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BUDGETING BY PRIORITIES: BALANCING STABILITY WITH ECONOMIC RESPONSIVENESS

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ABSTRACT

This article investigates how the budget priorities of Arkansas state government departments vary with changes in economic conditions. The Arkansas Revenue Stabilization Act (ARSA) of 1945 established a formalized method of state budgeting by priorities. State funds are allocated, meaning the funds are legally made available, according to priority levels established each year by the Governor and the General Assembly. Those allocated funds are later distributed, meaning released for spending, according to priority levels as funds become available. In this study, we ask the research question: Are departmental budget priorities driven by stability or are they responsive to economic condition? Incrementalism suggests that incremental annual changes in the budget are based on the previous year's budget, they take place across-the-board, and that there lacks an in depth consideration of priorities. However, ARSA requires explicit prioritization within each department. Perceptions of economic conditions are likely to play into this prioritization. We hypothesize that the higher priority items will follow a more incremental pattern of mostly being based on the previous year's budget in favor of stability. We also hypothesize that the economy has a greater impact on the lower priority items in favor of economic responsiveness. Our findings suggest that incrementalism is a persistent influence across priority levels. However, there is rational consideration during an economic downturn that results in a decline in funding for lower priority budget items.

Keywords: incrementalism, cutback budgeting, budget process, revenue stabilization, budget priorities

1. INTRODUCTION

Using Arkansas' unique approach to budgeting by priorities, this study investigates how the budget priorities of state government departments vary with changes in economic conditions. The Arkansas Revenue Stabilization Act (ARSA) allocates state funds according to priority levels established each year by the Governor in the Governor's budget recommendation, with additional changes and revisions resulting from the legislative consideration process of the General Assembly. The allocated amount is the amount that is legally made available for spending. ARSA dictates the order of distribution (release for spending) of those allocated funds (Jordan, 2006).

Although as many as six priority levels have been allocated in any given fiscal year, administrators generally view the lower priority allocations as activities and purchases that will take place only if the revenue is available. Quarterly updates of the revenue forecast are used to inform administrators of the likelihood of the distribution of funds to the lower levels. This strategy creates confidence in being able to maintain the department's capability to implement programs and services that are deemed as high priority (Jordan, 2006).

The ARSA prioritization method of budgeting has the stated purpose of stabilizing the budget during declining economic conditions resulting in revenue shortfalls. Jordan (2006) concludes that ARSA was effective at protecting top priority budget items that made up almost 90% of the budget by essentially creating a 10% cushion, which was greater than the size of most states' rainy day funds. As a result of this process, Arkansas lawmakers did not see a need for a 'rainy day' fund also known as a stabilization fund which sets aside funds for distribution when revenue falls short of expectations.

Arkansas administrators view the lower priority items as those activities and associated expenses that will take place only if the revenue is available. If revenue collections fall short of expectations, then the allocated items with the lower priorities are not funded. Therefore, throughout the fiscal year, administrators execute their budgets with low priority items on hold until there is a distribution of funds to pay for them. This prioritization method of allocation and distribution was created to mitigate the impact of declining economic conditions. A decline in the economy resulting in a revenue shortfall makes funding of low priority items less probable. In this study of the ARSA approach to priority budgeting, we ask the research question: Are departmental budget priorities driven by stability or are they responsive to economic condition?

Since 1945, Arkansas' unique method of stabilization has served effectively its purpose of creating a cushion for declining economic conditions. However, in recent years the public financial environment in which ARSA operates

has changed. The first change is the execution of significant funding reforms in the mid-2000s resulting from the Lake View education finance equity litigation[1]. Lake View, a poor, rural school district, sued the state claiming that reliance upon local property taxes as the primary funding of education was unfair to those in districts with low property value. The Arkansas Supreme Court ruled the state's funding as unconstitutional and that the state was solely responsible for the education system. Ultimately, primary education was ruled as being a state constitutional obligation that requires "adequate" funding. The rulings required a change in budget priorities, making primary (K-12) education the "highest priority," effectively lowering the priority of other areas of the budget (Jordan, et al., 2014).

Second, despite the effectiveness of ARSA, lawmakers established a rainy day fund in fiscal year 2007 as a political signal that the state was fiscally responsible. A rainy day fund essentially creates a second opportunity for an item to be funded even if revenue falls short. The Arkansas Rainy Day Fund was created during a time of surplus but due to the subsequent recession did not receive allocation for several budget cycles. In fiscal year 2012, the rainy day fund received allocation for the first time of only $10 Million out of a budget that is over $4 Billion. This amount is far less than the rule of thumb of 5%, which has often been found to be inadequate for state budget stabilization (Joyce, 2001; Hou, 2004).

Finally, Arkansas was one of a few of states with a biennial legislature which met every other year, in odd-number years. In 2008, there was a ballot initiative to change budgeting to an annual process in order to make revenue forecasting easier and more accurate. Voters unexpectedly approved the constitutional amendment to have legislators meet for a budget session in even-numbered years. This modification made the state one of the first to make the switch in the budget process from biennial to annual within the last two decades (Snell, 2011).

Combined, these changes suggest a need to reexamine ARSA to determine whether they have impacted departmental resource allocation decisions. Therefore, we seek to determine if ARSA is still used to respond to economic conditions. Our study spans the period 1992 through 2014, which encompasses these environmental changes surrounding ARSA.

2. ARSA ALLOCATION AND DISTRIBUTION

Table 1 shows the budget allocations and distributions under ARSA for 1992 through 2014. Across the years, the number of priority levels receiving distributed funds fluctuated from four levels in the mid-1990s to only a portion

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1. *Lake View School District No. 25 v. Huckabee.* 351 Ark. 31; 91 S.W.3d 472 (2002).

of the first level in 2010. However, for most years, only the first two budget levels are distributed. The consistent distribution of funds to the first priority level is evidence of the efficacy of the process at protecting the top priority budget items.

3. INCREMENTAL VS. RATIONAL APPROACHES TO BUDGETING

Wildavsky's (1964) introduction of the incrementalism theory of budgeting has held a firm and prominent place in public administration. It theorizes that the stickiness or stability of the status quo and limited comprehensive consideration create across-the-board budget adjustments in small increments from the base or previous budgeted amount. In theory, this decidedly non-rational approach is employed to mitigate conflict and the costs of negotiation and, therefore, avoids strategic review and deliberation of the entire budget (Schick, 1983). Robinson, et al. (2007) and Ryu, et al. (2008) conclude that spending patterns can be largely explained by incrementalism. However, there have been challenges to the exclusive focus on incrementalism that suggest that there are more rational approaches to budgeting used in practice. In fact, Reddick (2003) tests the use of incrementalism, the garbage can theory, and rational approaches such as biennial budgeting, and he concludes that there is not a singular "catch all" theoretical explanation of state budgeting (p. 337). He finds a dominant presence of incrementalism in combination with rational methods. This challenges the focus on incrementalism theory and suggests that the budget in practice is more rational under certain conditions. We argue that responding to strong economic downturns and allocating resources within specific budgeting frameworks require explicit and rational consideration of priorities used in cutback budgeting and various budget processes.

4. CUTBACK BUDGETING

Incrementalism as a budget theory was born during a time of resource increase. As a flip side to incrementalism, decrementalism avoids in-depth programmatic reviews and makes across-the-board small reductions. Decisions are made on the margins, leaving most of the budget unexamined (Schick, 1983). Levine (1978) argues that in the face of "zero growth and absolute decline", there is a need to re-examine the expansionist view of budgeting (p. 317). During strong economic downturns, states are faced with a balanced-budget requirement which brings about greater reductions via cutback budgeting instead of decrementalism. At a time of deep budget declines or cutbacks, tough choices are not mitigated. The idea of a department receiving its fair share of the budget adjustment cannot persist during cutback budgeting. As the size of the cuts increase or the period of decline is prolonged (i.e. a long or deep recession), the cuts become more targeted and, therefore, more rational (Behn, 1985).

Table 1. Budget Levels Allocated and Distributed Under ARSA structure, 1992-2014

Year	Funding Allocation	Actual Distribution	Priority Levels Distributed*
1992	$2,175,189,495	$1,934,996,462	A+A1+55.28% of B
1993	$2,431,887,384	$2,076,967,023	A+A1+27.7% of B
1994	$2,270,946,228	$2,270,017,689	A+B+B1+C+90.27% of C1
1995	$2,400,379,719	$2,452,523,636	A+B+B1+C+C1
1996	$2,533,174,612	$2,631,960,737	A+B+B1+C+C1
1997	$2,685,312,075	$2,771,893,531	A+B+B1+C+C1
1998	$2,902,837,978	$2,969,804,598	A+B
1999	$3,009,281,308	$3,103,708,459	A+B
2000	$3,243,688,704	$3,176,581,515	A+79.91% of B
2001	$3,437,168,936	$3,258,940,496	A+40.6% of B
2002	$3,450,739,822	$3,238,373,556	98.72% of A
2003	$3,623,980,274	$3,250,769,591	93.94% of A
2004	$3,525,966,225	$3,598,842,591	A + B + B1
2005	$3,629,925,804	$3,937,142,958	A + B + B1
2006	$3,825,053,006	$4,227,770,000	A + B
2007	$4,058,615,931	$4,467,900,000	A + B + C
2008	$4,352,672,063	$4,529,200,000	A + A1+ B
2009	$4,523,673,103	$4,434,701,497	A + A1 + 53.9% of B
2010	$4,593,605,359	$4,323,207,922	94.73% of A
2011	$4,478,900,000	$4,572,847,441	A + B
2012	$4,605,925,000	$4,751,568,795	A + B
2013	$4,727,500,000	$5,026,990,611	A + $137.7 million
2014	$4,943,779,505	$5,022,445,083	A+B+C

*The letters used to denote priority levels come from the legislation. The variation in what the priority levels are called is a matter of legislative preference. For instance, "A" is always the first priority level, but the second priority level may be named "A1" or "B" in the legislation.

Levine (1978) defines cutback management as initiatives and interventions needed to lead a public organization toward a more efficient organization that consumes fewer resources. He argues that cutback management meant that public managers have to consider tactics that are "inclusionary" in spreading the share of budget cuts. A review of the annual Fiscal Survey of the States by the National Association of State Budget Officers during the Great Recession and its slow recovery period reveals that across-the-board cuts are a common state government strategy during the recession, but the prevalence of targeted cuts grew over the time period. This diffused strategy was confirmed by Klase

(2011) in his comparison of state responses across two recessions in the 2000s. As recession severity grew, states moved past the across-the-board cuts to more targeted eliminations. During fiscal stress, cutback budgeting reflects administrative choices that represent shifts in departmental programmatic priorities (Daugherty and Klase, 2009; Bartle, 1996).

Conant (2010) provides a summary of how six states dealt with budget shortfalls during the Great Recession. He argues that in states with structural deficits, the main driver and cause of the deficit was Medicaid; therefore, Medicaid was a common target for budgetary cuts (Conant, 2010). In Connecticut, higher education was also targeted for cuts in spending, and other agencies were targeted for elimination and consolidation (Dautrich, et al., 2010). Massachusetts also targeted health care and education in addition to state aid to local governments (Wallin and Snow, 2010). The targeted cuts resulted from prioritization across functions. For instance, explanations asserted for targeting cuts to higher education and aid to local governments were that those entities could raise their own revenue, and, therefore, were lower priority for state funding.

5. BUDGET PROCESSES

Some budget processes are put in place with the intent of encouraging planning and deliberate consideration of alternatives. Three such processes are biennial budgeting, performance-based budgeting, and zero-base budgeting. While annual budgeting is advocated as an important part of the budget reform movement for increasing control, it decreases the time necessary for financial planning. Therefore, the biennial budget process, which allows for a longer planning period, is viewed as a more rational approach (Schick, 1983; Reddick, 2003; Hou, 2006). Until 2008, ARSA involved a biennial budget process which required establishing priorities for two fiscal years.

Performance-based budgeting process has the purpose of implementing planning, strategizing, and prioritizing into the budget process. Management's development of goals and objectives are integrated into the budget process and decision making (Jordan and Hackbart, 1999; Hou, et al, 2011). While Jordan and Hackbart find that performance-based budgeting is a useful managerial tool that may not impact budget decisions, Hou, et al. observe that some states use performance measurement for prioritizing budget decisions but perhaps less so during fiscal stress.

Under zero-base budgeting, decision making is intended to be more rational and comprehensive because the base or previous amount is scrutinized and decision makers are provided additional information for choosing between alternatives (Draper and Pitsvada, 1981). Even the modern day version of zero-base budgeting requires a review of performance in addition to the delibera-

tion of the base as opposed to assuming the base is a constant even if drilling into the base is largely symbolic (Lauth, 2014).

Even as rational budget reforms, like performance-based and zero-base budgeting, undergo many variations, their common intent seems to be to insert prospective consideration of policy alternatives and priorities (Reddick, 2003). What cutback budgeting and rational budget reforms have in common with ARSA is that they move away from the across-the-board "fair share" assumption of incrementalism. They introduce prioritization into budgetary decision making, which is the complexity that incrementalism theory is said to avoid.

6. CONCEPTUAL FRAMEWORK

The theory of incrementalism (and decrementalism) states that changes in the budget will take place across-the-board in small increments from the previous year. The definition of "small increments" is not clearly defined in the literature. However, the significance of the previous year as the basis of budget changes is consistent among incrementalist, which is the focus in this study. The theory suggests a lack of in depth budget consideration of priorities. On the other hand, ARSA requires explicit prioritization for each department, and the prioritized order of distribution is contingent upon revenue flow. As Clemens and Miran (2012) note, state balanced budget requirements create a tight relationship between state governments' revenues and expenditures.

Not surprisingly, the theoretical and empirical literature have shown that, because budgeting is open to the environment (i.e., the economy), budget strategies are more rational during specific economic periods, such as those requiring cutback budgeting, particularly when the economy is expected to change in the negative direction. Therefore, we hypothesize that the economy will have a significant impact on budget decisions. However, because decision makers are boundedly rational and likely to make decisions at the margin, we expect that some features of stability will remain as budget decisions are based on the previous year's budget. Specifically, we hypothesize that the higher priority items will follow a more incremental pattern, while the economy has a greater impact on the lower priority items. The rational decision to place items in priority Level 1 has already been decided in previous periods based on expectations regarding service levels and costs. Therefore, budget decisions over time regarding priority Level 1 will not undergo additional scrutiny and will be incremental. On the other hand, lower priority items will be subject to additional scrutiny and re-prioritization. We hypothesize that budgeting for higher priority items tends to be more stable and incremental in nature due to the need to maintain or protect basic funding needs. Therefore, allocation decisions for higher priority budget levels are expected to rely on the previous year's allocation. Lower priority items are considered more discretionary and often subject to greater decision making scrutiny. Therefore, allocation deci-

sions for lower priority budget levels are expected to be less subject to incremental decision making, instead being more open and responsive to economic forces and the perceived likelihood of greater or less revenues.

H1: Higher priority budget levels are related to the previous year's budget allocations, in support of incrementalism.

H2: Lower priority budget levels are related to perceptions of economic conditions, in support of rational decision making.

Previous research has found that state-level fiscal policy is asymmetric, with differing responses to "expansions and recessions of equal magnitudes" (Sorensen & Yosha, 2001, p. 47). A one percent expansion in gross state product (GSP), for example, may not generate the same magnitude response to a one percent contraction in GSP. To capture this asymmetry, we distinguish between positive and negative changes in economic condition.

Given ARSA's prioritization structure, we also expect there to be little differences across departments for higher priority budget levels in terms of allocation ratios. We expect that the size of the department will not matter for the highest priority level. All departments and their advocates will seek to protect the status quo of their highest priority items, and the stability of Level 1 priority will not vary across departments based on their size relative to the total budget. However, we expect size of the department to matter at priority Level 2. Keeping in mind that there may be and often are more than two priority levels, departments that are larger in size may have more budget items to categorize, which creates more opportunity to change the proportion of the items categorized at priority Level 2.

7. DATA AND METHODOLOGY

Our study's unit of analysis is department expenditures. The three dependent variables are:

(1) percent of the department's budget that is allocated in priority Level 1;
(2) percent of the department's budget that is allocated in priority Level 2;
(3) ratio of department's budget in Level 2 to Level 1.

Arkansas departmental budget data are obtained from the state budget office for each priority level. Consistent with prior research on the Arkansas priority budgeting approach (Jordan, 2006), we focus on 11 departments in the state of Arkansas government from fiscal years 1992 to 2014. These departments are listed in Table 2. This table summarizes the department budgets in terms of the percent of department budget in Levels 1 and 2 between 1992 and 2014, and also shows the variability of department budget allocations across time. The proportion of the departmental budget in priority Level 1 is between 92% and 98%, averaging 96.1%, which is higher for each department than in

Jordan's 2006 study of ARSA; however the state's grand budget total only increased from about 90% to 92%. There is greater variation in departmental budgets in Level 2 compared to Level 1. The average coefficient of variation for Level 1 is 6.8% compared to 208.1% for Level 2. Differences in the coefficient of variation between Levels 1 and 2 is statistically significant at $p<.001$.

Table 3 shows the department's allocation ratios (Level 2 to Level 1) and the size of the department's budget as a percent of the state's total budget. The ratio of the department's budget in Level 2 to Level 1 (column two in Table 3) reflects an inverse measure of how much the department's budget is prioritized at a higher level. A lower number for this ratio reflects greater reliance on Level 1, and conversely less reliance on Level 2. This indicates that a greater portion of the budget is categorized as high priority. There are several observations where the department budget is 100% in Level 1, so the ratio of Level 2 to Level 1 is 0.

Table 2. Percent of Department Budget in Level 1 and Level 2, 1992-2014

	Level 1			Level 2		
Department	**Mean**	**Std Dev**	**CV**	**Mean**	**Std Dev**	**CV**
Aging & Adult Services	92.20%	11.80%	12.80%	5.00%	9.70%	194.00%
Children & Family Services	94.00%	8.50%	9.00%	2.20%	4.80%	218.20%
Corrections	93.80%	5.50%	5.90%	4.10%	4.30%	104.90%
County Aid	96.50%	4.70%	4.90%	0.50%	2.00%	400.00%
Economic Development	97.10%	3.20%	3.30%	1.30%	1.70%	130.80%
Higher Education	95.00%	6.00%	6.30%	1.80%	2.30%	127.80%
K-12 Education	96.40%	4.00%	4.10%	2.30%	1.90%	82.60%
Labor	94.90%	8.40%	8.90%	1.20%	2.70%	225.00%
Municipal Aid	96.60%	4.70%	4.90%	0.40%	1.50%	375.00%
Parks & Tourism	95.50%	7.30%	7.60%	1.70%	5.10%	300.00%
State Police	92.60%	6.50%	7.00%	2.60%	3.40%	130.80%

We use the previous year's budget decisions as the basis for measuring budgeting stability (i.e. in(de)crementalism) and use changes in state-level per capita personal income as the basis for understanding responsiveness to changes in economic condition. Per capita personal income, like state GSP, measures the economic well-being of a state (Broda & Tate, 2014) and, thus, is appropriate to measure economic condition. Per capita personal income has been broadly used in the literature as an indicator of economic performance (see for example Bishop et al., 1992; Connaughton & Madsen, 2004; Garnick, 1990; Hofer & Wörgötter, 1997). The change in personal income is measured

as the change in per capita personal income for the previous year. This is because budget decision making happens before the year commences, and decision makers are expected to use information available to them during the decision making period and not during the year for which the budget is being decided. Specifically:

$$\%\Delta \text{Personal Income}_t = \frac{\text{Per Capita Personal Income}_{t-1} - \text{Per Capita Personal Income}_{t-2}}{\text{Per Capita Personal Income}_{t-2}} \times 100\%$$

Table 3. Allocation Ratios and Department Budget

Department	% Budget in Level 2 / % Budget in Level 1	Dept Budget / State Budget
Aging & Adult Services	0.0723	0.37%
Children & Family Services	0.0290	1.32%
Corrections	0.0473	5.32%
County Aid	0.0015	0.61%
Economic Development	0.0125	0.26%
Higher Education	0.0196	15.65%
K-12 Education	0.0257	44.28%
Labor	0.0129	0.07%
Municipal Aid	0.0015	0.86%
Parks & Tourism	0.0216	0.55%
State Police	0.0282	1.26%

Note: We focus on the ratio of budget allocations in Level 2 to Level 1 because the amount allocated to Level 2 is often small and sometimes zero. The ratio of Level 2 to Level 1 (as opposed to Level 1 to Level 2) is to avoid having a zero in the denominator.

Personal income data are obtained from the U.S. Bureau of Economic Analysis. Since previous research has found that state-level fiscal policy is asymmetric, we follow the methodology used by Sorensen and Yosha (2001), and create two relative economic change variables representing upturns or positive change (%ΔPersonal Income+) and downturns or negative change (%ΔPersonal Income–). These relative change variables are measured in comparison to the average for the previous four year period, with an upturn corresponding to an above-average change in per capita personal income and a downturn defined as a below-average change in per capita personal income. More specifically,

%ΔPersonal Income+ = Positive percent change in per capita personal income; otherwise 0

%ΔPersonal Income– = Negative percent change in per capita personal income; otherwise 0.

Table 4. Descriptive Statistics

	Mean	Std. Dev.	Min	Max
% Budget in Level 1$_t$	95.452	6.388	68.073	100
% Budget in Level 2$_t$	2.098	4.362	0	31.927
$\left[\dfrac{\% \text{ Budget in Level 2}}{\% \text{ Budget in Level 1}}\right]_t \times 100\%$	0.025	0.059	0	0.469
Stability				
$\left[\dfrac{\% \text{ Budget in Level 2}}{\% \text{ Budget in Level 1}}\right]_{t-1}$	0.025	0.060	0	0.469
Responsiveness				
%ΔPersonal Income$_{t,+}$	1.009	1.373	0	4.834
%ΔPersonal Income$_{t,-}$	-1.147	1.680	-6.146	0
$\%\Delta\text{Personal Income}_t \times \left[\dfrac{\% \text{ Budget in Level 2}}{\% \text{ Budget in Level 1}}\right]_{t-1}$	0.018	0.091	0.456	0.638
Department Size				
$\left[\dfrac{\text{Dept. Budget}}{\text{Total State Budget}}\right]_t \times 100\%$	6.531	13.032	0.010	48.520
Policy Changes				
Lake View education finance equity litigation				
Year 2005	0.045	0.209	0	1
Year 2006	0.045	0.209	0	1
Year 2007	0.045	0.209	0	1
K12 department AND Year 2005	0.004	0.064	0	1
K12 department AND Year 2006	0.004	0.064	0	1
K12 department AND Year 2007	0.004	0.064	0	1
Annual budget process				
Year 2009 and beyond	0.273	0.446	0	1

To test hypotheses about stability and economic responsiveness, our key explanatory variables are previous year budget decisions and positive and negative changes in economic condition. We include an interaction variable that combines previous year's budget decision with the magnitude of the change in economic condition. This interaction variable is intended to capture how forces for stability may be either amplified or attenuated by the need to be responsive to external economic pressures. We also include variables to capture policy changes that may affect budget decision making. To capture the effects of the Lake View educational finance equity court decision, we include dummy variables for fiscal years 2005, 2006, and 2007. Those years represent the re-

sults of regular and special sessions where the Legislature was continually reforming education funding to reflect court rulings in the ongoing case as well as the court ordered education study (Jordan et al., 2014). In addition, because the Lake View case was expected to have a specific impact on K12 education, we include three dummy variables that capture the combination of K12 department and the years 2005, 2006, and 2007, respectively. The change to annual budgeting (as opposed to biennial budgeting) took effect in 2008, impacting budget decisions for the fiscal year 2009 and all years following. We include a dummy variable for all years post 2008 to account for this budget process change. Finally, we control for department size by including a measure of departmental budget as a percent of the state's total budget. Given ARSA's prioritization structure, we expect there to be little differences across departments for higher priority budget levels in terms of allocation ratios. With lower priority levels we expect the reverse; differences across departments will occur. The descriptive statistics for all the variables used in the regression analysis are provided in Table 4.

We estimate the following regression models:

$$\% \text{ of Budget in Level } i_t = \alpha_i + \beta_{i,1} \left(\frac{\% \text{ Budget in Level 2}}{\% \text{ Budget in Level 1}} \right)_{t-1}$$

$$+ \beta_{i,2}\%\Delta\text{Personal Income}_{+,t-1} + \beta_{i,3}\%\Delta\text{Personal Income}_{-,t-1}$$

$$+ \beta_{i,4}\%\Delta\text{Personal Income}_{t-1} \times \left(\frac{\% \text{ Budget in Level 2}}{\% \text{ Budget in Level 1}} \right)_{t-1}$$

$$+ \beta_{1,5}\left(\frac{\text{Dept. Budget}}{\text{Total State Budget}} \right)_{t-1} \times 100\%$$

$$+ \sum_{k=1}^{6} \beta_{i,5+k}\text{Lake View Education Finance Equity Litigation}_k$$

$$+ \beta_{i,12}\text{ Annual Budget Process}$$

where i=1 or 2

$$\left(\frac{\% \text{ Budget in Level 2}}{\% \text{ Budget in Level 1}} \right)_t = \alpha_3 + \beta_{3,1}\left(\frac{\% \text{ Budget in Level 2}}{\% \text{ Budget in Level 1}} \right)_{t-1}$$

$$+ \beta_{3,2}\%\Delta\text{Personal Income}_{+,t-1} + \beta_{3,3}\%\Delta\text{Personal Income}_{-,t-1}$$

$$+ \beta_{3,4}\%\Delta\text{Personal Income}_{t-1} \times \left(\frac{\% \text{ Budget in Level 2}}{\% \text{ Budget in Level 1}} \right)_{t-1}$$

$$+ \beta_{3,5}\left(\frac{\text{Dept. Budget}}{\text{Total State Budget}} \right)_{t-1} \times 100\%$$

$$+ \sum_{k=1}^{6} \beta_{3,5+k}\text{Lake View Education Finance Equity Litigation}_k$$

$$+ \beta_{3,12}\text{ Annual Budget Process}$$

Given the stability hypothesis that budgeting for higher priority items tend to be more stable and incremental, $\beta_{1,1}$ and $\beta_{3,1}$ are expected to be negative. However, $\beta_{2,1}$, which captures the incrementalism effects on lower priority budget levels is not expected to be statistically significant. Consistent with Hypothesis 2 that lower priority budget items are more responsive to economic conditions, $\beta_{2,2}$ (economic growth) is expected to be positive and $\beta_{2,3}$ (economic decline) is expected to be negative. Given expected stronger response to negative changes in economic conditions, the magnitude of $\beta_{2,3}$ is also expected to be larger than $\beta_{2,2}$. Similarly, $\beta_{3,2}$ (the ratio of level 2 to level 1) is expected to be positive in a growing economy and negative in a declining economy, $\beta_{3,3}$. In terms of interactions between forces for stability and responsiveness, we expect all coefficients ($\beta_{1,4}$, $\beta_{2,4}$ and $\beta_{3,4}$) to be statistically significant. We do not expect Level 1 prioritization to be dependent on department size, so $\beta_{1,5}$ is not expected to be statistically significant. However, we expect department size to matter for low priority budget items and for $\beta_{2,5}$ to be statistically significant. We do not have any expectations for coefficients of the Lake View educational finance equity litigation dummy variables ($\beta_{i,6}$ through $\beta_{i,8}$). However, given that the case was expected to have specific impact on prioritizing K12 education, we expect $\beta_{1,9}$, $\beta_{1,10}$ and $\beta_{1,11}$ (K12 department and the reform years) to be positive. Finally, while we control for the switch to an annual budget process, we do not have specific expectations regarding statistical significance or signage for $\beta_{i,12}$.

With panel data of 11 departments across 23 years, we use feasible generalized least squares (FGLS) to estimate models for the three dependent variables: percent of department budget in priority Level 1, percent of department budget in priority Level 2, and ratio of department budget in Level 2 to Level 1. Our analysis relies on panel data that includes cross-sectional (departments) and time-series (fiscal years) information. Several diagnostics and tests were conducted to determine the correct model specification and linear regression approach, particularly out of concern for heteroscedasticity across departments and correlation within and/or between the departments. Statistically significant results of the likelihood ratio test (p<.0001) indicated panel-level heteroscedasticity. The Woolridge test for autocorrelation in the panel data (p<.0001) indicated serial autocorrelation, subsequently the Lagrange-Multiplier test (p<.0001) indicated presence of first-order autocorrelation. Statistically significant results for the Breusch-Pagan Lagrange Multiplier test of cross-sectional independence (p<.0001) and Pasaran cross-sectional dependence test (p<.0001) indicate the presence of cross-sectional dependence/contemporaneous correlations. FGLS was selected to estimate the model since it allowed for (1) first-order serial correlation in the dependent variables within each department where the coefficient on the auto-regressive process is specific to each department (panel-specific first-order auto-regressive autocorrelation), (2) heteroscedasticity across panels, and (3) cross-sectional correla-

tions. FGLS is a more efficient estimation procedure than the pooled OLS, fixed effects, and random effects modeling approaches typically used in cross-sectional, time-series analysis. For our analysis, we utilize FGLS estimation in the presence of panel-specific first-order autoregressive autocorrelation within panels, contemporaneous cross-sectional correlation, and heteroskedasticity across panels. The Stata xgls command with the option corr (psar1) was used.

8. RESULTS

Our analysis utilizes FGLS estimation in the presence of panel-specific, first-order autoregressive autocorrelation within panels, contemporaneous cross-sectional correlation, and heteroskedasticity across panels. Results of the three regression models using FGLS are presented in Table 5.

We hypothesized that budgeting for higher priority items tends to be more stable and incremental in nature due to the need to maintain or protect basic funding needs. Lower priority items, on the other hand, are considered more discretionary and often subject to greater decision making scrutiny. Therefore, allocation decisions for lower priority budget levels are expected to be less subject to incremental decision making and instead be more open and responsive to economic forces and the perceived likelihood of greater or lesser revenues.

Results for Model 1 show that budgeting for Level 1 is indeed incremental, as the coefficient for the stability indicator is statistically significant. The coefficients in Models 1 and 2 capture the average effects (across departments and over time) of the explanatory variables on the percentage of the department's budget in the respective priority levels. In Model 1, the greater the previous year's budget allocation of Level 2 relative to Level 1 (i.e. greater allocation for lower priority budget items) the lower the current year's allocation for Level 1. For every one percent increase in the ratio of the previous year's allocation for Level 2 to Level 1, the percentage of the budget allocated for Level 1 decreases by 11% in the current year. This is consistent with Hypothesis 1. Surprisingly, results for Model 2 (percent of budget in Level 2) also suggest incremental budgeting for lower priority budget items, but the coefficient is only marginally significant at p<.10. The coefficient for the stability variable was not statistically significant in Model 3.

We can compare the effects of incrementalism across Levels 1 and 2 by analyzing the coefficients using average values. If the previous year's budget had 1% more allocated in Level 2 (from 2.10% to 3.10%) and 1% less allocated in Level 1 (from 95.45% to 94.45%), the corresponding increase in $\left[\dfrac{\% \text{ Budget in Level 2}}{\% \text{ Budget in Level 1}}\right]_{t-1}$ is 0.008 $\left(\dfrac{3.10\%}{94.45\%} - 0.0248 = 0.008\right)$.

Table 5. Regression results of panel data linear models using FGLS

	Model 1: %Budget in Level 1	Model 2: %Budget in Level 2	Model 3: $\dfrac{\%\text{ Budget in Level 2}}{\%\text{ Budget in Level 1}}$
Stability			
$\left[\dfrac{\%\text{ Budget in Level 2}}{\%\text{ Budget in Level 1}}\right]_{t-1}$	**-10.699***	**9.034ᵗ**	0.088
Responsiveness			
$\%\Delta$Personal Income$_{t,+}$	-0.0596	0.173	0.00187
$\%\Delta$Personal Income$_{t,-}$	**0.614****	**-0.341****	**-0.00374***
$\%\Delta\text{Personal Income}_t \times \left[\dfrac{\%\text{ Budget in Level 2}}{\%\text{ Budget in Level 1}}\right]_{t-1}$	**-8.602*****	**8.349*****	**0.0988*****
Department Size			
$\left[\dfrac{\text{Dept. Budget}}{\text{Total State Budget}}\right]_t \times 100\%$	-0.0060	**0.024***	**0.000244ᵗ**
Policy Changes			
Lake View education finance equity litigation			
Year 2005	**2.667ᵗ**	**-1.382ᵗ**	-0.0163
Year 2006	0.039	**2.743*****	**0.0365*****
Year 2007	**2.747ᵗ**	**2.284****	**0.0290****
K12 department AND Year 2005	**2.160***	-.733	-0.00555
K12 department AND Year 2006	0.772	-0.852	-0.0169
K12 department AND Year 2007	**3.748*****	**-3.891***	**-0.0491****
Annual budget process			
Year 2009 and beyond	**2.866*****	-1.184	**-0.0135***
Constant	**96.379*****	**0.884***	**0.0104***
Model Summary			
Estimated Covariances	66	66	66
Estimated Autocorrelations	11	11	11
Estimated Coefficients	13	13	13
No. of Observations	242		
No. of Groups	11		
Time Periods	22		
X^2	56.73***	66.01***	61.72***

ᵗ p<.10; * p<.05; ** p<.01; ***p<.001

The budget allocated in Level 1 for the average department decreases from 95.45% to 95.36%, which is 0.09% lower ($-10.699\times0.008 = -0.086$). The budget allocated in Level 2 for the average department increases from 2.10% to 2.17% (increase is $9.034\times0.008 = 0.072$). The percent change in the percentages allocated in Levels 1 and 2 were −0.09% and 3.44%, respectively. Consistent with Hypothesis 1, incrementalism has a larger magnitude effect on the actual amount of funds budgeted in Level 1 compared to Level 2. However, in terms of the relative impact, Level 2 was affected to a larger extent, as a change in previous year's budget decisions caused a greater percentage change on the amount budgeted for Level 2.

In terms of responsiveness, Hypothesis 2 posits that lower priority budget levels will be influenced by economic conditions. The responsiveness to negative economic condition variable (%ΔPersonal Income$_{t,-}$) in Model 2 is statistically significant and negative. This indicates that decision makers respond to expected economic downturns by decreasing the percent of the department budget allocated in the lower priority Level 2. Correspondingly, the same measure of responsiveness is statistically significant and positive in Model 1. The results of Model 3 reflect the same pattern of results, with the coefficient being statistically significant and negative.

Overall, these results show that the extent of receptiveness is dependent on whether the economic condition is perceived to be favorable or unfavorable. When the economic condition is perceived to be favorable (%ΔPersonal Income$_{t,+}$), there is no statistically significant effect on budget decisions. However, the percent of the budget in Level 1 increases and Level 2 decreases if the economic condition is perceived as unfavorable (%ΔPersonal Income$_{t,-}$). A 1% decline in per capita personal income produces a 0.61% increase in the percentage of the budget allocated in Level 1 and a 0.34% decline in the budget allocated in Level 2. However, given the mean percentage of the budget in Level 1 of 95.45% and Level 2 of 2.10% across all the departments, the relative impact is higher on the Level 2 budget with a 16.19% $\left(\frac{0.34\%}{2.10\%} = 16.19\%\right)$ decline in the budget allocated in Level 2. In contrast, the 0.62% increase in the Level 1 budget represents a 0.64% $\left(\frac{0.62\%}{95.45\%} = 0.64\%\right)$ growth in the budget. As hypothesized, then, the lower priority budget level (Level 2) is affected to a greater degree by perceptions of economic conditions, in support of rational decision-making.

In terms of the interactions between stability and responsiveness, results show that the Level 1 budget is affected to a greater degree than the Level 2 budget (the magnitude of the coefficient for Level 1 was 8.602, compared to 8.349 for Level 2), but the differences between the two are not statistically

significantly different than zero. We can conclude, then, that both Level 1 and Level 2 budgets are simultaneously influenced by both measures of stability and responsiveness, and that the size of the influence is equal across the two levels but in opposite directions.

Given ARSA's prioritization structure, we also expect there to be little differences across departments for higher priority budget levels in terms of allocation ratios, and the reverse for lower priority departments. We see this in the results of our regression analysis, where department size (relative to the state budget) is statistically significant in Model 2 but not in Model 1. The coefficient for department size is marginally significant at p<.10 in Model 3.

It is also important to note that budget decisions are affected by policy change. Specifically, decision makers appear to respond to changes in the decision making process (i.e. a shift to annual budgeting) and to changes in priorities (the Lake View education finance equity court decision that made K12 education a funding priority). The dummy variable for the annual budget process period (Year 2009 and beyond) was statistically significant in Model 1 (positive signage) and Model 3 (negative signage). These results suggest that as the state moved to an annual budget, the decision makers increased the amount of the budget they prioritized as Level 1. With an annual budget process, each year's budget undergoes a thorough review process. There is more frequent scrutiny of resource allocation decisions compared to a biennial budget process where off-year budgets face less review. Decision makers and department advocates may feel the need to protect the budgets – which come under more scrutiny post-2009 – by placing more of the budget in Level 1. This added scrutiny may be due to the shift to annual budgeting, but could also be due to the tightening of state budgets due to the recent recession.

The Lake View education finance equity court decision also had an effect on all departments, as the decision makers attempt to protect the budgets by increasing the percentages of the budget they place in Level 1. A much more pronounced increase was seen for K12 departmental budgets, with the strongest effect being seen in fiscal year 2007. In fiscal years 2005 and 2007, this department increased its reliance on Level 1 spending by 4.83% (2.16+2.67=4.83) and 6.50% (2.75+3.75=6.50), respectively.

Interestingly, the dummy variables for years 2006 and 2007 were statistically significant and positive in Models 2 and 3. These results could reflect the impacts of the Lake View education finance equity litigation, but may also reflect the boom in government revenues. The assurances of surplus revenues may have prompted decision makers to be more assured that funds would be distributed for lower level budget item. Such confidence may have made them more likely to increase the percentage of the budget categorized as lower priority (Level 2).

9. CONCLUSION

Jordan's (2006) previous finding that the highest priority items are stable and lower priority items are volatile is confirmed; however, there has been a growth in the proportion of the budget prioritized in Level 1 of the departments examined. This increase in Level 1 may be the result of protectionism during the Great Recession of the departments examined here. Interestingly, the Grand Total of the state budget in Level 1 is about 91%, indicating that a decline in the proportion of the department budgets in Level 1 for departments not included in this study compensated much of the increase in Level 1 for the departments in our study. Overall, the results indicate that the ARSA approach to budgeting favors stability, regardless of priority level. However, ARSA also allows for responsiveness to economic conditions, but with a larger effect for the lower priority budget items. Furthermore, the extent of this responsiveness varies depending on whether economic conditions are expected to be favorable or unfavorable. Finally, department size also plays a role in decisions regarding discretionary (lower priority) budget items, with larger departments having greater reliance on lower priority budget levels.

Incrementalism continues to be a strong influence on budget changes in our first two models, even in the presence of rational decision making. This is similar to Reddick's (2003) findings that incremental decision making occurs in conjunction with rational decision making. The previous year's budget is still of primary importance to decision makers, especially as they determine the proportion of the budget to place in the top two priority levels.

Our findings suggest that the rational consideration of a decline in the economy impacts prioritization, while the expectation of an economic upturn does not influence prioritization. This suggests that when the economy is good, there is no need to reprioritize, and the status quo is maintained. On the other hand, a declining economy is associated with an increase in the percent of the budget in the top priority level and a decline in Level 2. Details of the decline in Level 2 cannot be determined from the data. However, the decline is statistically significant and could reflect a shift in the location of budget items or a decline in the budgeted amount. Furthermore, it is important to note that during a declining economy, the top priority is protected, which is the goal of ARSA.

The interaction of economic responsiveness and budget stability is significant at the 0.001 level across all models, and the magnitude on prioritizing Level 1 and Level 2 are quite strong. Simultaneously, the incremental influence of the previous year's budget and the rational influence of economic conditions are related to prioritization. Given the separate and combined magnitudes of the budget stability and economic responsiveness, our findings suggest that incrementalism is still a powerful influence.

ARSA is yet another way that rationality and incrementalism coexist in budgeting. Decision makers (the Governor and the Legislature) must categorize the budgets into priority levels. Categorization is influenced largely by what existed in the prior year; however, change in economic condition also influences that prioritization, especially an economic decline. The top priority level is more protected during an economic downturn, creating more stability for the highest priority. This suggests that ARSA is achieving its purpose of stabilization during negative revenue fluctuations.

The key limitation of this study is that the ARSA legislation and process are unique to one state. However, the transferable value of the findings is that prioritization could be an effective form of contingency planning that is an alternative or supplement to a state rainy day fund. Prioritization may help states to preserve their rainy day funds for periods of extreme or prolonged revenue stagnation or decline like the states experienced with the Great Recession. The fact that the Grand Total of Arkansas' budget in the top priority level is approximately 92%, while the departments studied here ranged from 92% to 98% in Level 1, indicates some lowering of priorities in other departments not studied. While the resulting 8% cushion in the total budget is still greater than most states' rainy day funds, the caution to states that choose to implement budgeting by priorities is that the effectiveness of the method can only be sustained if a significant proportion of the budget is below Level 1.

REFERENCES

Bartle, J. R. (1996) "Coping with cutbacks: City responses to aid cuts in New York State", *State and Local Government Review*, 28(1):38-48.

Behn, R. D. (1985) "Cutback budgeting", *Journal of Policy Analysis and Management*, 4(2):155-177.

Bishop, J. A., Formby, J. P., & Thistle, P. D. (1992) "Explaining interstate variation in income inequality", *The Review of Economics and Statistics*, 74(3):553-557.

Broda, J. E., & Tate, R. P. (2014) *Comprehensive Revision of Gross Domestic Product by State: Advance Statistics for 2013 and Revised Statistics for 1997–2012*. Bureau of Economic Analysis, Survey of Current Business. Accessed October 9, 2014 (www.bea.gov/scb/pdf/2014/07%20July/0714_gdp_by_%20state.pdf).

Conant, J. K. (2010) "Introduction: The "Great Recession," state budgets, and state budget deficits", *Public Budgeting & Finance*, 30(1):1-14.

Connaughton, J. E., & Madsen, R. A. (2004) "Explaining per capita personal income differences between states", *The Review of Regional Studies*, 34(2): 206-220.

Dautrich, K., Robbins, M. D. & Simonsen, B. (2010) "Budget deficits in the states: Connecticut", *Public Budgeting and Finance*, 30(1):103-151.

Dougherty, M. J., & Klase, K. A. (2009) "Fiscal retrenchment in state budgeting: Revisiting cutback management in a new era", *International Journal of Public Administration*, 32(7):593-619.

Draper, F. D. & Pitsvada, B. T. (1981) "ZBB-Looking Back After Ten Years", *Public Administration Review*, 41(1):76-83.

Garnick, D. H. (1990) "Accounting for regional differences in per capita personal income growth: an update and extension", *Survey of Current Business*, 70(1):29-40.

Hofer, H., & Wörgötter, A. (1997) "Regional per capita income convergence in Austria", *Regional Studies*, 31(1):1-12.

Hou, Y. (2004) "Budget stabilization fund: Structural features of the enabling legislation and balance levels", *Public Budgeting & Finance*, 24(3):38-64.

Hou, Y., Lunsford, R. S., Sides, K.C., & Jones, K. A. (2011) "State performance-based budgeting in boom and bust years: An analytical framework and survey of the states", *Public Administration Review*, 71(3):370-388.

Hou,Y. (2006) "Budgeting for fiscal stability over the business cycle: A countercyclical fiscal policy and the multiyear perspective on budgeting", *Public Administration Review,* 66(5):730-741.

Jordan, M. M. (2006) "Arkansas Revenue Stabilization Act: Stabilizing programmatic impact through prioritized revenue distribution", *State and Local Government Review*, 38(2):104-111.

Jordan, M. M., & Hackbart, M. M. (1999) "Performance budgeting and performance funding in the states: A status assessment", *Public Budgeting and Finance*, 19(1):68-88.

Jordan, M. M., Chapman, D., & Wrobel, S. L. (2014) "Rich districts, poor districts: The property tax equity impact of Arkansas school finance equalization", *Public Finance and Management*, 14(4):399-415.

Joyce, P. G. (2001) "What's so magical about five percent? A nationwide look at factors that influence the optimal size of state rainy day funds", *Public Budgeting & Finance*, 21(2):62-87.

Klase, K. A. (2011) "The intersection of flexible budgeting and cutback management: factors affecting responses of selected states to recent economic recessions", *Public Finance and Management*, 11(2):197-230.

Levine, C. H. (1978) "Organizational decline and cutback management", *Public Administration Review*, 38(4):316–25.

Lauth, T. P. (2014) "Zero-base budgeting redux in Georgia: Efficiency or ideology?", *Public Budgeting & Finance,* 34(1):1–17.

Reddick, C. G. (2003) "Testing rival theories of budgetary decision-making in the US States", *Financial Accountability and Management*, 19(4):315-339.

Robinson, S. E., Caver, F. S., Meier, K. J., & O'Toole, L. J. (2007) "Explaining policy punctuations: Bureaucratization and budget change", *American Journal of Political Science*, 51(1):140–50.

Ryu, J. E., Bowling, C. J., Cho, C. L., & Wright, D. S. (2008) "Exploring explanations of state agency budgets: Institutional budget actors or exogenous environment?", *Public Budgeting & Finance*, 28(3):23-47.

Schick, A. (1983) "Incremental budgeting in a decremental age", *Policy Sciences*, 16(1):1-25.

Snell, R. (2011) *State experiences with annual and biennial budgeting.* National Conference of State   Legislatures. Accessed September 20, 2014. (http://www.ncsl.org/documents/fiscal/BiennialBudgeting_May2011.pdf).

Sorensen, B. E., & Yosha, O. (2001) "Is state fiscal policy asymmetric over the business cycle?", *Economic Review – Federal Reserve Bank of Kansas City*, 86(3):43-64.

Wallin, B. A. & Snow, D. (2010) "Budget deficits in the states: Massachusetts", *Public Budgeting & Finance*, 30(1):80-104.

Wildavsky, A. B. (1964) *The Politics of the Budgetary Process*, Boston: Little Brown.