

THE
PEW
CHARITABLE TRUSTS

Rainy Day Funds and State Credit Ratings


How well-designed policies and timely use can protect
against downgrades

Jonathan Moody
Officer, States' Fiscal Health
July 18, 2017

Pew Research on State Rainy Day Funds



A report from THE PEW CHARITABLE TRUSTS | Feb. 2014



Managing Uncertainty

How State Budgeting Can Smooth Revenue Volatility

A report from THE PEW CHARITABLE TRUSTS | July 2014



Building State Rainy Day Funds

Policies to Harness Revenue Volatility, Stabilize Budgets, and Strengthen Reserves

A report from THE PEW CHARITABLE TRUSTS | Dec. 2015



Why States Save

Using Evidence to Inform How Large Rainy Day Funds Should Grow


A report from THE PEW CHARITABLE TRUSTS | April 2017



When to Use State Rainy Day Funds

Withdrawal policies to mitigate volatility and promote structurally balanced budgets

A report from THE PEW CHARITABLE TRUSTS | May 2017



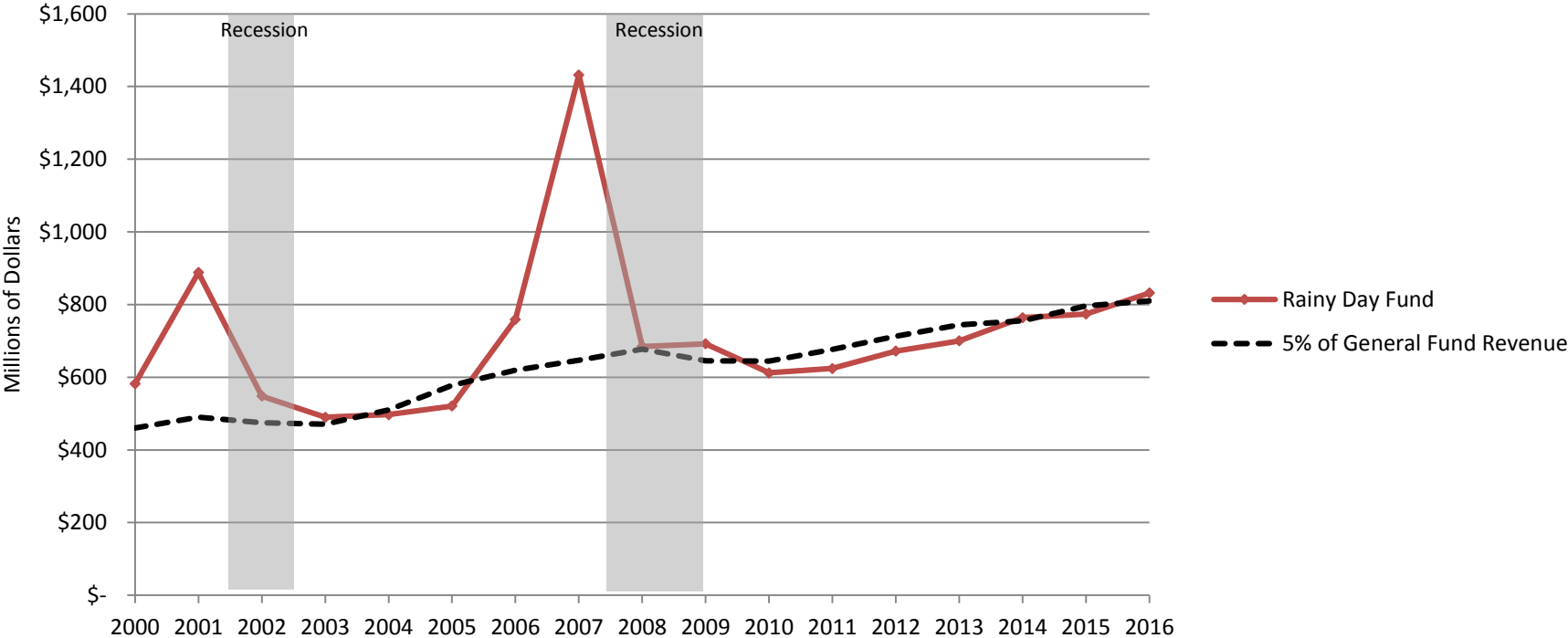
Rainy Day Funds and State Credit Ratings

How well-designed policies and timely use can protect against downgrades

A Reason Not to Withdraw?



Maryland's Revenue Stabilization Account, 2000 - 2016



Source: National Association of State Budget Officers

“We never use ours, and that’s one of the reasons we have a triple-A rating in good economic times and bad”

- Barbara Hoffman, former state senator

Setting the stage



- 48 states currently have rainy day funds
 - These funds are designed to provide supplementary revenues during recessions, revenue shortfalls, or budget deficits
- State lawmakers are concerned about their credit ratings
 - Several refuse to use their RDF or limit withdrawals, even during revenue downturns, for fear of receiving a credit downgrade
- But how closely are the two related?

What we know



- The academic literature speaks to the impact of rainy day fund policies on borrowing costs and credit ratings (Wagner 2005; Grizzle 2010)
- The rating agencies' methodologies identify reserves as tools for improving liquidity and flexibility during downturns
 - Out of the 149 rating action reports issued by Moody's between 1992 and 2015 that addressed an upgrade or downgrade, 81% mentioned reserves generally, and 42% mentioned the state's RDF by name.

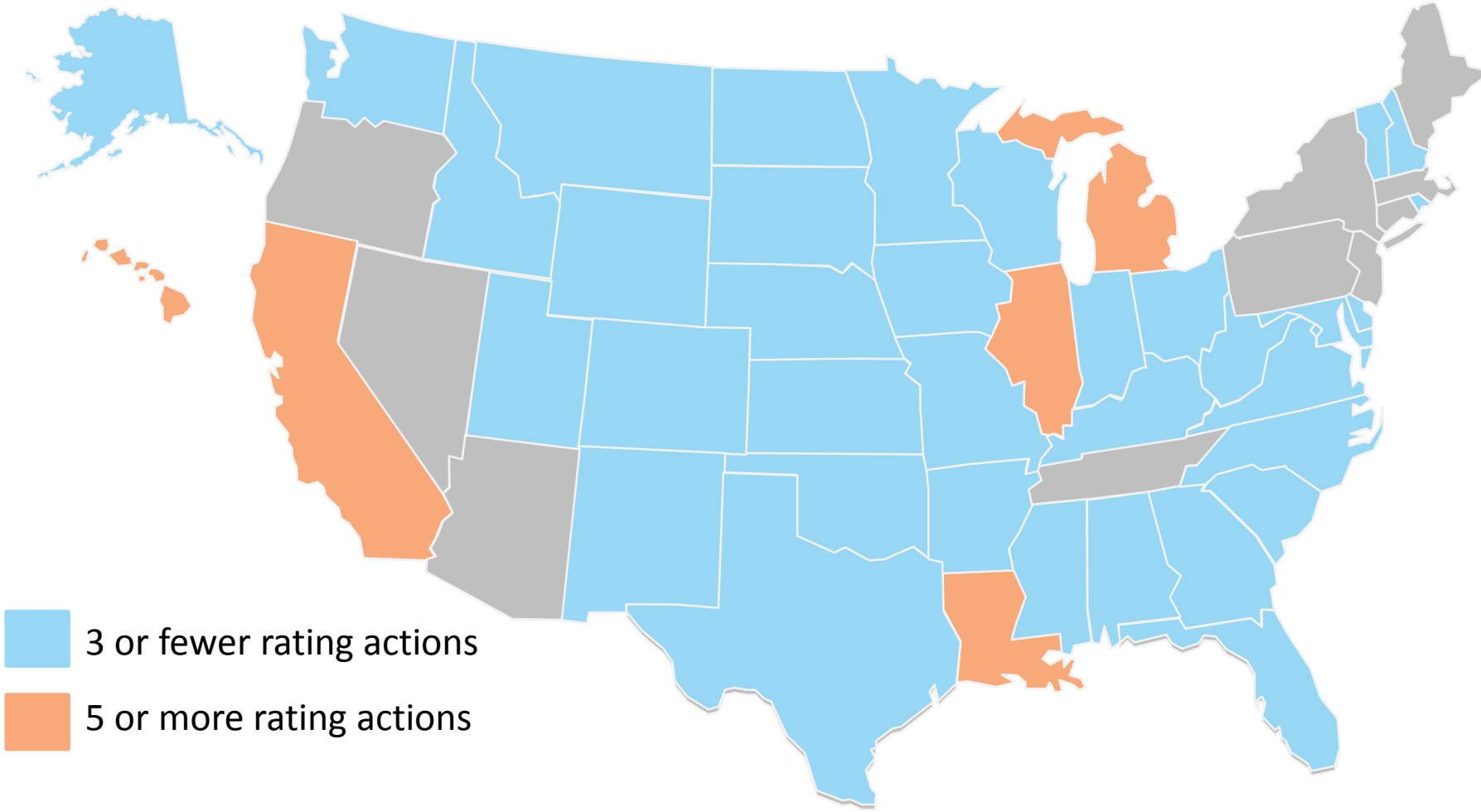
The Data



- A new, unique dataset containing:
 - General Obligation (GO) bond ratings for 46 states from 1994-2014
 - State-provided data recording deposits, withdrawals, and ending balances for rainy day funds
 - State general fund revenue and expenditure data (NASBO)
 - State debt obligations (Census)
 - State demographics: population and pop. > 65 (Census)
- 966 state-years of credit ratings, RDF usage, and other controls

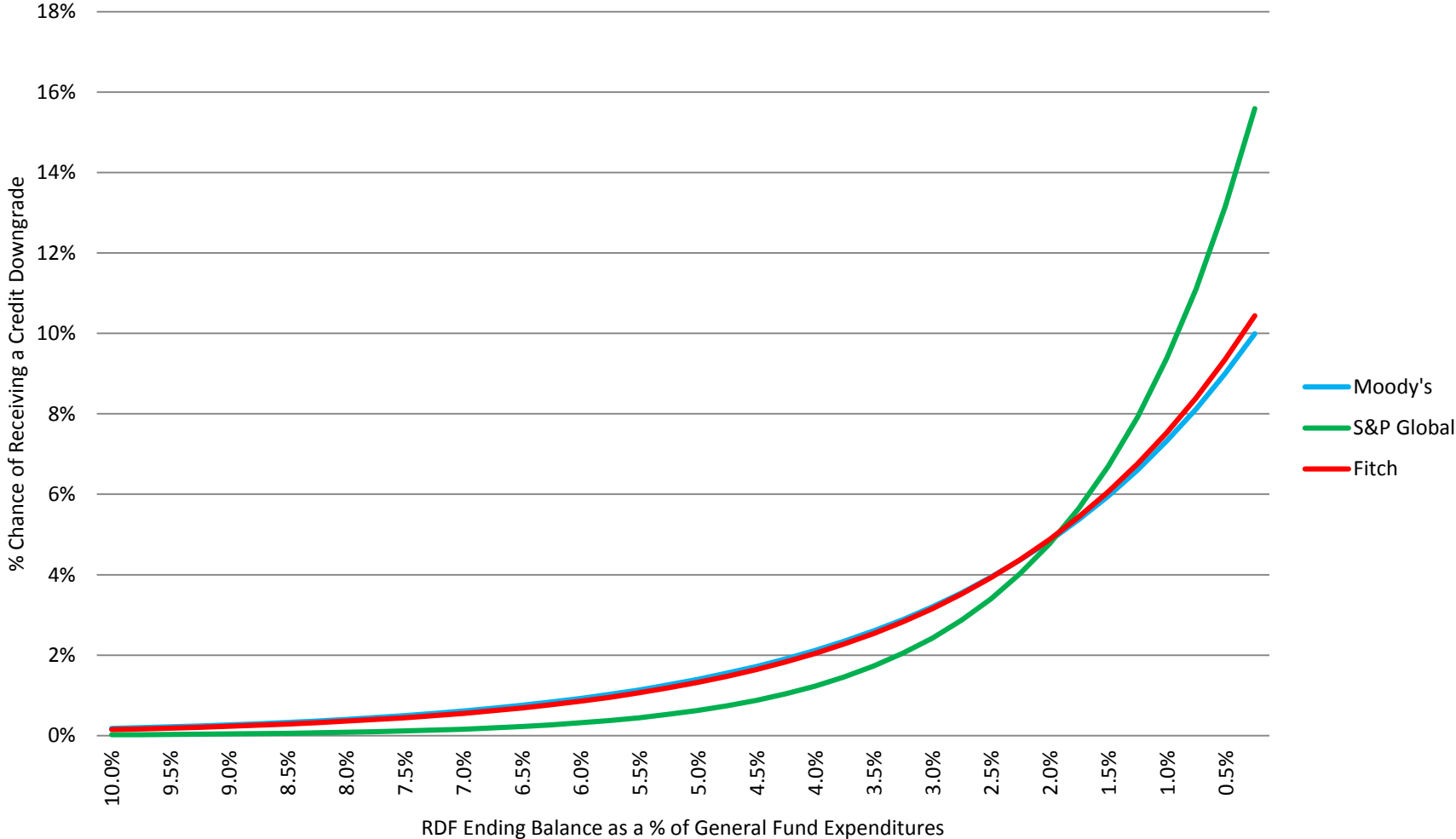
Rating Shifts are Rare for Most States

Moody's Investors Service, 1992-2015

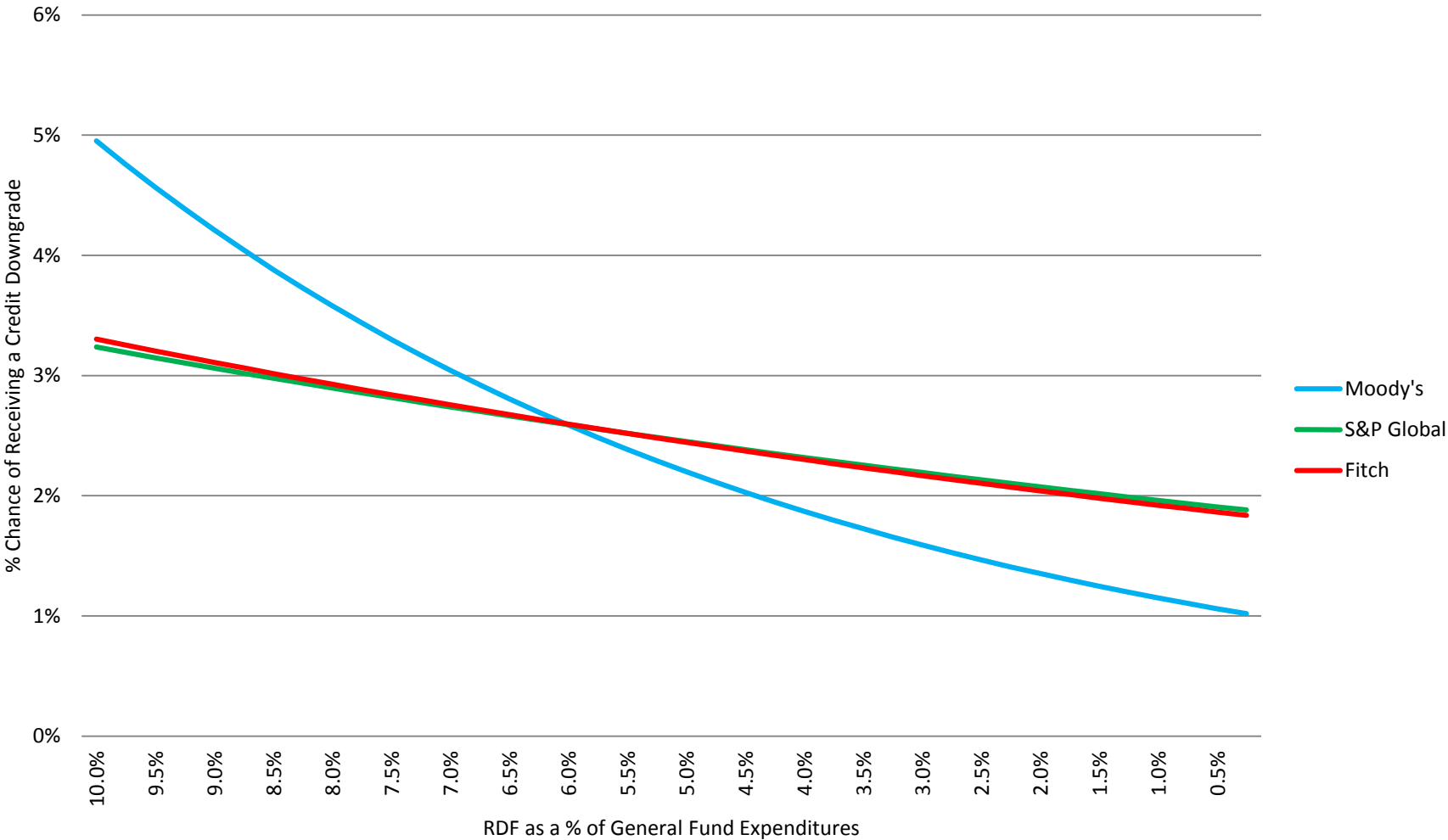


3 or fewer rating actions
5 or more rating actions

Withdrawals During Growth Years Increase Chance of a Downgrade



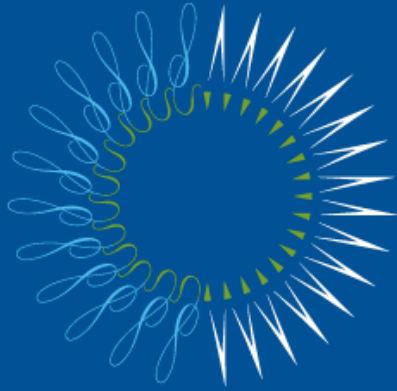
Withdrawals During Downturns Do Not Translate into Higher Chances of Downgrades



Key Findings



- Credit rating analysts examine how states structure their reserves
 - Design rainy day funds with clear, objective goals that policymakers (and ratings analysts) can refer to.
- Rating agencies observe rainy day fund use and prefer states that consistently follow their own policies.
 - Structure rainy day funds to be in line with the economy - deposits, withdrawals, and savings targets informed by the state's revenue volatility and the business cycle.
- Withdrawals during recessions will not necessarily jeopardize credit ratings, as long as other budgetary actions are taken.
 - Base the decision to tap rainy day funds on the fiscal situation.



THE
PEW
CHARITABLE TRUSTS

For additional questions or information, please contact:

Jonathan Moody
jmoody@pewtrusts.org

Data Construction and Adjustments



- Aggregate all RDFs into a single figure and calculate net usage
 - *Net Usage = Total Deposits – Total Withdrawals*
- All fiscal/financial variables are normalized as a % of General Fund Revenue

- Annualized State GO Bond Ratings
 - Latest listed rating for each fiscal year
 - Recorded as ordinal scale and then converted to binary upgrade/downgrade measures

Valencing RDF Usage



- Calculate revenue cycle using Butterworth Filter
- Compare NASBO general fund revenue against revenue cycle to determine if state is above/below revenue trend

Valencing Net Rainy Day Fund Use

		Countercyclical use	
		Above trend (+)	Below trend (-)
Net RDF use	Net deposit (+)	Depositing during growth period. This reflects responsible savings while limiting reliance on unsustainable revenue. Credit positive.	Depositing during revenue downturn, creating unnecessary budgetary pressure. Credit negative.
	Net withdrawal (-)	Withdrawing during growth years, indicating a "raiding" of the fund or reliance on reserves to fund recurring expenditures. Credit negative.	Withdrawing during revenue downturn or recession. Rainy day fund is being used to supplement revenues. Credit positive.

Source: Pew analysis of state rainy day fund use and general fund revenues. General fund revenue data are from the National Association of State Budget Officers' Fall Survey of the states and only reflect audited, actual revenue collections.

© 2017 The Pew Charitable Trusts

Why Fixed Effects Logit?



- The inclusion of fixed effects in non-linear models can introduce bias (Greene 2002) and can produce inconsistent estimates (Baetschmann et al. 2013)
- We are not trying to explain how states receive their initial ratings, rather, how usage affects upgrades and downgrades
 - States operate on an inflated rating scale
 - Rare events
- Models estimated:

$$\begin{aligned} \Pr(\textit{Upgrade or Downgrade}) = & \\ & \alpha + \beta_1 \textit{RDF Usage} + \beta_2 \textit{RDF Balance} + \beta_3 \textit{GF Ending Balance} \\ & + \beta_4 \textit{Longterm Debt} + \beta_5 \textit{Shortterm Debt} + \beta_6 \ln \textit{Population} \\ & + \beta_7 \textit{Pop over 65} + \varepsilon \end{aligned}$$

Model results – upgrades



Variable	Model 1 – S&P	Model 2 – Moody's	Model 3 - Fitch
Valenced RDF Usage	0.036 (0.030)	0.017 (0.027)	-0.014 (0.035)
RDF Ending Balance	0.020 (0.017)	-0.008 (0.014)	-0.008 (0.019)
General Fund Ending Balance	0.010 (0.024)	-0.007 (0.023)	0.005 (0.035)
Long Term Debt Obligations	-4.010 (4.895)	0.580 (4.272)	5.986 (4.473)
Short Term Debt Obligations	-19.401 (66.233)	-13.188 (56.017)	-48.509 (70.330)
Log(Population)	-4.942 (4.659)	-1.949 (4.192)	2.047 (4.390)
% of Population >65	0.000 (0.003)	0.002 (0.002)	-0.001 (0.002)
N	533	519	450
Likelihood Ratio	8.45	2.54	2.88

Note: *p<0.10; **p<0.05; ***p<0.01. Values reflect conditional logit coefficients. Standard errors reported in parentheses. The number of observations differs across models due to differences in the number of states to experience upgrades for each rating agency.

Model results – downgrades



Variable	Model 1 – S&P	Model 2 – Moody's	Model 3 - Fitch
Valenced RDF Usage	-0.366** (0.172)	-0.288** (0.121)	-0.248† (0.154)
RDF Ending Balance	-0.311** (0.155)	-0.126 (0.121)	-0.187 (0.143)
General Fund Ending Balance	-0.119 (0.075)	-0.184** (0.084)	-0.122 (0.090)
Long Term Debt Obligations	-11.098 (7.773)	1.038 (8.352)	-3.862 (7.151)
Short Term Debt Obligations	86.789 (88.779)	270.884** (112.296)	235.584** (110.722)
Log(Population)	16.202* (9.693)	-2.135 (8.193)	8.392 (10.737)
% of Population >65	-0.001 (0.003)	0.000 (0.003)	0.000 (0.004)
N	225	279	232
Likelihood Ratio	19.65***	22.68***	15.85**

Note: ***p<0.01; **p<0.05; *p<0.10. † The p-value here is 0.107, placing it on the verge of marginal significance. Values reflect conditional logit coefficients. Standard errors reported in parentheses. The number of observations differs across models due to differences in the number of states to experience downgrades for each rating agency.