + (inflation[y]))$
netinterest	Net Interest Expense	Expenditure	double(15,0)	$debt[y-1] * avgcpnrate[y]$
totexp	Total Expenditures	Expenditure	double(15,0)	$defense[y] + socialsec[y] + medicare[y] + medicaid[y] + othermandatory[y] + domesticdiscr[y] + netinterest[y]$

- Revenue and expenditure items can also use any valid C expression
- Items may be linked to macroeconomic variables such as inflation or GDP.
- Annual surpluses or deficits can be computed from the revenue and expenditure series and then added to the previous year's debt.

Walkthrough Part 5: Adjustments Sheet

	A	B	C	D	E	F
1	Adjustment Name	Expression to Evaluate	Relation to Threshold	Threshold Value	Series to Adjust if Threshold is Surpassed	Distribute Adjustment to Related Series
2	Expense Adjustment for Large Deficit	totrev[y]/totexp[y]	<	0.5	totexp[y]	defense[y]
3						medicaid[y]
4						othermandatory[y]
5						domesticdiscr[y]

- Legislative/executive decisions to reduce deficits (or spend large surpluses) can be simulated in the adjustments sheet.
- Revenue/Expenditure ratios can be bounded and changes to either revenues or expenditures can be distributed pro rata back to select budget lines.
- Would like to support more constraints in future releases.

Walkthrough Part 6: Ratingmap Sheet

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
AAA	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
AA+	0.00003	0.00006	0.00009	0.00012	0.00015	0.00018	0.00021	0.00024	0.00027	0.00030	0.00033	0.00036	0.00039	0.00042	0.00045	0.00048	0.00051	0.00054	0.00057	0.00060
AA	0.00006	0.00012	0.00018	0.00024	0.00030	0.00036	0.00042	0.00048	0.00054	0.00060	0.00066	0.00072	0.00078	0.00084	0.00090	0.00096	0.00102	0.00108	0.00114	0.00120
AA-	0.00010	0.00020	0.00030	0.00040	0.00050	0.00060	0.00070	0.00080	0.00090	0.00100	0.00110	0.00120	0.00130	0.00140	0.00150	0.00160	0.00170	0.00180	0.00190	0.00200
A+	0.00020	0.00040	0.00060	0.00080	0.00100	0.00120	0.00140	0.00160	0.00180	0.00200	0.00220	0.00240	0.00260	0.00280	0.00300	0.00320	0.00341	0.00361	0.00381	0.00401
A	0.00040	0.00080	0.00120	0.00160	0.00200	0.00240	0.00280	0.00320	0.00361	0.00401	0.00441	0.00481	0.00521	0.00561	0.00602	0.00642	0.00682	0.00722	0.00763	0.00803
A-	0.00070	0.00140	0.00210	0.00280	0.00350	0.00421	0.00491	0.00561	0.00632	0.00702	0.00773	0.00843	0.00914	0.00984	0.01055	0.01126	0.01197	0.01268	0.01338	0.01409
BBB+	0.00010	0.00020	0.00030	0.00040	0.00050	0.00060	0.00070	0.00080	0.00090	0.00100	0.00110	0.00120	0.00130	0.00140	0.00150	0.00160	0.00170	0.00180	0.00190	0.00200

- Associate cumulative default probabilities with rating grades.
- Any rating system can be used.
- System returns a vector of annual ratings in recognition of the fact that bonds with different terms have different levels of risk.

Walkthrough Part 7: Results Sheet

Clipboard		Font	Alignment	Number	Styles	Cells	Editing		
K3		fx							
	A	B	C	D	E	F	G	H	I
1	PSCF Fiscal Projection								
2	Government Entity	United States							
3	Model Description	US Federal Budget Sample							
4	Currency Units in	USD							
5	Trials	10000							
6	Run Date/Time	Tue Apr 10 16:47:34 2012							
7									
		Default	Default	Cumulative	Cumulative	Rating		Minimum Interest	Maximum Interest
8	Year	Count	Probability	Default	Default	Equivalent		Expense/Total	Expense/Total
				Count	Probability			Revenue	Revenue
9	2012	0	0.0000	0	0.0000	N/A		0.0961	0.0961
10	2013	0	0.0000	0	0.0000	AAA		0.0718	0.1593
11	2014	0	0.0000	0	0.0000	AAA		0.0536	0.2029
12	2015	0	0.0000	0	0.0000	AAA		0.0444	0.2465
13	2016	0	0.0000	0	0.0000	AAA		0.0399	0.2523
14	2017	0	0.0000	0	0.0000	AAA		0.0347	0.2911
15	2018	2	0.0002	2	0.0002	AA		0.0288	0.3344
16	2019	11	0.0011	11	0.0011	A+		0.0278	0.3868
17	2020	22	0.0022	23	0.0023	A		0.0195	0.4425
18	2021	45	0.0045	51	0.0051	A-		0.0119	0.4615
19	2022	90	0.0090	95	0.0095	BBB		-0.0185	0.4501
20	2023	131	0.0131	145	0.0145	BBB		-0.0503	0.5334
21	2024	192	0.0192	212	0.0212	BBB-		-0.0850	0.5724
22	2025	266	0.0266	299	0.0299	BBB-		-0.1125	0.5747
23	2026	374	0.0374	427	0.0427	BB+		-0.1425	0.6243
24	2027	473	0.0473	534	0.0534	BB+		-0.1734	0.6940
25	2028	555	0.0555	643	0.0643	BB+		-0.2171	0.7819

documentation

model

series

adjustments

ratingmap

results

Ready

100%

Walkthrough Part 8: Projection Sheet

	A	OI	OP	OQ	OR	OT	OU	OV	OW	PA
8	Fiscal Year	Total Revenues	Net Interest Expense	Total Expenditures	Surplus or Deficit	Debt		Interest Expense/Total Revenue	Debt/GDP	Default Flag
290	Trial 9									
291										
292	2012	2,302,495,000,000	221,302,000,000	3,598,973,000,000	-1,296,478,000,000	10,167,912,418,920		0.0961	0.6799	0
293	2013	2,460,901,632,932	215,713,519,710	3,618,691,076,933	-1,157,789,444,001	11,372,823,862,921		0.0877	0.7298	0
294	2014	2,738,130,457,281	324,766,609,467	3,683,634,132,699	-945,503,675,418	12,427,759,442,339		0.1186	0.7888	0
295	2015	2,919,359,571,991	308,092,721,273	3,747,232,009,645	-827,872,437,654	13,358,776,174,729		0.1055	0.8239	0
307	2027	4,360,917,366,457	1,065,957,373,408	6,864,758,295,705	-2,503,840,929,249	30,797,778,502,871		0.2444	1.2912	0
308	2028	4,380,768,181,383	1,403,906,594,396	7,307,402,386,095	-2,926,634,204,711	33,803,186,110,445		0.3205	1.4108	1
309	2029	4,351,925,430,986	1,611,185,718,726	7,607,784,758,326	-3,255,859,327,340	37,138,434,721,290		0.3702	1.5603	1

- Optional projection tab shows trial-by-trial, year-by-year results for each variable you want to see.
- Default flag is set whenever the first metric specified in the models sheet surpasses the default threshold.

Selected Media Coverage

FT Alphaville – Monte Carlo Simulated Credit Risk -

<http://ftalphaville.ft.com/2012/05/02/983041/monte-carlo-simulated-sovereign-credit/>

Canadian Broadcasting Company – Rating Agency Rebellion -

<http://www.cbc.ca/player/News/Business/ID/2258963934/>

Concord Coalition – Do Bond Markets Underestimate the True Riskiness of U.S. Treasuries? - <http://www.concordcoalition.org/tabulation/do-bond-markets-underestimate-true-riskiness-us-treasuries>

Global Treasury News – An Alternative to Sovereign Credit Ratings: PSCF

[http://www.gtnews.com/Articles/2013/An Alternative to Sovereign Credit Ratings PSCF.html](http://www.gtnews.com/Articles/2013/An_Alternative_to_Sovereign_Credit_Ratings_PSCF.html) (Gated)

Government Finance News, February 2013 (Hard Copy)



Applications of PSCF

Provincial Solvency and Federal Obligations, Macdonald-Laurier Institute.

<http://www.macdonaldlaurier.ca/files/pdf/Provincial-Solvency-October-2012.pdf>

Italy Model – Covered in MF (Milano) – 26 July 2013 →

Modeling State Credit Risk in Illinois and Indiana, Mercatus Center.

<http://mercatus.org/publication/modeling-state-credit-risks-illinois-and-indiana>

ettori: n.d.
iffusione: n.d.
MF
Dir. Resp.: Osvaldo De Paolini
26-LUG-20
da pag. 4

LE PROBABILITÀ DI FALLIMENTO SECONDO UN'INDAGINE PSCS

Italia, rischio default al 2,6%

DI ESTER CORVI

Moody's ha abbassato il rating dell'Italia fino a Baa2, a un passo dal temuto livello junk bond, ma c'è chi, numeri alla mano, con questo giudizio non è d'accordo. Perché ritiene che sia del tutto ingiustificato per un Paese che non solo ha dimostrato in passato di saper convivere con ratio elevati debito-pil, ma che nei mesi scorsi ha anche imboccato con coraggio la via del risanamento. Lo sostengono gli esperti della società statunitense Public Sector Credit Solutions (Pscs) (fondata da Marc Joffe, ex direttore di Moody's Analytics), che hanno elaborato diverse proiezioni sull'evoluzione futura delle finanze pubbliche italiane, utilizzando un modello econometrico. E sono arrivati alla conclusione che le probabilità di default dei titoli di Stato italiani sono solo il 2,6%. Una percentuale risibile, che stride con la recente impennata del differenziale Btp-Bund oltre quota 500. Le ragioni principali sono quelle ricordate in precedenza: in primo luogo, l'Italia ha sostenuto nella metà degli anni Novanta spese per interessi maggiori di quelle attuali in percentuale sul debito senza fallire e, anche se il tasso di interesse medio sul debito pubblico raggiungesse il 7% (un processo che richiederebbe alcuni anni in funzione della struttura del nostro debito), il rapporto interessi/pil salirebbe, ma resterebbe comunque inferiore al livello sperimentato a metà degli anni Novanta. Il secondo aspetto che sostiene la valutazione degli analisti di Pscs è che l'Italia con la riforma pensionistica ha affrontato il problema dell'invecchiamento della popolazione, mentre il calo del tasso di fertilità si è stabilizzato negli ultimi anni.

Osservando l'esperienza del passato, si può notare che l'Italia dal momento della sua costituzione, nel 1861, non è mai fallita fino al 1932, a causa delle spese legate Prima guerra mondiale, è più tardi nel 1940, in conseguenza della dichiarazione di guerra alla Francia e alla Gran Bretagna. Un debito che non fu completamente onerato fino al 1952. Da allora l'Italia non è mai più stata insolvente, diversamente dalla Grecia ha registrato cinque default tra il 1862 e il 1964. Se si guarda alle prospettive future, gli esperti

fanno notare che il deficit dell'Italia (3,2% del pil nel 2011) è relativamente modesto e in decisa riduzione, visto che le stime del Fondo monetario internazionale lo indicano nel 2012 intorno al 2,6%, nonostante un calo del pil dell'1,9%, in un trend di graduale ma deciso miglioramento. In conclusione, in uno scenario a dieci anni, applicando il modello di Pscs e considerando le molte variabili in gioco, le probabilità di un default dell'Italia sono inferiori al 3%.

Un'elaborazione molto ardita, quella realizzata dalla Public Sector Credit Solutions, che ha pubblicato nel maggio scorso un'analisi per il calcolo delle probabilità annuali di default da parte dei governi. Il modello è stato elaborato al fine di effettuare una simulazione fiscale pluriennale, basata su numerosi scenari relativi al pil, all'inflazione e ai tassi di interesse. La relazione comprendeva anche un'analisi dettagliata dei conti pubblici italiani, che è stata in seguito aggiornata.

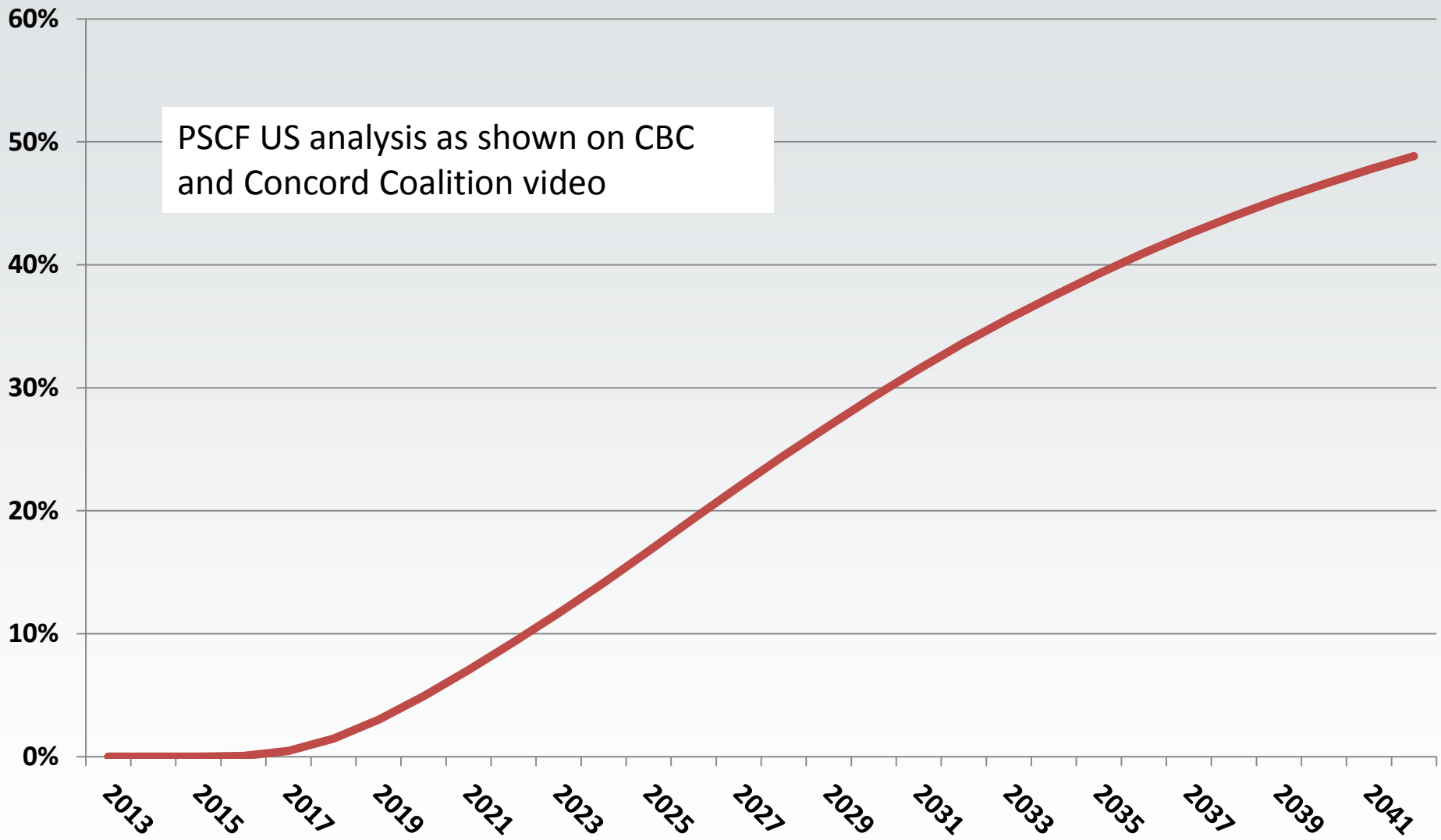
Joffe ha fondato la Pscs e divulgato il Public Sector Credit Framework open source allo scopo di elevare il livello di analisi del credito sovrano e sub-sovrano. «A causa dei disordini sociali che comportano, le crisi del credito sovrano possono trasformarsi in questioni di vita o di morte. Saperle prevedere con precisione è quindi una priorità sociale importante». La Pscs ha l'obiettivo, a detta dei fondatori, di produrre «ricerca destinata a tutti i principali emittenti sovrani e sub-sovrani, applicando tecniche trasparenti e quantitative e spera che la ricerca contribuisca alla creazione di un'agenzia di rating no-profit come quelle suggerite da Bertelsmann e Roland Berger». (riproduzione riservata)



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marc@publicsectorcredit.org
<http://www.publicsectorcredit.org/pscf.html>

US Fiscal Crisis Probability



History of U.S. Municipal Ratings

Pre-1940

- 1918: Moody's begins publishing annual Municipal and Government Manual. The manuals include bond ratings and are purchased mostly by investors.
- 1929: 55% of US munis are rated Aaa and another 23% are rated Aa.
- 1933: Peak of muni default wave. Most defaults caused by over-bonding, poor revenue source diversification, property tax delinquencies and bank closures/bank holidays
 - Over 4700 muni defaults during the 1930s.
 - 10-Year default rate for 1929 Aaa rated munis is 10%.
 - 10-Year default rate for 1929 Aa rated munis is 25%.
 - Overall, munis *underperform* corporates in each rating category.
- 1939: 1% of US munis are rated Aaa and 14% Aa.

“ ”
...

*This shortcoming of inadequate analysis is natural, indeed, in view of the size of the task. For instance, the 1937 industrial manual of Moody lists 5,032 companies on which statistical information has been gathered and prepared; 691 bond issues of these companies have been rated. The utility staff of the same agency covered 1,986 companies "fully" and added short paragraphs on a further 347 units; 1,547 public utility bonds were selected for rating. As to railways, 1,597 roads are listed with 1,668 issues rated. **The municipal manual discussed 14,711 taxing bodies and rated 4,816 securities of 3,704 issuing units. One cannot escape being impressed by the volume of expensive work involved - and by the conclusion that a uniform pattern of rating, making all these different issues comparable with one another in terms of some nine grades, handled by a large staff of moderately paid analysts with necessarily divergent experiences, biases, and opinions, can only be applied if based on none but obviously visible and easily comparable features.** The staggering cost of detailed study of some 23,000 issuing units, or even of the almost 9,000 rated issues, is prohibitive. Accordingly, the responsible agencies advise the customer not to rely upon the ratings alone but to use them together with the text of the manual and even to buy special investment advisory services which they are ready to supply. The candid observer cannot help wondering whether it would not be a still more responsible attitude to stop the publication of ratings altogether in the best interest of all concerned.*

- Melchior Palyi, Journal of Business of the University of Chicago, January 1938

Mid 20th Century

- 1949: S&P starts issuing muni ratings. Small issuers given the option to pay for a rating.
- 1963: Moody's and S&P rating levels remain near post-Depression lows despite two decades of minimal defaults.
- 1965: Moody's downgrades New York City from A to Baa; S&P follows in 1966. Resulting controversy triggers Congressional hearings, a book-length study by the 20th Century Fund and other investigations.
- 1968: S&P migrates to the issuer-pays model for all munis. Moody's follows shortly thereafter.
- 1971: Ambac pioneers the monoline insurance industry. MBIA formed in 1974.

“ ”
...

[N]o one, including some of the analysts involved, with whom we have spoken, with whom others that we know have spoken at very great length indeed, are quite sure what a rating is based upon. The criteria are foggy. The rating services maintain a sort of an aloofness and are not too willing to discuss with the representatives in municipal offices of cities what it is about the city that occasions the upward or downward move in a rating.

- Roy Goodman, Director of Finance, New York City, In Congressional Testimony, Dec. 5, 1967

Recent History

- 1999: Fitch study finds that post-1979 default rates in most muni sectors were very low, suggesting that municipal ratings and corporate ratings are not comparable. Moody's reports similar results in 2002.
- 2002: Hedge fund manager Bill Ackman issues a research report on MBIA revealing that it is 139 times leveraged and thus not deserving of its AAA/Aaa rating
- 2008: California Treasurer Bill Lockyer reports that California paid \$102 million for “unnecessary” municipal bond insurance; Moody's Laura Levenstein claims that the dual muni/global ratings scale dates from 1920; Connecticut Attorney General Richard Blumenthal sues rating agencies over inconsistencies between muni and corporate rating scales

“ ”
...

All three credit rating agencies systematically and intentionally gave lower credit ratings to bonds issued by states, municipalities and other public entities as compared to corporate and other forms of debt with similar or even worse rates of default, Blumenthal alleges.

As a result of these deceptive and unfairly low ratings, Connecticut's cities, towns, school districts, and sewer and water districts have been forced to spend millions of taxpayer dollars to purchase bond insurance to improve their credit rating, or pay higher interest costs on their lower rated bonds.

"We are holding the credit rating agencies accountable for a secret Wall Street tax on Main Street -- millions of dollars illegally exacted from Connecticut taxpayers," Blumenthal said. "Connecticut's cities and school districts have been forced to spend millions of dollars, unconscionably and unnecessarily, on bond insurance premiums and higher interest rates as a result of deceptive and deflated credit ratings. Their debt was rated much lower than corporate debt despite their much lower risk of default and higher credit worthiness.

-Connecticut Attorney General's Office Press Release, July 30, 2008



The Financial Crisis to Today

- Most monoline insurers go bankrupt or suffer multiple-notch downgrades (due to insuring toxic MBS and CDOs)
- Auction rate market freezes
- In April 2009, Moody's places the entire muni sector – i.e., all issuers – on negative outlook
- In December 2010, Meredith Whitney panics the muni market by incorrectly forecasting 50-100 or more sizeable defaults in 2011
- Connecticut lawsuit is settled for \$900k of credits for future ratings services and no admission of guilt
- Annual muni bond default rates remain low. Default rates on rated munis and General Obligations remain even lower

Takeaways

- Municipal bond ratings performed poorly during the Depression.
- Rating agencies (over)-reacted by severely grading municipalities for the next 70 years, creating the so-called dual ratings scale.
- Severe municipal ratings gave rise to the monoline bond insurance industry, which received billions of taxpayer dollars and then blew itself up by using proceeds to insure toxic structured finance assets.
- Problems occurred under both the issuer-pays and investor-pays models. Issues with municipal bond rating quality are only partially explained by incentives; the real problem has been insufficient rigor.

What the Market Needs

Municipal bond assessments that:

- Are based on thorough research of historic credit performance and issuer-specific financial conditions rather than conjectures and generalizations
- Rely primarily on quantitative approaches (given the large number of issuers together with the expense and subjectivity of analytical talent)
- Are transparent and thus clearly understood by participants on both the buy and sell sides

These comments apply to sovereign ratings as well.

Depression Era Default Research & Modeling

Municipal Credit Scoring

In December 2012, PSCS won a contract from the California State Treasurer's Office to calculate credit scores for 250 cities in the state with population > 25,000

Approach:

- Use a composite of financial statistics published in each city's Comprehensive Annual Financial Report
- Fully transparent methodology
- Score will take the form of a default probability

Benefits

- Easy to keep current
- Can be applied to *all* issuers – even those that don't purchase ratings



Why a Default Probability?

Default probability scores would allow us to estimate “fair value” yields for municipal bonds

Other components of fair value include:

- Recovery rate
- Risk premium
- Tax treatment adjustments

Fair value (aka intrinsic value) calculations are common for corporate and structured bonds – we could improve transparency and liquidity by applying this technique to munis

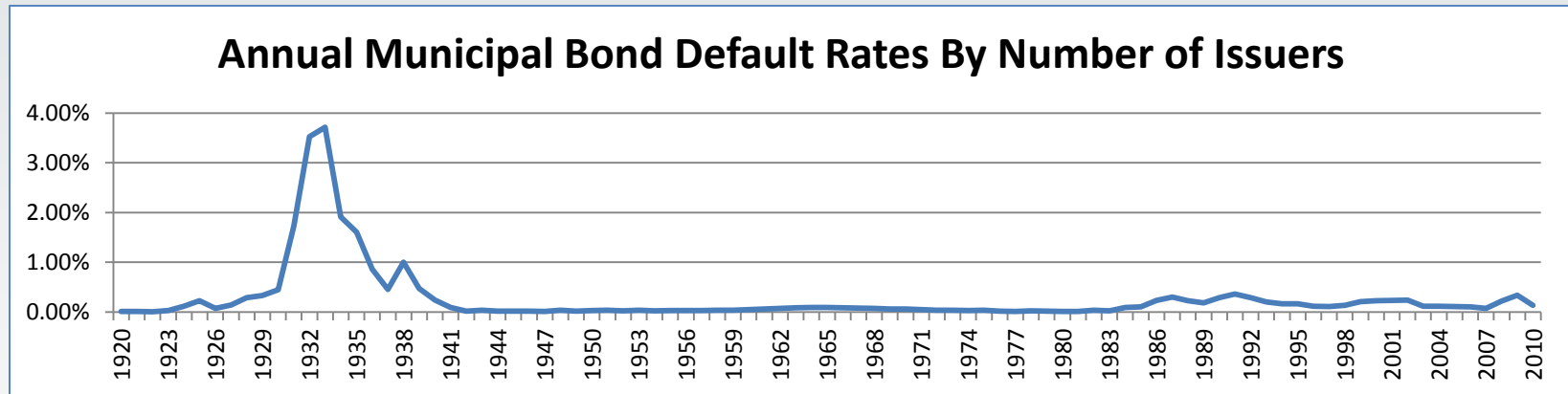
A widely accepted system that translates fiscal changes to updated default probabilities and fair bond yields would assist issuers in analyzing the debt service impact of their policy choices

Estimating Default Probabilities

- Different types of models have been developed for different asset classes.
- The most relevant asset class for our purpose is debt issued by private (i.e., unlisted) firms such as Moody's Riskcalc.
- The dominant methodology for estimating private firm default probability involves the following:
 - Gather data points for a large set of firms that have defaulted and for comparable firms that have not defaulted
 - Use theory and statistical analysis to determine a subset of variables that distinguish between defaulting and non-defaulting firms
 - Use statistical software to fit a model on the selected variables. Data for current issuers can then be entered into the model to calculate their default probabilities
- George Hempel applied a similar approach to municipal bonds in a 1973 study, but only had access to a small data sample.

Applying this Approach

- Problem: Lack of recent defaults.
 - Income Securities Advisors' database contains fewer than 40 general obligation bond defaults between 1980 and mid-2011.



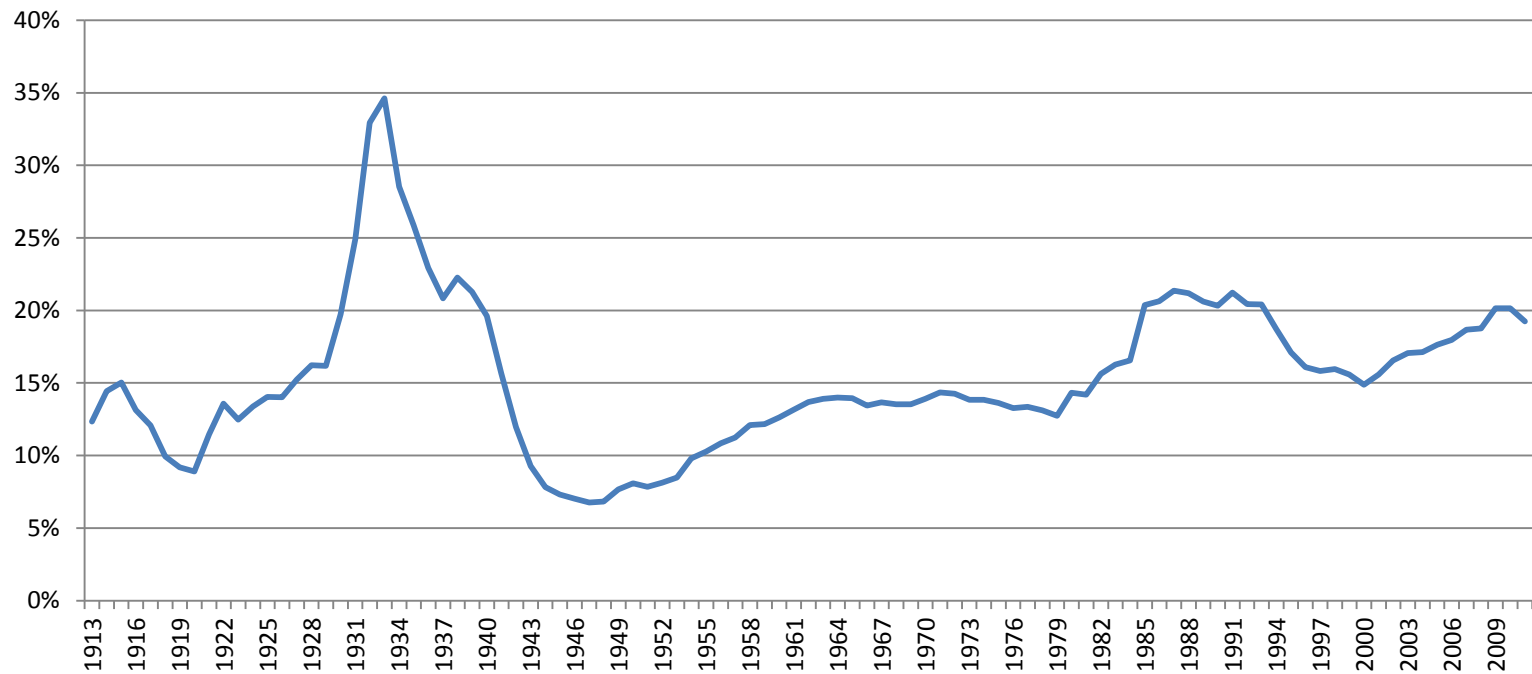
Source: Kroll Bond Rating Municipal Bond Study (2011). Public domain data collected by and in possession of PSCS.

- Solution: Follow the example of Reinhart & Rogoff (2009) by looking at older defaults.

Will the Depression Muni Experience Repeat?

Unlikely: We have not seen a buildup of municipal bond debt relative to GDP similar to the one that preceded the Depression. Municipal issuance surged after WW I as investors demanded tax free bonds and governments needed to build roads to accommodate newly popular automobiles.

State and Municipal Bonds Outstanding as a Percentage of GDP



Source: Kroll Bond Rating Agency Municipal Default Study, 2011. Public domain data collected and in possession of PSCS.



Gathering Depression-era Default Data

- Sources

- Old Moody's bond manuals
- Old Census reports
- Newspaper accounts
- Records at state archives

- Technologies

- Some resources on Google books
- Library material needs to be photographed with proper lighting and a good camera
- Photographs can be processed by Abbyy FineReader, which performs Optical Character Recognition and can convert inputs to PDFs or spreadsheets
- Older material is usually too difficult to process automatically so offshore data entry personnel were used

The image shows a page from "MOODY'S MANUAL OF INVESTMENTS" for the year 1916. The page is titled "1916 MOODY'S MANUAL OF INVESTMENTS". It contains a table of financial data for Parma, Ohio, and a section titled "PARMA HEIGHTS".

DEBT SERVICE DUE IN CALENDAR YEARS.			
	1916	1917	1918
Bonded debt principal due	\$25,166	\$27,182	\$13,100
Accumulated debt prin. due	111,126	106,922	516,333
Interest charges on all debt	122,124	175,142	291,490
Total	\$258,416	\$309,246	\$800,923

REVENUES AND EXPENDITURES, fiscal years ended Dec. 31:

	1915	1916
Revenues	\$1,212,118	\$1,277,781
Expenditures	1,145,319	1,096,178
Balance	\$66,799	\$181,603

Notes: On Sept. 15, 1915, the city had no money to cover its bonded debt. Public deposits are secured by first mortgages. Number of families on public relief last, Sept. 15, 1915, approximately 800.

Interest: At Pearl Street Bk. of Cleveland (O.) Tr. Co.

PARMA HEIGHTS: Located in Cuyahoga County. Post office, Brooklyn Station, Cleveland. A residential suburb of Cleveland. Population in 1900, 160.

Assessed value, all property (1915), \$4,813,578. Total tax rate for 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 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(Techniques also apply to sovereigns)

FINANCES PUBLIQUES

166. Budget accounts and public debt (continued) — Comptes budgétaires et dette publique (suite)

Country and items	1939	1950	1951	1952	1953	1954	1955	Pays et postes
AMERICA, NORTH (continued)								AMERIQUE DU NORD (suite)
MEXICO (millions of pesos)								MEXIQUE (millions de pesos)
	Calendar years — Années civiles							
Expenditure						D E	D E	Dépenses:
Public debt service	82.0	554.0	770.9	895.3	805.9	651.6	799.5	Service de la dette
Education	69.1	314.0	367.9	459.0	507.8	606.6	711.8	Education
Other social services, etc.	36.7	136.8	153.9	172.9	185.0	208.9	249.0	Autres services sociaux, etc.
Defence	96.3	346.3	397.7	434.5	479.4	649.6	677.9	Défense
Other expenditure	336.2	2 112.2	3 303.6	4 502.5	3 512.3	2 711.0	3 242.8	Autres dépenses
Total	620.3	3 463.3	4 994.0	6 464.2	5 490.4	4 827.7	5 681.0	Total
Receipts:								
Direct taxes on income and wealth	50.2	770.8	1 193.9	1 448.1	1 145.3	1		
Customs duties	187.1	990.9	1 396.5	1 452.1	1 311.3	1		
Other indirect taxes	240.6	1 157.6	1 388.6	1 579.0	1 580.6	1		
Other receipts	87.8	525.2	983.9	1 624.5	985.9			
Total	565.7	3 444.5	4 962.9	6 103.7	5 023.1	4		
Balance (+) or (—)	—54.6	—18.8	—31.1	—360.5	—467.3	—		
Public debt (31 December):								
Domestic long-term	184.0	2 199.7	2 086.7	2 330.8	2 247.8			
Short-term	52.7							
Foreign	1 263.1	286.1	283.3	349.9	339.7			
Total	1 499.8	2 485.8	2 370.0	2 680.7	2 587.5			

← UN Statistical Yearbook 1955

UNITED STATES OF MEXICO

2579

British capital invested in Mexico during recent years was as follows:

	Govt. Bonds	Railways	Miscellaneous	Total
1925	£32,512,895	£107,876,109	£54,637,052	£197,025,049
1926	32,512,897	107,817,652	54,900,871	197,231,420
1927	33,784,430	107,476,751	63,677,910	199,338,061
1928	35,784,430	99,332,090	60,312,860	199,029,980
1929	35,784,430	97,711,525	64,274,915	200,770,880
1930	38,784,430	98,843,237	60,469,375	198,087,042
1931	38,597,130	98,721,917	57,698,016	195,027,063

American investments in Mexico have been estimated as follows: Mining and smelting, \$230,421,000; petroleum, \$205,568,000; communications and public utilities, \$90,393,000; railways, \$78,817,000; agriculture, fruit, etc., \$58,873,000; other, \$18,164,000; total, \$682,536,000.

Governmental Finances

Revenues and Expenditures (in pesos):

Year	Revenue	Expenditure	Surplus	Year	Revenue	Expenditure	Surplus
1908	111,811,000	98,177,000	18,634,000	1927	306,872,516	340,231,614	*33,359,098
1913	120,958,902	110,781,871	10,177,031	1928	310,738,676	287,244,111	23,494,565
1918	146,749,283	145,711,651	1,037,632	1929	296,198,568	275,541,193	20,657,375
1920	236,734,091	201,714,221	55,019,870	1930	277,541,855	279,171,739	*1,629,884
1923	256,259,128	249,654,885	6,604,238	1931	227,689,969	231,054,495	*13,364,526
1925	309,306,011	302,164,487	7,141,524	1932	227,690,000	226,573,546	1,116,454
1926	301,770,765	304,405,345	*2,634,580	1933 (budget)	215,050,000	215,014,754	35,246

* Deficit. † Certain obligations were not met, such as the national agrarian and banking debt and loans of the Bank of Mexico and advances on taxes payable in previous years, all of which amounted to 23,989,968 pesos or a total deficit in 1931 amounting to 27,913,646 pesos.

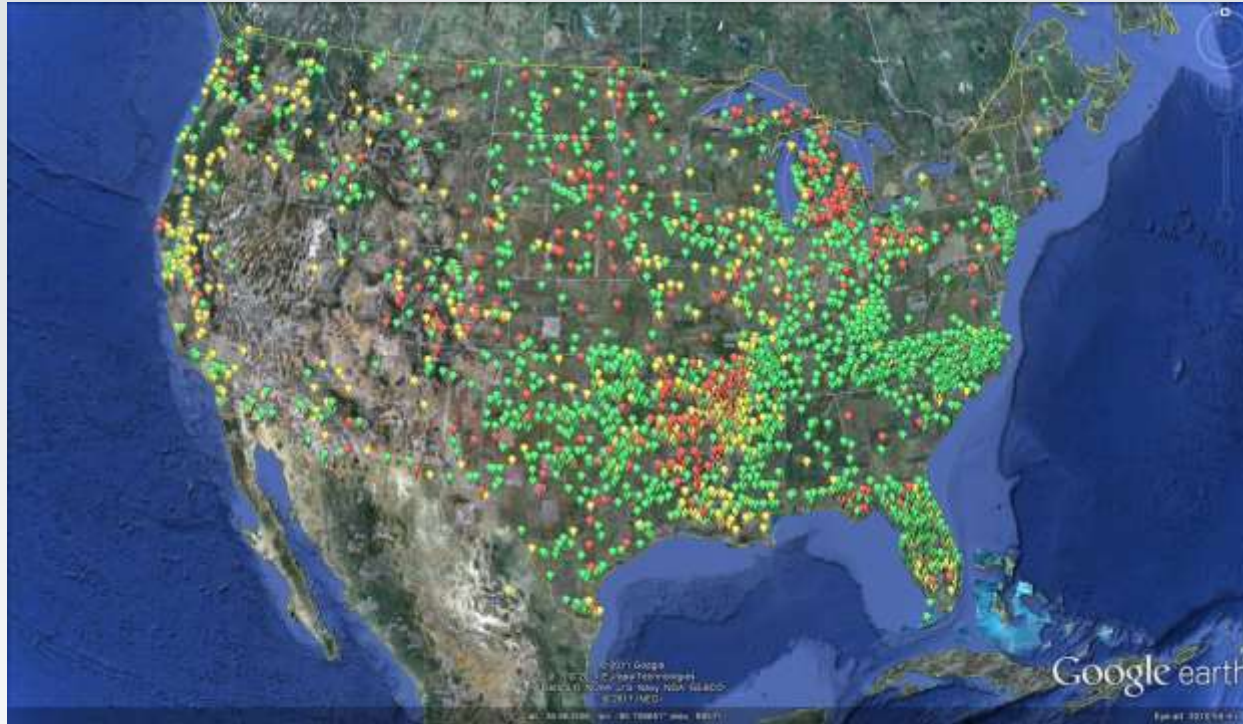
Details of revenues and expenditures (in pesos):

	1933	1932	1931		1933	1932	1931
REVENUES*	(Actual)	(Actual)	(Actual)	EXPENDITURES*	(Actual)	(Actual)	(Actual)
Import duties	47,250,000	63,150,000	54,195,104	Legislative	4,761,872	4,462,900	5,004,395
Export duties	4,600,000	5,000,225	4,067,331	Presidency	1,494,905	1,592,184	1,842,755
Taxes on industries	49,850,000	56,350,000	44,600,911	Judiciary	2,858,304	3,739,575	3,718,713
Income tax	18,500,000	13,500,000	33,090,148	Interior	2,442,577	2,561,178	2,569,460
Capital tax	1,000,000	900,000	1,166,901	State	4,257,241	4,676,401	5,206,073
Stamp tax revenues	11,000,000	29,150,000	29,179,996	Treasury	24,936,383	27,255,931	24,284,289
Immigration tax	140,000	125,000	112,901	War	56,288,900	64,864,232	59,682,226
Wholesale sales tax	5,100,000			Agriculture	13,145,845	15,721,649	15,108,723
Natural resources	11,500,000	15,200,000	10,505,231	Communications	26,131,774	31,791,294	37,093,913
10% additional	6,000,000	4,750,000	5,423,403	Industry	5,058,068	4,566,660	5,417,644
Public service concessions	16,400,000	22,247,000	22,681,002	Education	31,627,289	27,929,285	21,862,379
Other	43,460,000	13,131,500	22,719,937	Public health	6,499,987	6,415,176	7,407,952
				Government factories	6,000,000	6,122,234	6,820,922
				Comptroller's dept.		2,550,806	3,412,958
				Statistical	900,655	1,749,986	2,077,555
				Attorney general	1,170,998	1,156,036	1,736,596
				Public debt	28,440,941	29,223,967	12,598,953
Total	269,800,000	*213,074,226	227,689,969	Total	215,014,754	*228,574,436	231,054,495

* As reported

Moody's 1934 Bond Manual →

US Municipal Bond Defaults: 1920 to 1939



Yellow = Special Districts

Red = School districts

Green = Cities, States
and Counties

Source: Public Sector
Credit Solutions Default
Database

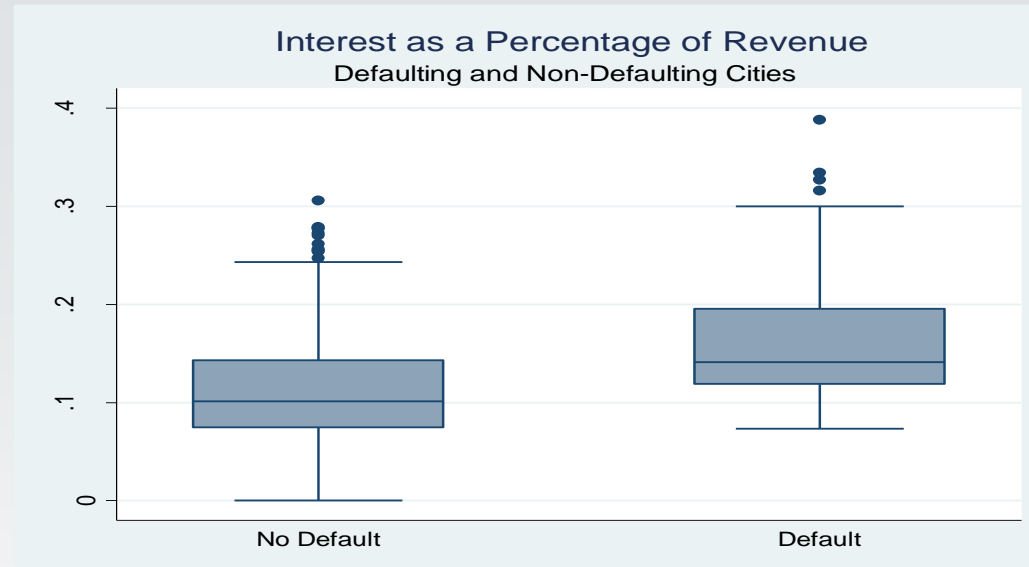
- Over 5000 defaults in all
- Defaults heavily concentrated in specific states, esp. Florida, the Carolinas, Arkansas, Louisiana, Texas, New Jersey, Michigan, Ohio and California
- No defaults reported in Maryland, Delaware, Connecticut, Vermont and Rhode Island

Drivers of Depression-Era Defaults

- Poor control of municipal bond issuance in certain states such as Florida (which had outlawed state debt), Michigan, New Jersey and North Carolina.
- Many defaults stemmed from bank failures and bank holidays. When banks holding sinking funds and other municipal deposits were not open, issuers could not access cash needed to perform on their obligations.
- Prohibition had eliminated alcohol taxes as a revenue source; local income and sales taxes had yet to become common. Cities were thus heavily reliant on real estate taxes. When real estate values fell and property tax delinquencies spiked, many issuers became unable to perform.
- Many defaults occurred in drainage, irrigation and levee districts. Bonds funding these agricultural infrastructure projects were serviced by taxes paid by a small number of farmers or farming companies. A single delinquency could thus trigger a default.

Analysis and Modeling of Large City Defaults

- Strongest predictor was ratio of **Interest to Total Revenue**.
- Mean ratio for defaulting cities was 16.1% versus 11.0% for non-defaulters.
- High ratio non-default observations were concentrated in **Virginia** – which has a unique law requiring the State to cover municipal bond defaults. A dummy was added to address this state-specific attribute
- Change in Annual Revenue** was also significant
- Population changes and cash balances were *not* significant



Variable	Coefficient	Standard Error	p
Interest/Revenue	17.41951	1.99172	0.000
Virginia Dummy	-3.695301	1.471739	0.012
Δ Revenue	-1.964635	-1.964635	0.042
Constant	-4.13551	0.3037248	0.000

$$dp = \exp(-4.14 + 17.42IR - 3.70VA - 1.96\Delta R) / (1 + (-4.14 + 17.42IR - 3.70VA - 1.96\Delta R))$$

Some Other Observations

- Pensions and Other Post Employment Benefits (OPEB) are a threat to certain issuers, but we should consider the following:
 - Underfunded pensions are nothing new
 - Discussion around the issue is often distorted by political considerations. In particular, comparisons between a government's annual budget (a flow) and its unfunded liabilities (a stock reported in present value terms) are not meaningful
 - Future pension and OPEB expenditures should be estimated and compared to projected revenues
- Recoveries on municipal bond defaults have been quite high both during the Depression and more recently. New York City (1975) and Orange County (1994) both had full recoveries. Jefferson County, Stockton and San Bernardino creditors may not be as fortunate, however.

Toward an Alternative Business Model

Some Concerns with Current Model

Current business and billing practices can jeopardize the quality and independence of municipal bond ratings:

- Billing based on the size of a bond issue may cause a rating agency to place less emphasis on an issuer's total indebtedness, which (relative to capacity) is the strongest contributor to default risk.
- Because rating agencies realize less revenue from public sector bonds than other asset classes, they may under-invest in methodology research and technology.
- Rating agencies may have an incentive to “under rate” municipal issuers to create space for bond insurers, which may be expected to pay higher rates.
- Rating agencies' monitoring performance has been comparatively weak. When they receive monitoring fees, payment is not based on quality of service provided.

An Example of Failing to Monitor

<HELP> for explanation.
 25<GO>Setup Rating Change Alert

Mtge **RCHG**

RATING CHANGES
 STAK 2006-1A P

CUSIP: 85233YAE5
 ABS: EXCHANGEABLE

0% 10/06/2043
 Issued: 7/27/2006

☒ Include historical ratings

Agencies

☒ Standard & Poors ☒ Moody's

☐ Fitch ☐ DBRS

☐ Other

Agency	Rating Type	Rating	Effective Date ↑
Moody's	Long Term	WR	6/11/2010
Standard & Poor's	Long Term	D	5/18/2010
Standard & Poor's	Long Term	CC	8/10/2009
Standard & Poor's	Long Term	B-*	8/21/2008
Standard & Poor's	Long Term	B-	7/24/2008
Standard & Poor's	Long Term	BBB-*	6/17/2008
Standard & Poor's	Long Term	BBB-	2/22/2008
Standard & Poor's	Long Term	AAA*	1/30/2008
Standard & Poor's	Long Term	AAA	4/27/2007
Moody's	Long Term	Aaa	8/31/2006

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000
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 SN 627636 6814-1065-2 14-Jul-10 14:00:34

Incumbent Firms and Transparency

US Government accounting standards require a high degree of transparency, and most large units of government provide substantial amounts of public disclosure.

Since the rating process does not really require any “secret sauce” it, too, could be transparent, but isn’t.

For example, rating agencies could collect, aggregate and report publicly available issuer statistics – but don’t

Instead these data must be collected on PDFs scattered across the web and to subscribers of proprietary data services such as Merritt Research

A new firm can provide an important service to investors and the general public simply by publishing these data



An Alternative Business Model: 3 Levels

Level 1: Open data / Open model

Publish key financial statistics and municipal credit scores on a widely accessible web site. Business benefit: Creates public awareness by providing a useful service.

Level 2: Certified Scores

Work with local governments to ensure that model inputs are accurate and properly interpreted. Annual flat or hourly fee billed to the government regardless of issuance size. Score could be DP itself or an implied rating like AA(m).

Level 3: Traditional Rating Service

Incorporates qualitative and issue specific factors.

Advantages of this Business Model

The “freemium” model – providing a compelling free service to build traffic and then charge for enhancements – is common among internet firms

Publishing standardized data and scores on a large number of issuers should create significant media attention and thus awareness among local government officials – our potential customers

This high level of awareness could result in calls from issuers asking to be rated, and should also ease the sales process