Politics, Fiscal Necessity, or Both? Factors Driving the Enactment of Defined Contribution Accounts for Public Employees

Recent conflicts over public sector defined benefit pension funding have inspired polarized debates about the need for reform, including the utility of replacing pensions with defined contribution accounts, which are popular throughout the private sector. Between 1996 and 2011, 15 American states enacted legislation to implement either mandatory or optional defined contribution accounts for certain public employees. What drove this process? This article investigates the role of political, budgetary, and contagion influences on the diffusion of defined contribution accounts for general state employees. Empirical results suggest that enactments were influenced by Republican legislative, but not executive, partisanship. Gains in state indebtedness also increased the likelihood of enactment independent of political and other factors. There is no evidence of policy learning based on neighboring state activity and no influence from two measures of organized labor power. Both quantitative and qualitative robustness checks largely reinforce these findings.

Despite continued financial support of public sector retirement pensions, some policy makers and scholars worry that plan assets will not keep pace with increasing benefit liabilities. This concern has prompted questions about the impact of traditional defined benefit (DB) pensions on state and municipal fiscal sustainability and has raised calls for reform, particularly in light of evolving workforce demographics that have altered the long-term feasibility of age-based entitlements. However, incremental adjustments such as raising the retirement age or eliminating annual cost of living allowances will not solve the funding challenge for all plans (Novy-Marx and Rauh 2011), suggesting that more significant changes may be necessary for some governments.

Defined contribution (DC) accounts are an alternative medium for providing retirement income support. Advocates contend that from a budgetary perspective, DC accounts—such as 401(k) and 403(b) plans—are advantageous to the short- and long-term fiscal sustainability of sponsoring public sector units (Beaulier 2011; Chapman 2008; Greenhouse 2011; McMahon and Ferrara 2003; cf. Crane, Heller, and Yakoboski 2009; DiNapoli 2012; Frank, Gianakis, and Neshkova 2012; Mackenzie et al. 2003; Munnell 2012). Cost advantages are sourced from two structural differences between DB and DC plans. First, employer contributions to DC accounts, usually at a rate established by the employer, can prove lower and more stable relative to variable DB pension costs. Second, by divesting investment risk and asset accumulation responsibility to employees, DC accounts impart no long-term liability to the employer, circumventing moral hazard concerns and the seemingly chronic issue of pension underfunding. While administrative costs may or may not increase under a DC scheme, if these costs are paid by employees, an employer can realize added savings.

Most American state and municipal governments administer DB pensions, but there is growing structural diversity in retirement plans across the public sector. A number of states have enacted alternatives to existing pensions that make use of DC accounts, but the causal mechanism behind the enactments has escaped significant examination. One notable exception is a policy brief by Munnell et al. (2008), which concludes that unified Republican control of state government increased the likelihood of DC enactments through 2006, with no influence from existing pensions’ long-term funding condition or the generosity of pension benefits. However, the brief does not examine the effect of institution-specific political measures, policy learning from geographic peers, or additional budget indicators.

This article aims to further resolve the factors that have led a growing number of states to move away from defined benefit [DB] pensions toward schemes that utilize defined contribution [DC] accounts.
a growing number of states to move away from DB pensions toward schemes that utilize DC accounts. It offers several improvements on existing research. First, the analysis directs a more critical eye to the role of states’ political environments on the enactment of DC accounts. Second, the analysis investigates the effect of fiscal stress measures and contagion influences on enactments, utilizing more recent data. And third, the analysis utilizes a modeling strategy that recognizes the substantive differences in how states have aligned DC accounts with existing DB pensions. Resultant insights of retrospective policy diffusion offer prospective guidance on how states will proceed with reforms to public sector pensions and reveal several opportunities for future research.

Dependent Variable: Risk and the Alignment of DC Accounts with Existing DB Pensions
Between 1996 and 2011, 15 states enacted pension reform legislation involving DC accounts for some segment of the public sector workforce. While each program is unique, enacting states can be classified into one of three broad categories based on how the state aligned DC accounts with its existing DB pension. This categorization is shown in table 1.

Each category is based primarily on how the overall pension scheme apportions risk between employer and employee. “Mandatory DC Account” states have enacted legislation that requires some portion of the state workforce to enroll in a DC plan only; DB pensions are typically preserved for employees hired prior to a certain date. Relative to their peers, these states have divested the greatest amount of risk to qualifying public employees. “Mandatory DC/DB Hybrid Plan” states require employees to contribute to both a DB pension and a DC account. Under this scheme, varying amounts of risk are shared between the employer and employee. “DB, DC, or Hybrid Plan” states give employees a choice between a DB pension and a DC account or, in some instances, allow participation in both, ultimately empowering the employee with the question of risk assumption—a fundamental difference between the second and third categories. Values for the dependent variable are based on this conceptualization: DB, DC, or Hybrid Option (1), Mandatory DB/DC Hybrid (2) and Mandatory DC Participation (3).

Partisan disagreement about the relative merits of DB and DC schemes can also be traced to sharply different orientations toward risk and the believed appropriate role of government as an insurance agent against the costs of advanced age.

### Theoretical Framework
State policy diffusion and innovation have long captured scholarly interest. While a majority of the literature focuses on broad issues that concern the mass public, a number of inquiries focus more specifically on the diffusion of programs that target public sector employees (e.g., Kellough and Selden 2003; Moon and deLeón 2001). Regardless of frame, studies commonly posit new enactments as a product of internal economic and political conditions, as well as external influence from neighboring states (Berry 1994). Budgetary conditions are theoretically a significant motivator behind DC account enactment. Deteriorating finances could open a “policy window” (Kingdon 2003) that allows policy makers to link a solution to a problem (i.e., DC accounts to fiscal stress), not to mention political cover to avoid accusations of partisanship. Munnell et al. (2008) find no association between low DB pension funding and DC enactments, suggesting that relevant factors are instead more directly tied to states’ overall fiscal environments. For example, declining revenues and increases to state indebtedness may cause policy makers to seek pension alternatives that offer lower, more stable costs with no possibility of unfunded liabilities. These effects may be more pronounced in states with balanced budget requirements that do not allow deficit carryover.

But the budgetary situation alone cannot force policy changes; that outcomes are shaped by political conditions is a resonant theme in the policy and administrative sciences. The hyperpartisan environment of late yields scant evidence that political effects have declined, certainly not over public sector compensation. Indeed, the relationship of political parties to public employees has received significant media attention, especially over pension benefits and reforms. Popular wisdom maintains that DC accounts are favored more strongly by Republican than by Democratic policy makers. Greenhouse (2011) summarizes the party dichotomy succinctly: The push to switch to 401(k)-type plans comes overwhelmingly from Republicans, who see them as more individualistic and free market. Democrats generally oppose the change, partly because their union allies are eager to keep traditional plans.

Because of campaign support from unions, elected Democrats have a strong incentive to maintain DB pensions and vote against legislation that would replace those pensions with DC accounts (cf. Bellante and Long 1981; Blais, Blake, and Dion 1997; Garand, Parkhurst, and Seoud 1991; Moe 2011; Troy 1994). For its own part, organized labor has an incentive to maintain existing DB pensions so that pensions can continue to be sold as a benefit of union membership (Hacker 2002; Lowenstein 2008).

Partisan disagreement about the relative merits of DB and DC schemes can also be traced to sharply different orientations toward risk and the believed appropriate role of government as an insurance agent against the costs of advanced age. Across industrial democracies, members of conservative political coalitions tend to favor retirement income programs that minimize public sector risk and cost exposure, preferring...
that individuals assume responsibility for retirement provisions; in contrast, members of liberal coalitions favor arrangements that prescribe a state-centric role (Gran 2008; Huber and Stephens 2001; Stinchcombe 1985). Beliefs among Republicans and Democrats are also influenced by the tax implications of various alternatives (Hicks 1999).

Regardless of motivation, overt political effects must be measured carefully. Various studies have established that the partisan character of states’ legislative and/or executive branches affects the likelihood of policy enactment (e.g., McLendon, Heller, and Young 2006; Patton 2007; Volden 2006), but the branches sometimes have idiosyncratic effects on budgeting (Dometrius and Wright 2010), and thus it is important to distinguish these fiscal policy-making institutions empirically. Simple measures of unified or divided government overlook distinctive executive and legislative influences and also fail to capture the strength of partisanship within legislative bodies. At least one study connects state ideology to public sector benefit funding (Dometrius and Wright 2010), and political measures not based on partisanship should also be considered. And given the relationship between organized labor and traditional DB pensions, some measure of union policy influence is necessary.

Finally, diffusion studies have also explored the likelihood that states emulate programs of their neighbors. Theoretically, the probability of DC account enactment increases in a particular state if a neighboring state has already pursued the accounts. Not only could states “learn” from the experiences of others, but also the enactment of DC accounts in a neighboring state could help policymakers justify the proposal to the public—and to public employees. While the geographic proximity of states does not drive all new policy adoptions (Miller and Richard 2010; Mintrom and Vergari 1998), proximate states often exhibit congruent policy preferences (Bowman 2004; Gray 1973), and enactments in one state can lead to policy learning in one or more neighbors (Case, Hines, and Rosen 1993; Seljan and Weller 2011; Stream 1999), a process that may be affected by policymakers’ ideology (Grossback, Nicholson-Crotty, and Peterson 2004). As a result of growing interconnectedness across governments, there is a declining belief that contagion effects are as strong today as they were previously (Shipan and Volden 2012); however, this study’s time frame extends back to the mid-1990s, and it is useful to seek evidence of peer-driven enactments.

**Independent Variables**

**Political Measures**

The model reported here includes separate variables for executive and legislative Republican partisanship, with further disaggregation of legislative partisanship by upper and lower chamber. This conceptualization is necessary to clarify any sensitivity between or within policy-making institutions. Republican gubernatorial partisanship is measured with a dummy variable (1 = Republican governor), and, to account for varying degrees of influence on budgeting, Krause and Melusky’s (2012) measure of unilateral executive budgeting influence is also included.²

Legislative partisanship is calculated as the proportion of seats in each chamber held by Republican identifiers according to Klarner (2003) and the Statistical Abstract of the United States. A chamber interaction term is included as a quantitative recognition of the context in which legislative decisions are made; such terms should be modeled if there is a theoretically driven expectation of significance (Brambor, Clark, and Golder 2006). Upper and lower chambers are independent bodies but often render decisions in a conditional manner; support for DC enactment in one may depend on support in the other. In addition to partisanship, the model includes Berry et al.’s (2010) measure of state citizen liberalism.³

Finally, a dummy variable for whether or not public employees in each state have mandated collective bargaining rights is included as a proxy for organized labor’s influence over public sector employment matters (1 = state has bargaining rights). States with bargaining rights for public employees theoretically have stronger unions and thus are less likely to enact DC accounts. Previous studies of pension funding offer no consensus on the existence or nature of independent union influence (Aranson, Dearden, and Munley 2009; Chaney, Copley, and Rosen 2002; Mitchell and Smith 1994) and typically use measures of unionization among the public sector (e.g., density variables). Other political indicators, though potentially linked to the diffusion of DC accounts, were excluded from the model because the measures were of limited compatibility with the period of interest.⁴

**Budgetary Measures**

The model incorporates two variables related to states’ overall fiscal condition, annual revenue change and annual debt change, calculated from data reported in the Statistical Abstract of the United States. Both measures are defined as the annual percentage change in per capita state revenue and total outstanding state debt, respectively. Declining revenue or rising debt may increase the likelihood that states abandon the costs and liabilities of DB pensions in favor of DC accounts. A dummy variable for whether or not a state has a balanced budget requirement that forbids deficit carryover is also included (1 = yes). To control for differences in economic capacity across the states, the model controls for per capita gross state product (GSP).

**Policy Learning Measures**

The model tests two possible contagion effects. The first is a dummy variable for whether or not an enacting state borders a state that already has an identical DC arrangement, as shown in table 1 (1 = yes). For example, does a state enacting a hybrid DC scheme border another that has already implemented a hybrid DC scheme? The second possible contagion effect—tested separately—is less conceptually restrictive, merely a dummy variable that records whether or not an enacting state borders another that has already enacted any one of the three DC arrangements. In other words, regardless of category, when a state enact a DC arrangement, does a bordering state already have any of the arrangements already in place?

**Methodology**

**Panel Construction**

Empirical analysis is based on a national sample of state-level legislative activity between 1996, when Michigan became the first state to implement DC accounts, and 2008. During this period, 13 states...
passed legislation to implement DC accounts. Nebraska, a historical outlier, is excluded from the panel (see note 1). The truncated analytical period is a result of limited availability of relevant independent variables from 2009 to 2011. Notably, no new enactments occurred in 2009–2010, but in 2011, Utah and Rhode Island implemented DC accounts. These enactments are used to construct a brief qualitative robustness check on the reported quantitative findings.

**Estimation**

DC account enactments are modeled with a stratified Cox proportional hazards model (Cox 1972). Like other event history analyses, the stratified Cox model is built on an underlying proportional hazards model in which the hazard, or probability, \( h \) that a unit of analysis faces at time \( t \) of experiencing a specified policy change can be expressed as follows:

\[
h(t) = h_0 \exp(\beta X_i), \quad h_0 \geq 0,
\]

where \( h_0 \) is a “baseline” hazard applicable to all units of analysis, increased or decreased by the components of covariate vector \( X_i \). The expression simply means that the probability of a given state enacting DC accounts for public employees in a given year, \( h(\cdot) \), is equal to a general probability of enactment that applies to all states, \( h_0 \), increased or decreased by values of the political, budgetary, and contagion variables measured in that state and year, collectively symbolized by \( X_i \).

There are several benefits to using a stratified Cox model over other empirical models, such as logistic regression. For example, the stratified approach recognizes the fundamental difference between policy options, an important distinction to make in diffusion studies (Malsee and Volden 2011). It seems imprudent to disown the heterogeneity of the fiscal and risk implications attached to each DC arrangement outlined in table 1 and reduce the dependent variable to a dichotomous indicator. Furthermore, the Cox model recognizes that the three arrangements “compete” with one another for enactment. Beyond that, the model does not assume a priori that the diffusion process adheres to a predetermined probability function, instead letting the data speak for itself. Additional discussion of the stratified Cox model and diagnostic information are given in the appendix (see also Box-Steff ensmeier and Jones 2004; Cleves et al. 2010).

**Empirical Results**

**Primary Findings**

Table 2 reports coefficients and robust standard errors clustered by state to avoid error correlation within states. Generally speaking, DC account enactments between 1996 and 2008 are more strongly associated with states’ political environments than with budgetary conditions. Among the budgetary measures included in the model, only annual growth in state indebtedness is a significant predictor, indicating a positive relationship between rising debt and DC account enactments. There is no evidence of an impact from revenue changes or the presence of balanced budget requirements that forbid deficit carryover. The collective implication of these results is that the movement toward DC accounts is motivated more by states’ worsening long-term fiscal outlook than by declines in relatively short-term annual revenue. Insofar as unfunded pension liabilities are often characterized as debt, even if they are not classified as such in an accounting sense, this result conforms to statements made by some policy makers about the need to pursue DC accounts as an alternative.

Coefficients for the political variables in the model construct an interesting narrative about the circumstances leading to enactments. Overall, results suggest some sensitivity across fiscal policy-making institutions and a statistically weak connection to citizen liberalism. Neither executive partisanship nor the measure of executive budget influence has any effect, while both legislative chambers are strongly significant and positive. This initially suggests that higher proportions of Republicans in state legislatures increase the probability of enactment.

But the chamber coefficients must be carefully evaluated in concert with the significant, negative interaction term. To the extent that one expects higher Republican populations to increase the probability of enactment, this is a puzzling result. Recall that the interaction term is formed from two continuous partisanship variables, and as a result, the three coefficients cannot be jointly interpreted as they would in a normal linear-additive regression model (Brambor, Clark, and Golder 2006). Because the probability of legislative passage in one chamber is conditioned on support in the other chamber, marginal effects must be evaluated instead.

For example, as Republican senate partisanship increases, how does the probability of enactment change in the state house?
research on pension funding offers no consensus on the impact of union density-based measures either, and this study's results offer no further clarification.

Finally, there is no evidence of peer-motivated DC enactments. Table 2 displays coefficients for the contagion variable, which indicates whether or not a state chose to enact a DC account scheme from the same category as that already enacted by a neighboring state. As revealed in table 2, this variable is not statistically significant. An alternative coefficient representing the other possible form of policy learning—that a state does not necessarily enact the same type of DC scheme but any of the three schemes outlined in table 1—was substituted in the model but also is nonsignificant. A third alternative tested included applying the same policy learning mechanisms on a regional basis by dividing the states into four sectors (Northeast, South, Midwest, and West) and re-estimating the model. However, neither of the regional contagion variables is statistically significant. In sum, there is no evidence to suggest that the enactment of DC accounts is a product of policy learning among geographically proximate states apart from the other political and budgetary factors included in the model.

Quantitative Robustness Check

An alternative event history modeling technique, one less complex than a stratified Cox model, is a simple binary logistic regression. Applied to DC schemes, this model treats all enactments the same; the dependent variable captures no differences in the way states chose to arrange DC accounts alongside existing DB pensions. Still, a logit model is a reasonable choice to verify the robustness of the

Figure 1 Marginal Effect of State House Partisanship on Enactment of Defined Contribution Accounts

Such effects are shown in figure 1. Values for Republican senate partisanship are plotted on the x-axis. The y-axis shows the marginal effect on the probability of enactment in the state house as Republican partisanship increases in the state senate. Overall, the marginal effect on Republican house partisanship declines with increasing Republican senate partisanship but nonetheless remains positive. The substantive conclusion is that increasing Republican partisanship between state legislative chambers does not have an increasing, additive influence on the probability of DC account enactment. In reality, the marginal effect from one chamber declines to an infinitesimally small magnitude as Republican partisanship in the other chamber increases.

The independently conceptualized partisan and budgetary measures may raise questions about possible interactions between these measures. For example, does increasing Republican partisanship in an environment of increasing debt also increase the probability that a state will enact DC accounts? Or are Republicans less likely to pursue DC accounts if revenue is increasing? An alternative specification of the model shown in table 2 that includes variables to test this possibility—that is, interacting partisanship with the revenue and debt measures—suggests no systematic joint effects between state legislative partisanship and changes in state revenue and debt.

Perhaps unexpectedly, states with mandated collective bargaining rights for public employees are no more or less likely to enact DC accounts than states without the privilege. However, when a state's right-to-work status is substituted for the bargaining rights measure, it also is found to be nonsignificant. Previous

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findings presented in table 2. Table 3 displays logit results for DC account enactments, which reinforce the conclusions drawn previously, although the model as estimated is not a superior fit. Both chamber partisanship variables are positively related to enactment, although levels of statistical significance are slightly lower. Debt increases remain positively related to enactment.

Qualitative Robustness Check
The preceding analysis is based on a truncated analytical period that terminates in 2008. This leaves out of empirical consideration two years of null activity for DC enactments (2009 and 2010), as well as 2011, when two states (Utah and Rhode Island) enacted pension reforms that utilize DC accounts. Given the economic climate in 2009, post-2008 increases in Democratic partisanship, and the midterm election cycle in 2010, it is not unexpected that state policy makers were focused on more immediate problems than public sector pension reform. Relatively recent enactments in Utah and Rhode Island serve as a unique qualitative robustness check to the quantitative models presented earlier. Utah’s pursuit of an optional DC account for some public employees largely conforms to the model; the state’s legislature was dominated by Republicans at the time of legislative enactment. But Rhode Island presents a more interesting case, because support for a DB/DC hybrid scheme came overwhelmingly from an independent governor (former Republican Lincoln Chafee) and state legislative Democrats. Nearly all cited worries about Rhode Island’s long-term indebtedness and growing pension liabilities. Thus, the state only partially conforms to theoretical and empirical expectations. Whether Rhode Island is simply an outlier, or the first instance of changing partisan orientations toward public sector retirement policy, remains to be seen.

Table 3  Factors Affecting Enactment of Defined Contribution Accounts for State Employees, 1996–2008, Robustness Check

<table>
<thead>
<tr>
<th>Political measures</th>
<th>β</th>
<th>SE</th>
<th>p-value</th>
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<tr>
<td>Executive partisanship (R)</td>
<td>2.012</td>
<td>1.322</td>
<td>.287</td>
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<tr>
<td>Executive budgeting authority</td>
<td>3.115</td>
<td>3.371</td>
<td>.294</td>
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<tr>
<td>Upper chamber partisanship (R)</td>
<td>1.01E18</td>
<td>1.99E19</td>
<td>.035**</td>
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<tr>
<td>Lower chamber partisanship (R)</td>
<td>1.49E18</td>
<td>2.87E19</td>
<td>.029**</td>
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<tr>
<td>Upper * lower interaction</td>
<td>2.54E-32</td>
<td>8.75E-31</td>
<td>.035**</td>
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<tr>
<td>Citizen ideology</td>
<td>1.028</td>
<td>0.052</td>
<td>.370</td>
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<tr>
<td>Collective bargaining required</td>
<td>1.398</td>
<td>1.024</td>
<td>.648</td>
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<th>Budgetary and contagion measures</th>
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<th>SE</th>
<th>p-value</th>
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<tr>
<td>Balanced budget requirement</td>
<td>2.109</td>
<td>1.802</td>
<td>.383</td>
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<td>Annual revenue change</td>
<td>19.380</td>
<td>40.718</td>
<td>.158</td>
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<tr>
<td>Annual indebtedness change</td>
<td>106.996</td>
<td>223.453</td>
<td>.025**</td>
</tr>
<tr>
<td>Gross state product</td>
<td>0.003</td>
<td>0.011</td>
<td>.966</td>
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<tr>
<td>Adjoining state matching DC scheme</td>
<td>0.970</td>
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<td>Prob &gt; chi-square</td>
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<td>Log likelihood</td>
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<tr>
<td>Total observations</td>
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</tr>
<tr>
<td>Pseudo R²</td>
<td>.186</td>
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Estimation method: Binary logistic regression.
*** p ≤ .01; ** p ≤ .05; * p ≤ .10.
Notes: Forty-nine states are included in the estimation; the sole exclusion is Nebraska. Large coefficients for some variables are the result of the continuous nature of their measurement.

Discussion
While diffusion research favors broad policy issues, this study joins a small but growing literature that focuses on the diffusion of programs affecting public employees. The study’s findings validate a general theme across the literature—that political forces influence policy enactments. Most significantly, the nascent trend toward DC accounts is partially driven by Republican legislative but not by executive partisanship, a finding that clarifies earlier conclusions about the associated political process within fiscal policy-making institutions. This outcome is consistent with theoretical expectations for the effect of a political party dominated by economic conservatives and libertarians.

But the number of states with Republican legislatures since 1996 exceeds the number that moved public employees toward DC accounts; thus, enactments—and nonenactments—are obviously the result of additional factors. Results advise that annual gains in state indebtedness had a positive impact on the probability of enactment. The nonsignificance of the variable measuring revenue fluctuations suggests that policy makers are conceivably more motivated to act on significant pension reforms when faced with growing long-term fiscal stresses (e.g., debt gains) than with short-term revenue changes.

Intuitively, one expects the legislative policy-making calculus to include the state governor, but there is no evidence that Republican governors have a nonzero effect on the enactment of DC accounts. This is an intriguing result, given previous research suggesting that governors are more receptive to privatization schemes than legislatures (e.g., Wallin 1997). There are several potential explanations for this curiosity. For example, it may simply be that the governor, as a policy-making institution, is less influential than the legislature concerning matters of public sector compensation (cf. Abney and Lauth 1998; Domerius and Wright 2010; Goodman 2007), a possibility with supporting evidence from the nonsignificant effect of unilateral executive budget authority. Alternatively, Republican governors may be less driven by partisanship than their legislative counterparts, which may explain why more states have not enacted DC accounts despite having Republican-led legislatures.

In fact, this may also be true of Democratic governors. Five states with DC accounts (Vermont, Indiana, South Carolina, Washington, and Oregon) were led by Democratic governors at the time of enactment, although none enacted a mandatory scheme. Perhaps Democratic governors serve as a moderating influence, agreeing to enact reforms that include DC accounts but without divesting full pension responsibility to public employees. Partisan crossovers of this nature may also explain the nonsignificant coefficient for executive partisanship.

In contrast to a second theme of diffusion scholarship, this study offers no indication that states enact DC accounts because of parallel enactments in adjoining states. Results do not suggest that policy learning has not occurred at all, only that it is not a broad-based phenomenon. Volden, Ting, and Carpenter (2008) contend that diffusion may instead be prompted by independent learning.
experiences; in this case, state legislators were likely borrowing an idea from the private sector. DC schemes had already spread throughout nonpublic employers before Michigan adopted a similar plan for new hires in 1996. As a potential solution to pension funding challenges already existed, all that remained to realize enactment was a joining of the “problem” and “politics” streams (Kingdon 2003), a process that the preceding findings suggest is most likely to occur in an environment of high Republican legislative partisanship and large increases to state indebtedness.

None of the discussion thus far intends to overlook public employees, the party most affected by DC account enactments. But the existence of collective bargaining rights for public employees has no positive or negative consequences for enactments. Unions have long fought on behalf of traditional DB pensions and against replacement of those plans with DC accounts in both the public and private sectors. The finding of nonsignificance could be a result of a poorly chosen independent variable. Yet a state’s right-to-work status, used as a proxy for organized labor’s broad policy influence, is also a nonsignificant predictor in an alternate model, and other studies have not offered consistent results on the effect of unions when using density-based measures. Ultimately, it may be that organized labor’s strength is absorbed in higher proportions of Democratic legislative partisanship and is not easily captured with a separate variable, or it is merely not as effective at shaping policy as some believe.

**Implications and Conclusion**

Why have some states broken rank and moved parts of the public sector workforce out of traditional DB pensions and into retirement benefit arrangements with successively higher degrees of employee risk and responsibility that include DC accounts? Empirical models show Republican legislative, but not executive, partisanship was the key political determinant and that annual growth in state indebtedness was the driving budgetary factor behind enactment of the accounts between 1996 and 2008. These findings have several implications for both practitioners and scholars of public administration.

First, policy makers supporting DC accounts in the past did not seek to alter pension schemes for wholly political reasons. On the contrary, enactment more likely occurred in a fiscal environment characterized by growing debt. Those interested in maintaining or even strengthening existing DB pensions should realize that significant reforms, such as DC accounts, are linked closely with long-term state fiscal matters rather than short-term revenue changes. One piece cannot be easily separated from the other, and perhaps the best way to preserve DB plans is to keep state indebtedness under control. Indeed, high debt-servicing costs may crowd out spending on fringe benefits for public employees, but further study is needed to provide statistical resolution of this prospect.

Second, enactment of DC accounts was nevertheless influenced by political forces unconnected to budgetary measurements. The notion of partisan effects on bureaucratic operations is certainly nothing new to public administration (e.g., Hedge and Johnson 2002; Shapiro 2002). But the preceding study follows others that report that partisan influences reach within agencies to affect elements of personnel management (e.g., Coggburn 2001) and, more specifically, public employee compensation. Political influences may lead to conflict and frustration among affected employees, especially those who view efforts to revise retirement benefits with DC accounts as motivated purely by partisanship regardless of revenue or debt stress. Real or imagined political manipulation of public sector compensation can have an adverse impact on employee morale and motivation, not to mention citizen perceptions of bureaucratic efficacy and levels of government trust, topics worthy of further examination. Beyond that, the sensitivity of only certain fiscal policy-making institutions to DC enactments is an intriguing basis from which to conduct additional research that is both normatively and empirically focused.

Third, assuming that the trend toward DC accounts in the public sector continues, stakeholders should reflect on questions not addressed in the preceding study that are nevertheless relevant to the subject at hand. For example, will DC accounts, more portable than DB pensions, encourage higher employee turnover? Will employees who fail to accumulate sufficient assets extend the length of their public sector tenure? What impact will DC accounts have on intrinsically motivated employees? And what responsibility do human resource managers assume as providers of investment education—for example, are learning opportunities developed in-house or contracted out to third-party firms? Beyond these questions, there are other research opportunities that center on how agencies can harness behavioral economics research to improve employee comprehension and utilization of retirement plans regardless of type (cf. Beshears et al. 2011).

Finally, the systematic role of organized labor on public sector pension policies remains unsettled. Neither measure included in this study has an effect on DC account enactments. Other studies focused instead on pension funding report a less than robust effect from organized labor once other factors are considered. A more comprehensive examination of the lack of influence from these measures is beyond the scope of this study. However, the puzzle is yet another strong opening for scholars who are interested in building a more comprehensive understanding of the interplay between public sector unions, managers, and elected officials and public employee compensation in an evolving fiscal and political environment.

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**Notes**

1. Nebraska offered a DC plan from 1967 through 2002. In 2003, the plan was replaced with a “cash balance” program that guarantees a certain annual return and accepts both employer and employee contributions. Because of the historical separation between Nebraska’s DC plan enactment and that in other states, Nebraska is excluded from the proceeding analyses.

2. As defined by Krause and Melusky (2012), “Full unilateral executive policy control is equal to one when the governor has unilateral control over both the official revenue forecast and budget formulation and is zero otherwise.”

3. Berry et al.’s (2010) measure of government liberalism is not included to avoid overspecifying states’ political environments. Alternative models using the measure consistently found it nonsignificant.
6. The equation of the line is $y = \exp (\beta_{\text{House}} + \beta_{\text{Republican}} \times x)$, where $y$ is the marginal effect on the probability of enactment in the state house and $x$ is proportion of seats held by Republicans in the state senate.

Appendix

As noted in the article, the application of a stratified Cox model to DC account enactments over more common approaches is based on several assumptions about the political process in question and how it should translate empirically. The first assumption concerns the nature of the baseline hazard rate. Both Buckley and Westerland (2004) and Jones and Branton (2005) note that it is advantageous to parameterize the baseline hazard as a function of selected independent variables, leaving the rate’s distributional form unspecified. Jones and Branton state,

Substantively, this means that scholars can test how theoretically important covariates affect the chances that a state adopts a piece of legislation without having to make assumptions about the shape of the hazard rate. Thus, analysts avoid potential biases that may result from using a parametric model with a faulty distributional assumption. (2005, 424–25)

Given the inherently unpredictable nature of most political processes, leaving the baseline hazard unspecified a priori is a prudent modeling choice. This “semiparametric” method characterizes the family of Cox proportional hazards models. Semiparametric models contrast with nonparametric models, which make no assumption about the baseline hazard and model no covariate effects (e.g., Aalen 1978; Kaplan and Meier 1958; Nelson 1972), and parametric models, which typically assume a Weibull, Gompertz, or exponential distribution function.

The second assumption is that the pursuit of DC accounts is a multidestination process, where “destination” refers to prospective outcomes. Multidestination processes are often described as competing risks problems because a unit of analysis is assumed to be at risk of experiencing one or more of several unique destinations (or policy outcomes). As outlined in table 1, states have used DC accounts within three distinct schemes. Reduction to a binary indicator—often the standard practice in modeling single-destination problems—overlooks substantive differences between each arrangement; as Makse and Volden (2011) note, it is important to recognize unique policy outcomes. Furthermore, the adoption of one alternative does not eliminate the unit from making subsequent changes. In other words, each of the three alternatives “competes” for enactment.

Third, the standard Cox proportional hazards model assumes that the baseline hazard is equivalent for each of multiple destinations—that is, the probability of enacting one of the plans is the same for the other two plans—but this may or may not be the case. Depending on various factors, the political feasibility of enacting a plan in which public employees are allowed to choose a retirement savings vehicle could be quite different from the feasibility of instituting a scheme with less employee flexibility. In contrast to the traditional approach, stratified Cox models, by stratifying the dependent variable, circumvent this assumption and allow the estimation of a baseline hazard for each of the three disparate policy outcomes (in the model, $h_i$ would then be appropriately replaced with $h_j$). This may be the greatest advantage of the stratified approach, one that fosters compatibility between the model utilized to describe a public policy phenomenon and the phenomenon itself.

Cox proportional hazards models assume that the hazard rates for two observations are proportional. It is also assumed that the proportionality is time invariant. Violation of these assumptions may bias coefficient estimates and, consequently, have an adverse effect on various statistical tests (Box-Steffensmeier and Zorn 2001; Therneau, Grambsch, and Fleming 1990; cf. Keele 2010), and ensuring that the proportional hazards assumption is not violated is of utmost importance if the model is to provide statistically valid inferences. Violations are usually diagnosed with graphical methods or residuals-based tests, although the latter is more advisable. Significantly, the assumption must be verified globally and on per-covariate basis and, within the context of a stratified model, the assumption should also be verified for each strata or policy outcome. A global test alone may not capture violations nested within the independent variables or individual strata.

Evidence of proportional hazards assumption violations was sought using a test based on Schoenfeld (1982) residuals developed by Grambsch and Therneau (1994). Two variables violated the proportional hazards assumption: lower chamber partisanship and per capita GSP. Violations of this nature may suggest that the functional form of the offending variables is nonlinear (Keele 2010), a condition that was confirmed graphically. Diagnosing the correct functional form of a nonlinear covariate in stratified models is no easy task (Leon and Tsai 2004) and can involve considerable trial and error. Applying a square root transformation to lower chamber partisanship remedied that variable’s nonlinearity. Multiple quadratic modifications of per capita GSP were unsuccessful, but transformation through a restricted cubic spline with four knots was successful. Within Stata, these knots are distributed according to percentiles recommended by Harrell (2001; see also Marsh and Cormier 2001).

Collinearity does not appear to be an issue within the given specification. States that had not enacted DC accounts by the end of 2008 are considered “right censored.” Right-censoring of observations in a traditional event history analysis may lead scholars to treat those observations as missing, eliminate the cases from analysis altogether, or employ a dyadic regression analysis; yet each of these adjustments leads to information loss that is necessary for a valid assessment of the underlying stochastic process and are not issues with the stratified Cox proportional hazards model.

References


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