

The Effects of Political Competition on the Generosity of Public-Sector Pension Plans*

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Abstract

In politically competitive jurisdictions, there can be strong electoral incentives to increase the generosity of public pensions and simultaneously, to not fund them fully, in order to keep taxes low. I examine the relationship between political competition and generosity of public pensions using a panel dataset for 3,000 municipal plans from Pennsylvania for the period 2003–2013. I find that as the level of political competition in a municipality increases, pension plans become more generous but this relationship holds true only for plans run by municipal governments. A one standard deviation increase in the level of political competition is associated with an increase in the generosity of municipal plans by about 3 percent (\$426–507/retiree/year) with no effect on plans run by municipal authorities. The effects of political competition are driven by municipalities that have a higher proportion of uninformed voters and are absent for defined contribution plans.

Keywords: Public-sector pensions; Political competition; Generosity of benefits; Defined benefit pensions; Defined contribution pensions.

JEL codes: H75, J45

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We all know what to do, but we don't know how to get reelected once we have done it.

-Jean-Claude Juncker, Prime Minister of Luxembourg (2005)¹

A recent survey of the compensation of state and local government workers (Gittleman and Pierce 2012) presents us with a number of stylized facts. Although wages for state and local government workers are roughly equal to wages of comparable private-sector workers, benefits are significantly more expensive in the public-sector. These differences in benefits lead to overall compensation costs being 10–19 percent higher in local government (and 3–10 percent higher in state government) than in the private-sector. Honing in on the different categories of benefits, we see that state and local governments spend more than triple on retirement and savings compared to what is spent by employers in the private-sector.² Those differences are magnified when we examine the amount employers spend on defined benefit (DB) pension plans.³ It is an open question why compensation for state and local government workers is thus structured – disproportionately in the form of benefits.

This paper offers an explanation that centers on the role of incentives faced by state and local politicians who decide on the terms and conditions of employment for public-sector workers. It proposes that political competition, defined as the lack of a systematic electoral advantage by either political party, can help explain why public-sector compensation tends to be back-loaded. If public-sector workers are better informed than workers in the private-sector, competition for votes creates incentives for politicians of all stripes to promise generous retirement benefits to workers in the public sector and simultaneously, to not fund them fully, in order to avoid raising taxes on workers in the private sector. Thus, a higher degree of political competition in a municipality (or a state) will be associated with an increase in the generosity of retirement benefits *and* a decline in the funding status of pension plans run by those jurisdictions. For purposes of tractability, this paper examines the effects of political competition on one of those two dimensions – the generosity of pension plans – with the effects of political competition on the funding of such plans the focus of a complementary paper (Bagchi 2017).

To test the effects of political competition on generosity, I examine municipal pension plans from the state of Pennsylvania. Pennsylvania provides a rich setting to investigate these issues because its local governments offer over 1,400 retirement systems that account for more than 40 percent of all public-employee retirement systems nationally.⁴ The existence of such a large number of plans is driven in part by the plethora of local governments and by the fact that unlike other states with a large number of local governments, there has never been a consolidation of local plans at the state

¹<http://www.economist.com/node/8808044>

²On average, state and local governments spend \$3.18 and \$3.37/ hour/employee on retirement and savings while the comparable number for the private-sector is \$1.00 (Ref. Table 2, Gittleman and Pierce 2012).

³DB plans promise lifetime pension benefits that are typically a specific fraction of an employee's last drawn salary. State and local governments spend \$2.65 and \$3.09/ hour/ employee on DB plans whereas the private-sector spends only \$0.43 (Ref. Table 2, Gittleman and Pierce 2012).

⁴<https://www.census.gov/prod/2013pubs/g11-aspp-sl.pdf> (Ref. Table 5a). Of the 3,418 public-employee retirement systems in the United States, 1,422 (or, 41.6%) are local retirement systems from Pennsylvania.

level. Given the political landscape of the state, we also observe wide variation in the level of political competition, our independent variable of interest. Finally, I am able to obtain and use a high-quality administrative panel dataset spanning the period from 2003 through 2013 for my analysis. These data do not suffer from non-response bias and cover the universe of local pension plans. Given the challenges researchers face in obtaining data on municipal pensions, to the best of my knowledge this is the first paper to analyze the reasons for variation in the generosity of local plans.

The primary empirical approach used in the paper is difference-in-differences (DID) in which DB plans run by municipalities (the treated group) are compared with DB plans run by municipal authorities (the control group). In contrast to the governing body of a municipality that is directly impacted by the outcome of an election and is likely to be responsive to voters, the *appointed* board of a municipal authority is relatively far removed from the electoral will of voters. The insulation of municipal authorities from political influence along with their ability to establish pension plans that are subject to the same reporting and funding standards as municipalities forms the basis of our empirical specification. Using this DID approach, I find that as the level of political competition in a municipality increases, pension plans become more generous but this relationship holds true only for plans run by municipal governments and *not* for plans run by municipal authorities. In terms of magnitude, a one standard deviation increase in the level of political competition is associated with an increase in the generosity of municipal plans by about 3 percent (roughly \$426-507 per retiree per year) with *no* effect on plans run by municipal authorities.⁵

An added attraction of using data on municipal pensions from Pennsylvania is that about a quarter of the plans are defined contribution (DC).⁶ Given that a more generous DC plan requires higher employer contributions in the present – which must be met through tax increases likely to displease voters – we expect the effects of political competition on such plans to be muted compared to the effects of political competition on DB plans. Those predictions are confirmed in the data. I find that political competition has *no* effect on the employer contribution rate for DC plans, and this holds for DC plans offered by municipalities as well as DC plans offered by municipal authorities.

Finally, I examine an assumption made in the construction of models that associate the underfunding of public pensions with a lack of information and understanding among private-sector voters about public pensions (Glaeser and Ponzetto 2014). I propose that back-loading DB pension plans (and underfunding them) can persist in equilibrium only if private-sector workers are not fully informed of the benefits promised to public-sector workers and do not realize that they will have to bear the

⁵A one standard deviation increase in the level of political competition, using the measure defined in Besley, Persson, and Sturm (2010), would result if the Democratic vote share were to go down from 57.5 percent (leaning Democratic) to 50 percent (most competitive), or go up from 42.5 percent (leaning Republican) to 50 percent (most competitive).

⁶“Defined contribution plans are retirement plans that specify the level of employer contributions, if any, and place those contributions in individual accounts. The value of an individual account is determined by the amount of money contributed and the rate of return on the money invested over time.” (BLS, 2010)

burden of any shortfalls in the pension fund through a combination of tax increases and service cuts. I take this implication seriously and split the sample of municipalities into two groups based on the level of voter awareness and engagement with the prediction that the effects of political competition are smaller in places that have more well-informed voters. Using data on the prevalence of newspaper readership at the local level as a proxy for voter awareness, I find that the effects of political competition are indeed muted (and in fact, absent) in municipalities where a larger fraction of residents subscribe to a newspaper. The results from this sample-split test suggest that when faced with an electorate that is more informed of the true cost of offering back-loaded compensation packages to public-sector workers, politicians are less likely to make these pension plans more generous.

1 Literature review

This paper builds on a number of different streams of literature. In the body of work that examines public-sector labor markets, much of the focus has been on differences in wages between public- and private-sector workers (see, for example, Ehrenberg and Schwarz 1986 and the studies cited therein). However, given the growing importance of benefits for all workers, particularly for those in the public sector, examining wages alone is unlikely to provide a complete picture of the differences in compensation between the two sectors. More recently, Gittleman and Pierce (2012) and Bewerunge and Rosen (2013) have used microdata to investigate the how wage and pension benefits compare for workers in the public- and the private-sectors. The papers arrive at roughly similar conclusions even though they look at different periods and use very different data sources.⁷ Both report that while wages of state and local workers are roughly equal to that of comparable private-sector workers, benefits are significantly more generous in the public-sector and drive overall compensation costs higher for that sector.⁸

Focusing most directly on the question of why compensation structures are back-loaded, explanations have been proposed that back-loading may promote employee retention and foster longer on-the-job tenures, which in turn enhances productivity (Lazear and Moore 1988; Lazear 1990). The empirical evidence in support of that thesis is however mixed. Gustman and Steinmeier (1993) note that jobs covered by pensions also offer higher levels of compensation than what workers can obtain elsewhere, and it is these compensation premiums (rather than the existence of pensions per se) that drive lower turnover. Moreover, turnover rates are lower for jobs offering DC plans as well which tend to not be backloaded. Gustman and Steinmeier (1995) hint that an unmeasured factor associated with employ-

⁷Gittleman and Pierce (2012) use the 2009 Current Population Survey (CPS) and the 2009 Employer Costs for Employee Compensation (ECEC) microdata collected as part of the National Compensation Survey (NCS) while Bewerunge and Rosen (2013) use data from the 2004 and 2006 waves of the Health and Retirement Study (HRS) and focus on workers 50 and older.

⁸Bewerunge and Rosen (2013) include federal workers in their analysis as well and find that wages of federal workers are about 28 log points higher than comparable private-sector workers. These higher wages are *not* offset by lower retirement benefits and federal employees have substantially more pension wealth than their private-sector counterparts.

ment on jobs offering backloaded pensions may account for some of the reduction in turnover observed for workers covered by pensions. The implication for us is that as we compare the generosity of pension benefits across municipalities, we control for a large set of employer and employee attributes.

Moving further afield, the basic argument offered in this paper that the lack of understanding about pensions creates incentives for politicians to offer generous benefits ties to the idea of fiscal illusion. Under fiscal illusion taxpayers' failure to perceive the full extent of tax burdens can prevent them from recognizing the true cost of public services and as a result, distort fiscal policy (Banzhaf and Oates 2013).⁹ Political budget cycles by which politicians run expansionary monetary and/or fiscal policies prior to elections can be seen as a manifestation of fiscal illusion. While the first generation of models (e.g., Nordhaus 1975) rested on some form of irrationality or ignorance on the part of voters, subsequent models consider voters as fully rational but imperfectly informed (e.g. Rogoff 1990; Rogoff and Sibert 1988). The takeaway from this body of literature is simply that politicians pander to voters by running hidden deficits and the more responsive voters are to pandering, the higher the hidden deficits. In the context of Pennsylvania, where local government are constrained to run balanced budgets, politicians enact policies that lead to deficits in the pension plans they run.

Finally, tied to the literature on the political economy of budget deficits, a number of papers have examined the influence of politics on the fiscal health of public pensions. Fitzpatrick (2017), for example, exploits a reform enacted by the Illinois state legislature in 2005 that required school districts to bear the full cost of increasing wages for teachers approaching retirement to find support for the view that intergovernmental incentives distort the true costs of offering generous retirement benefits to public-sector workers. Focusing squarely on the politics of pensions, Anzia and Moe (2017) note that prior to the Great Recession voters were unconcerned and uninformed about public pensions creating an environment "conducive to a bipartisan brand of politics in which Republicans went along with Democrats and unions in supporting generous pension plans for public workers, which they drastically underfunded." Most relevant to us in providing a theoretical underpinning for this study is Glaeser and Ponzetto (2014) who posit that pension obligations are shrouded because of lower availability of information about pensions than wages and because of the greater difficulty taxpayers face in understanding the operation of defined benefit plans, in contrast to current compensation.¹⁰ While a complete discussion of their model is beyond the scope of this paper, their basic message applies to our context as well: given voters' lack of understanding of DB pensions, the political process induces the back-loading of compensation in the form of retirement benefits.¹¹

⁹Fiscal illusion has its origins in the writings of Puviani (1903) but received significant interest following Buchanan (1967), and is reviewed in Oates (1988).

¹⁰In support of their claim, they note that salaries of state employees are publicly disclosed annually whereas no such database exists for the accruing pensions of retirees or active members. For example, salary data for state employees from the state of Pennsylvania are available at: http://www.pennlive.com/midstate/index.ssf/2013/03/search_pennsylvania_state_empl.html.

¹¹A similar intuition is provided in Epple and Schipper (1981) who conjecture that increased political competition may induce politicians to underfund pension liabilities, so as to be able to reduce taxes in the short-run; this behavior is rewarded by those voters who are unaware of deferred pension obligations.

2 Institutional Context

Before turning to the empirical analysis, it is worthwhile having a brief primer on the institutional context. As noted earlier, I examine local pension plans from the state of Pennsylvania because it provides a rich setting; the state offers more than thrice the number of public-sector retirement systems as any other state and accounts for two-fifths of the nation's public-sector plans. The existence of such a large number of plans in Pennsylvania can be attributed to its complex system of local government. With over 2,500 municipalities – cities, boroughs, and townships – the state has the second highest number of general purpose local governments in the country.¹² Moreover, unlike other states with a large number of municipalities, most local governments in Pennsylvania establish separate pension plans for their police and non-uniformed employees and are not part of a larger state-wide plan.¹³ The advantages of using municipal data to test the hypotheses are the large number of comparable cases that share the same national and state-level political context (e.g. state income tax rates) at the same time they exhibit wide variation on the variables of interest, viz. political competition and pension generosity. The availability of rich municipal-level data from the Decennial Censuses and the American Community Surveys (ACS) also enables me to control for many potentially important municipal characteristics that could influence the generosity of pension plans.

Another aspect of Pennsylvania's municipal pensions that makes it attractive to analyze is that municipal authorities, that number over 1,500 (DCED, 2015), can and do offer pension plans subject to the same reporting and funding standards as municipalities. Authorities tend to perform a very limited number of functions such as the provision of water (e.g. Erie City Water Authority) or sanitation services (e.g. Radnor-Haverford-Marple Sewer Authority). Municipalities justify the provision of services through a municipal authority on multiple grounds. Beyond the single-minded focus that the board of an authority can have on its operations and the fact that many services are provided efficiently only if a large service area spanning multiple municipalities is covered, the governance of municipal authorities may also be more conducive to their operation. Authority board members are appointed by the governing body of the municipalities where they provide service for five-year overlapping terms. Therefore in contrast to the governing body of a municipality that can change *en masse* following an election, the appointed board of an authority is relatively insulated from the electoral will of voters. As a result, Bennett and Dilorenzo (1982) note that authorities “can raise and spend money without reference to the immediate wishes of the electorate, whereas a government can raise and spend money only in the amounts and manner specified by the electorate under the constitution and statutes of the state.” The insulation of municipal authorities from political influence along with their ability to establish pension plans for their employees forms the basis of our differences-in-differences style spec-

¹²Source: <https://www.census.gov/content/dam/Census/library/publications/2012/econ/g07-cg-isd.pdf>, p. 252.

¹³Larger municipalities may also have a separate pension plan for firefighters. Teachers belong to a separate state-wide system, the Pennsylvania Public School Employees Retirement System (PSERS) that is not a part of this analysis.

ification in which we compare plans run by municipalities with those run by municipal authorities.

Operationalizing the differences-in-differences approach requires assigning each authority to a single municipality. Doing so is straight-forward for an authority that serves a single municipality where the service area of an authority and a municipal boundary perfectly match (e.g. Erie City Water Authority). In the case of municipal authorities that service more than one municipality, the following rules were used in order to assign a municipal authority to a single municipality. First, I examine the composition of the board of the authority and assign the authority to that municipality which has the largest number of board seats. If that information is unavailable or is inconclusive (e.g. equal number of board members from two or more municipalities), I examine how the authority is financed; I assign the authority to whichever municipality (or municipal residents) pays the largest share of expenses associated with the operation of the authority – information that is obtained from the annual reports of these authorities. If such information is not available either or is yet inconclusive, then I assign the authority to that municipality which has the largest population among all the municipalities served by the authority. Full details of the assignment are available on request from the author.

3 Empirical analysis

3.1 Construction of Variables and Data Sources

Data regarding municipal pension plans offered by the various local governments within Pennsylvania were obtained from the Public Employee Retirement Commission (PERC). As part of its enabling statute, the PERC was required to publish a status report on a biennial basis that lists the level of assets and liabilities and the number of active members for each local government plan.¹⁴ While these reports are available to us from 1985 onwards,¹⁵ they lack the data necessary for analyzing the generosity of pension benefits – for example, the normal costs of the plans or the amount paid out in benefits to retirees. The dataset that includes those variables, although only available from 2003 through 2013, are rich and are what I use for my analysis. They include the name of the municipal entity offering the plan, the type of plan (DB vs. DC), the employee group covered (either policemen or firefighters or non-uniformed personnel), and the status of coverage by Social Security.¹⁶ They also

¹⁴The PERC was created through the Public Employee Retirement Commission Act of 1981 to “review legislation affecting public employee pension and retirement plans and to study on a continuing basis public employee pension and retirement policy as implemented at both the State and local level, the interrelationships of the several systems and their actuarial soundness and cost” (<http://www.legis.state.pa.us/WU01/LI/LI/US/PDF/1981/0/0066..PDF>). The responsibilities of the commission were transferred to the Department of the Auditor General in 2016 (<http://www.legis.state.pa.us/cfdocs/legis/li/uconsCheck.cfm?yr=2016&sessInd=0&act=100>).

¹⁵Bagchi (2017) which analyzes the effects of political competition on the funding level of pension plans uses these data and finds that higher levels of political competition are associated with declines in the funded ratio for municipal plans.

¹⁶About 28 percent of state and local government employees in the U.S. were not covered by Social Security in 2008 (Nuschler, Shelton, and Topoleski 2011). I find that extent of coverage of local employees within Pennsylvania under Social Security is similar to the national average, with about 26 percent of local employees in the sample not covered by Social Security in 2009.

include the number of active members and the corresponding payroll, the number of beneficiaries and the amount paid out in benefits, and the amount contributed by employees into the plan. The dataset for DB plans includes the funded ratio and the normal costs for the plan along with the interest rate assumed in estimating actuarial liabilities while the dataset for DC plans includes the contributions made by employers into the plan – both in absolute terms and as a percentage of payroll.

Constructing measures of political competition at the local level is challenging as there is no central repository for data on municipal elections at either the federal or the state level. I construct proxy measures for political competition at the local level by looking at the vote shares for the two parties for all races to any of the six offices for which elections are held on a state-wide basis, namely, U.S. President, U.S. Senator, Governor,¹⁷ Attorney General, Auditor General, and Treasurer.¹⁸ Data on votes cast for each of these offices for candidates from both the Republican and Democratic parties (and any other parties that may have contested) are available at the level of each individual municipality in successive issues of the Pennsylvania Manual. Because the results for a particular candidate in any one election cycle may have a large idiosyncratic component to it, I average the Democratic vote share¹⁹ across all elections held within a given year to any of the six offices in constructing the average Democratic vote share for that year. For example, in constructing a measure of political competition for a municipality for 2003, I examine all state-wide races held in 2002 to any of the six offices for that municipality. Following Besley, Persson, and Sturm (2010), the key measure of political competition I use in the paper is defined as: $PC_{mt} = -|D_{mt} - 0.5|$ where m indexes municipality, t indexes year, and D_{mt} is the average Democratic vote share in municipality m in year t .

Before proceeding further, it is worth examining the reasonableness of using data on national and state elections to construct measures of political competition at the local level. We can ascertain how justifiable that is by examining the correlations between the limited data available for outcomes of local races and races to national and state-level offices for the same time period. Using a dataset on the composition of municipal councils, I find a correlation coefficient of 0.6525 ($p < 0.001$) between the share of council seats held by Democrats in 2009 and the average Democratic vote share for all national and state races held in 2008. Bagchi (2017) offers additional evidence of a positive and statistically significant relationship between the average Democratic vote share in municipal elections and the average Democratic vote share for elections held to national and state-level offices. All in all, examining national and state races seems to offer an accurate picture of local politics in Pennsylvania.

A number of additional data sources are used for our analysis. Data on controls at the municipal

¹⁷Election for the office of Lieutenant Governor is held separately in the primary election; for the general election each party's ticket for Governor and Lt. Governor is made up of the highest vote getters in the separate primary elections.

¹⁸As Besley, Persson, and Sturm (2010) note, name recognition of candidates for down-ballot offices is typically very low among voters, making it likely that measures of political competition based on races for these offices is driven largely by party attachment of voters rather than the popularity of individual politicians.

¹⁹Defined as $\text{Votes cast for Democrats} / (\text{Votes cast for Democrats} + \text{Votes cast for Republicans})$.

level that might affect pension plan generosity, such as the per capita income of the area, are drawn from the 2000 Decennial Census, the 2007–2011 and the 2011–2015 American Community Survey (ACS) 5-year estimates.²⁰ I also include the share of tax revenues spent on debt servicing as a proxy of municipal fiscal health and that variable is constructed using municipal financial reports prepared on an annual basis by the Pennsylvania Department of Community and Economic Development (DCED). The fraction of employees covered by collective bargaining is based on the 1982 Employment Summary Statistics of Census of Governments. The lack of more recent data on unionization, while not ideal, is not very concerning because while union membership rose rapidly in the 1960s and 1970s, by the early 1980s it had stabilized in an equilibrium that still prevails (Anzia and Moe 2015).²¹

Summary statistics for all variables are presented in Table 1 below. The table indicates the large amount of variation in the dependent variables of interest: the annual average pension benefit, the normal cost, and the ratio of benefits to wages for DB plans and the average employer contribution rate for DC plans. I also note the considerable variation in the level of political competition observed from -0.392 (corresponding to a Democratic vote share of 0.892 in Yeadon Borough, Delaware County for 2001 – least competitive) to -0.000 (corresponding to a Democratic vote share of 0.500 in Roaring Brook Township, Lackawanna County for 1993 – most competitive).²² An observation one can draw from this table is that while DB plans offered by municipalities tend to be more backloaded than similar plans offered by municipal authorities – they have higher normal costs and a higher ratio of benefits to wages on average – the same does not appear to be true for DC plans. Municipal DC plans appear similar to DC plans offered by municipal authorities on the basis of the employer contribution rate to such plans.

[Table 1 about here.]

3.2 Empirical Specification

Panel data on plan features for all municipal DB and DC plans are available on a biennial basis over the period from 2003 to 2013. The empirical approach used in examining the effects of political competition on the generosity of DB plans is a difference-in-differences style design in which DB plans run by municipalities (the treated group) are compared with DB plans run by municipal authorities (the control group). This is achieved by including all DB pensions in the regressions and interacting

²⁰The 2000 Census provides data on municipal demographic controls for the year 2000. The 2007–2011 5-year ACS, being centered on 2009, is used for that year, while the 2011–2015 ACS is used for 2013. I use a linear interpolation for other years. The 5-year estimates from the ACS are used because they provide data for all areas, whereas the 1-year (3-year) estimate only covers areas with populations more than 65,000 (20,000). <https://www.census.gov/programs-surveys/acs/guidance/estimates.html> To put that in context, the median-sized municipality in Pennsylvania has fewer than 2,000 residents.

²¹Pennsylvania has allowed collective bargaining for policemen and firefighters since 1968 and for other employees since 1970. (<http://www.dli.pa.gov/INDIVIDUALS/LABOR-MANAGEMENT-RELATIONS/plrb/Pages/default.aspx>)

²²Using the 11-year lag structure described in the following section, pension data for the year 2013 are matched with measures of political competition based on elections held in 2001. Likewise, elections held in 1993 are matched with pension generosity as of 2005.

a time-invariant indicator for municipal authority status with the continuous measure of political competition. To allow for maximum flexibility, I also interact each control variable with this time-invariant indicator for municipal authority status letting the effects of the control variables differ for municipalities versus municipal authorities. Thus the empirical specification is:

$$G_{imt} = \alpha + \beta_1 * PC_{m(t-l)} + \beta_2 * PC_{m(t-l)} * MA_i + \beta_3 * C_{it} + \beta_4 * C_{it} * MA_i + \beta_5 * X_{it} + \beta_6 * X_{it} * MA_i + \beta_7 * Z_{mt} + \beta_8 * Z_{mt} * MA_i + \lambda_c + \gamma_t + \gamma_t * MA_i + \varepsilon_{imt} \quad (1)$$

where:

- G_{imt} is the dependent variable, the average annual benefit per retiree for plan i in municipality m (or a municipal authority serving municipality m) in year t ;
- PC_{mt} is a measure of political competition in the municipality m for year t , with l the lag length;
- MA_i is a dummy variable that is set to 1 if plan i is operated by a municipal authority and zero otherwise;
- C_{it} are a set of dummy variables indicating which group of employees are covered by the plan (e.g. policemen or non-uniformed personnel, etc.);
- X_{it} includes the coverage of employees under Social Security (1 = Yes, 0 = No) and the fraction of employees covered by collective bargaining;
- Z_{mt} are time-variant controls at the municipal level listed below;
- λ_c are county fixed effects and γ_t are year fixed effects; and
- ε_{imt} is the error term.

In the empirical analysis, I start off with a parsimonious specification that includes only the measure of political competition along with county and year fixed effects and employee-group dummies. A richer specification includes controls for the coverage of employees under Social Security because plans where participants are not covered by Social Security tend to be more generous (Munnell, Haverstick, and Soto 2007). This richer specification also controls for the fraction of employees covered by collective bargaining given the evidence that points to a positive association between unionization and fringe benefits (see, for example, Lewis 1990 and the studies cited therein), although recently questions have been raised about whether the positive relationship is causal or whether it is driven by unobserved heterogeneity across unionized and non-unionized workforces (e.g. Lovenheim 2009; Frandsen 2016).²³

²³Our interest is in measuring the causal impact of political competition on benefits and so we do not take a stance on

Subsequent specifications include time-varying controls at the municipal level that might affect the generosity of pension plans – the per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation. I control for per capita income, the local unemployment rate, and the fraction of tax revenues spent on debt service as proxies for local economic conditions; prosperous municipalities are likely to offer generous pensions whereas municipalities experiencing high levels of fiscal stress may find it harder to do so. The percentage of households that are owner-occupied is included as a control because owners have a longer time horizon than renters and we may therefore expect homeowners to exercise more discipline on politicians who make decisions about public-sector benefits (Fischel 2001; Oliver and Ha 2007). I include the percentage of population aged 65 or older as a control for the age structure of the population as municipalities with a larger fraction of older voters may be more willing to simply pass on these obligations to future generations. The level of income inequality and ethnic fragmentation are included as controls because there is some evidence that politicians use public-sector employment as a redistributive device in cities that are more unequal and that have a higher level of ethnic fragmentation (Alesina, Baqir, and Easterly 2000). Lastly, I control for the class to which a municipality belongs (for example, Township versus Borough versus City) as municipalities of different classes vary in the set-up of their local governments and that might also influence pension plan characteristics.

The question of how to lag political competition in the empirical specification is not one that admits an easy answer. The data on pension benefits are not disaggregated by retiree; we simply know the number of retirees and what they receive in benefits. This group is likely to include retirees from various cohorts: individuals who retired within the last year as well as those who retired 25 years earlier and are still drawing pension benefits. Decisions about what set of benefits each cohort of retirees would receive were decided at various points in time during the municipality's history. Complicating matters further, decisions about benefit increases are often made retroactively as was the case for state-government workers in California in 1999²⁴ and in Pennsylvania in 2001.²⁵ Accordingly it becomes challenging for us to associate the average level of benefits received by retirees with the level of political competition at a particular point in time that in turn corresponds to a unique lag structure.

I therefore look to the literature for guidance. The most recent work in the area (Rauh 2017) suggests that the effective average duration of pension liabilities is 11 years whereas prior work suggested an average duration of 13 years (Novy-Marx and Rauh 2011) and 15 years (Waring 2004a, 2004b). Thus, in our base specifications I lag political competition by 11 years but in the robustness

whether the observed union premiums reflect the causal effects of unions on benefits or whether unobserved differences across municipalities drive those differences. By including coverage under collective bargaining as a control we simply want to reduce the possibility that differences across plans based on unionization are driving the effects of political competition that we observe.

²⁴<https://www.city-journal.org/html/pension-fund-ate-california-13528.html>

²⁵<http://triblive.com/news/editorspicks/8530945-74/pension-state-billion> & <https://www.pasr.org/pa-house-pension-reform/>

checks, I present results with several different lag structures ranging from 0–4 years on the lower end and 13 or 15 years on the upper end which implicitly make different assumptions about the pace of adjustment. Fortunately, our results are not sensitive to the lag structure used possibly because the level of political competition for a given municipality is stable over time.

Given the possibility of inter-temporal correlation in the error terms, I cluster standard errors at the county level all throughout (Bertrand, Duflo, and Mullainathan, 2004). These tend to yield the most conservative standard errors.

4 Examining the Effects of Political Competition on Defined Benefit Plans

In this section, I present estimates of the effects of political competition on the generosity of DB pensions operated by the various municipalities and municipal authorities within Pennsylvania. I start off with results from a parsimonious specification, which is then augmented with the inclusion of variables that are also likely to influence the generosity of pension plans. I next present a host of checks which examine the sensitivity of the results to operationalizing the dependent variable differently and measuring political competition in alternative ways. I conclude this section with a number of robustness checks that address possible concerns of omitted variable bias.

Results from the base specification on pension plan generosity

Before providing the regression results, I first present the data visually. In Figure 1 I simply plot the average benefit levels for municipal plans and plans run by municipal authorities splitting the sample into terciles²⁶ based on their underlying level of political competition. Given that benefit levels differ substantially between non-uniformed personnel versus policemen and firefighters, I plot benefit levels for these different groups of employees separately, with retiree benefits for non-uniformed personnel in the two panels on the left and those for policemen and firefighters in the two panels on the right.

[Figure 1 about here.]

An inspection of the figure conveys the key message of this paper: We observe that an increase in political competition is associated with an increase in the generosity of benefits for municipal pension plans for both groups of employees, but there is no consistent pattern in the relationship between political competition and the level of benefits for plans operated by municipal authorities. The rest of

²⁶Terciles partition the data into three equal-sized groups, each containing a third of the total data.

this section is devoted to showing that these patterns in the data hold up to the inclusion of a variety of controls which might affect plan generosity and are robust to several plausible empirical specifications.

I present the regression results which are obtained by estimating specification (1) with the log average annual pension benefit per retiree as the dependent variable in Table 2. Columns (1) through (3) of the table present the coefficient on political competition for municipalities while columns (4) through (6) present the coefficient for municipal authorities.²⁷ Columns (1) and (4) correspond to the most parsimonious specification that only includes our key independent variable of interest, political competition, along with county and year fixed effects and dummy variables for the various employee groups covered by the pension plans. Columns (2) and (5) introduce a dummy variable for the coverage of employees under Social Security and the fraction of employees covered by collective bargaining. Columns (3) and (6) are the most complete specification and include the class of the municipality and all municipal-level controls that proxy for local economic conditions, homeownership, the age structure of the population, local income inequality and ethnic fragmentation. In the interests of space, only the coefficients on political competition are presented in this (and all subsequent) tables with complete results including coefficients on the control variables available on request.

[Table 2 about here.]

The coefficients on political competition in columns (1) through (3) suggest that a higher level of political competition is associated with a higher benefit level for retirees in municipal plans. To provide a sense of magnitude of these effects, note that if the level of political competition were to increase by one standard deviation,²⁸ the benefit received by the typical retiree for a typical pension plan would go up by about \$507–750/ year. In contrast, based on examining the coefficients in columns (4) through (6), we do not find any effect of political competition on the generosity of plans run by municipal authorities. The coefficients are precisely estimated to be zero, with standard errors that are an order of magnitude larger than the coefficient estimates.

The coefficients on some of the control variables, while not of primary interest, are worth mentioning. Moving from no coverage under collective bargaining to full coverage of all employees is associated with an increase in pension benefits by 36 percent in our most complete specification. Economic prosperity of the municipality, as captured by the per capita income, is also associated with a more generous pension plan,²⁹ while a higher prevalence of homeownership has a moderating influence on the generosity of these benefits.³⁰ Higher ethnic fragmentation is also associated with more generous

²⁷Coefficient on political competition for municipal authorities = Coefficient on political competition for municipalities + Coefficient on the interaction term, political competition interacted with a dummy for municipal authorities.

²⁸A one standard deviation increase in the level of political competition, using the measure defined in BPS (2010), would result if the Democratic vote share were to go down from 57.5 percent (leaning Democratic) to 50 percent (most competitive), or conversely, go up from 42.5 percent (leaning Republican) to 50 percent (most competitive).

²⁹A one standard deviation increase in per capita income is associated with an increase in benefits of about 6 percent.

³⁰A one standard deviation increase in the fraction of municipal residents who are homeowners is associated with a decrease

benefits. The only variable which shows up as statistically significant and whose sign differs from our *a priori* expectations is the debt service variable; municipalities where a greater fraction of the tax base goes towards paying interest on the debt have *more*, rather than less generous pension benefits. This finding may simply reflect that such municipalities have a higher fiscal capacity but may also reflect the fact that municipalities with generous pensions end up borrowing more.

There are two limitations to the empirical approach presented above. First, we have not accounted for the possibility that the more generous pension benefits may be offset by lower wages and in that case, looking at retirement benefits alone may lead to a misleading and incomplete picture in terms of the effects of political competition. Second, unlike DB plans in the private-sector, employees covered by DB plans in the public-sector contribute to these plans (Munnell, Haverstick, and Soto 2007). Thus, a pension plan could be more generous – in the sense that it pays out more in retirement benefits – but that may simply reflect higher contributions made by the employee during her years of service, rather than the tendency of politicians to pander to voters and make public pensions more generous as has been proposed in this paper. Accordingly, to address both concerns, in our subsequent specifications, I control for wages and the employee contribution rate to the pension plan. The results obtained using such an approach are presented in Table 3 and form our baseline specifications.

[Table 3 about here.]

As we observe from the coefficients in columns (1) through (3) of Table 3, the effects of political competition on the generosity of municipal plans are similar to those reported in Table 2, albeit somewhat smaller. A one standard deviation increase in the intensity of political competition is associated with an increase in the generosity of pension benefits by about 2.7–3.1 percent (or about \$426–507/retiree/ year), with no effect for plans run by municipal authorities.³¹ Contrary to the theory of compensating differentials (but consistent with much of the empirical literature), the coefficient on wages in these benefit regressions is positive and statistically significant across all specifications. Pension benefits are also more generous if employees contribute a greater fraction of their wages into the DB plan with a one percent increase in employee contributions associated with a five percent increase in their benefits. The effects of other control variables are similar to those reported earlier, although the coefficients on collective bargaining coverage averaging 0.22 are about half what we find in Table 2. The results from Table 3 can be captured in the form of Figure 2, which illustrates that political competition has a positive effect on the generosity of municipal plans, but not on plans run by municipal authorities.

[Figure 2 about here.]

in the generosity of benefits by about 6 percent.

³¹E.g. $0.417 * 0.075 = 0.0313$. Given average benefits of \$16,111 for municipal plans, this translates to \$507/ retiree/ year.

4.1 Robustness Checks

In this subsection, I examine the robustness of the finding that political competition is associated with an increase in the generosity of DB municipal plans but not for plans run by municipal authorities.

4.1.1 Alternative measures of generosity of DB plans

The primary measure of the generosity of pension plans we use in our analysis is the average annual benefit per retiree in that plan. The reason I prefer it over other measures, such as the normal cost which measures the present value of benefits accrued in a given year, is because such measures are often systematically and significantly lower than they ought to be.³² Sabin (2015) in a study of public plans from California reports that the main cause of underfunding in pension plans for the city of Sunnyvale – the municipality he analyzes – was underestimating the normal rate of contribution. As per his analysis, over the 18-year period from fiscal years 1995 to 2012, the normal rate prescribed by CalPERS should have been set 9.0% higher as a percentage of payroll in order to fully fund the plans. It was the understatement of normal costs, rather than the poor performance of retirement assets, which accounted for about three-quarters of the unfunded liability for Sunnyvale over this period.³³

These limitations of the normal cost notwithstanding, I examine the effects of political competition on the normal costs of local pension plans from Pennsylvania as this measure has been used in prior work (e.g. Munnell et al. 2011). In Panel A of Table 4 we use the numbers as-is, that is, as reported by the government entities themselves, which implicitly assumes that the projections used by municipalities in coming up with estimates of normal costs are uncorrelated with their underlying levels of political competition. An earlier version of this paper (Bagchi 2016) suggests that this may not be the case; instead, the results in that paper suggest that municipalities that are more competitive also choose higher interest rates and thus politically competitive municipalities systematically *underreport* their normal costs. The findings of Diebold, Reitano, and McDonald (2018) are in a similar vein; they note that when normal costs increase, “administrators tend to use less prudent methods that defer, or keep low, the pension contributions required from the state while, simultaneously, and perversely, improving the appearance of the plan’s funded status and the state’s funding discipline.”

Attempt to recalculate the normal costs of a pension plan on the basis of a common interest rate follow Novy-Marx and Rauh (2011). On the basis of those steps, I recalculate the normal costs with respect to a discount rate of 7 percent, corresponding to the median across all municipal pension plans in the sample. Panels B, C, and D of Table 4 present the results for three choices of the weighted

³²The normal cost is calculated by apportioning the total present value of an employee’s expected benefits in retirement to each year of an employee’s worklife, based on a specific actuarial cost method (Public Plans Data, 2001-2016).

³³Exhibit 8 of Sabin (2015) shows that for Sunnyvale, investment loss (= \$35.3M) + normal loss (= \$217.3M) + amortization loss (= \$40.8M) = unfunded liability (\$293.4M). The normal loss thus accounts for 74.1 percent of the unfunded liability.

average duration of liabilities – 11 years, 13 years, and 15 years.³⁴ Columns (1) through (3) present the coefficient on political competition for municipalities while the coefficient for municipal authorities is presented in columns (4) through (6).

[Table 4 about here.]

As we can see, the coefficients on political competition continue to be positive and statistically significant in each of the panels for municipal plans. A one standard deviation increase in the intensity of political competition is associated with an increase in the normal costs of about 0.2 percent or 2 percent of the average normal costs. In contrast, there are no effects of political competition on the normal costs for pension plans run by municipal authorities, with the coefficients negative in Panels B through D although they are far from statistical significance.³⁵

Beyond looking at the average benefits received by a retiree and the normal costs of the plan, another way, plausibly a more direct way, of capturing the degree to which DB plans are back-loaded is to examine the ratio of benefits to wages. Constructing such a ratio is fraught with similar issues we encounter earlier when contemplating the ideal lag structure; the benefit levels pertain to retirees whereas wages pertain to members who are currently active and working and data limitations prevent us from obtaining wages for retirees or benefit levels for those who will be retiring in the future. With that important caveat in mind, we construct two measures – the ratio of benefits to wages and the log of that ratio – and we examine the effects of political competition on these dependent variables in Table 5.

[Table 5 about here.]

Based on the coefficients on political competition in Table 5, we note that political competition is associated with an increase in the ratio of benefits to wages for municipal plans, regardless of whether we express it in absolute or log terms. This is however not true for plans run by municipal authorities.

4.1.2 Alternative ways of measuring political competition

Beyond using the measure of political competition based on Besley, Persson, and Sturm (2010), one can operationalize political competition differently. As Boyne (1994) points out, one ought to take

³⁴Here is an example: If the normal costs for a plan assuming an 8 percent discount rate are 12 percent (of payroll), the normal costs recalibrated to 7 percent equal $0.12 * (1.08/1.07)^{11}$, or 13.3 percent, *if the average duration of liabilities is 11 years*. If the average duration of liabilities is longer at 13 years, the normal costs are recalculated as $0.12 * (1.08/1.07)^{13} = 13.5$ percent.

³⁵As the 7 percent rate is likely too high, I also discount them back to an interest rate corresponding to the nominal yield on zero-coupon Treasury bonds of similar duration. Based on recent market conditions and expectations of market participants about future economic conditions, I use 1.5 percent for the real yield on long-term zero-coupon Treasury bonds and add in 2 percent to reflect inflation expectations, for a nominal yield of 3.5 percent. I find similar results when calibrating normal costs at a 3.5 percent discount rate.

the volatility of party strength into account when constructing a measure of political competition. Therefore, a potential alternative measure is the standard deviation of Democratic vote share across all elections that occur in any given year. Results with political competition, thus defined, as the independent variable are presented in Panel A of Table 6.

[Table 6 about here.]

As we can see, political competition continues to have a positive and statistically significant effect on the average benefit received per retiree. A one standard deviation increase in the level of political competition, using this measure, leads to an increase in the average retirement benefit of about 3 percent for municipal plans, with no effects for pension plans run by municipal authorities.

The second approach I use in terms of operationalizing political competition differently is to introduce a linear and squared term for the average Democratic vote share in the same specification. If political competition makes pension plans more generous, then one would expect to see a positive coefficient on the linear term and a negative coefficient on the squared term generating an inverted U-shape. This is, in fact, what I find with this alternative operationalization of political competition in Panel B. Based on my estimates, the Democratic vote share which corresponds to the highest level of benefits varies in a range from 53.1 to 58.6 percent. Thus, benefits increase as the Democratic vote share increases to about 55 percent and then they decline.³⁶

The third and final approach I use in terms of operationalizing political competition differently involves redefining the Democratic vote share by factoring in votes received by third party-candidates as well. Thus, I redefine the average Democratic vote share as Votes cast for Democrats/ (Votes cast for Democrats + Votes cast for Republicans + Votes cast for third-party candidates) and recompute our measure of political competition. This does not make a large difference to either the average Democratic vote share or the measure of political competition³⁷ and therefore, not surprisingly, when I introduce this measure of political competition in the regressions, my estimates are similar to those reported earlier. A one-standard deviation increase in political competition is associated with a 3 percent increase in the benefits received by retirees, with no effects for pension plans run by municipal authorities.

Thus the results in Table 6 confirm the positive relationship between political competition and benefit levels for municipal pensions that we observe in Table 3. They also support the lack of a similar positive relationship between political competition and benefits for plans run by municipal authorities.

³⁶For example, using the coefficients in col. (3), the level of Democratic vote share at which benefits are maximized = $1.621/(2*1.527) = 53.1$ percent.

³⁷The median value of the variable, average Democratic vote share, goes down from 46.7 percent to 43.9 percent.

4.1.3 Other specification checks

This sub-section includes a number of robustness checks that address concerns of omitted variable bias. As before, columns (1)–(3) of Table 7 present the estimated effect of political competition on plan benefits for municipalities while columns (4)–(6) present the estimates for municipal authorities.

Robustness Check (RC) 1: Controlling for average Democratic vote share In the regressions estimated thus far, I have not included the average vote share for Democrats as a control variable. Introducing that however may let us separately identify the effect of an increase in Democratic support from an increase in the level of political competition. In this robustness check, I estimate regressions that control for the average Democratic vote share and find that an increase in political competition continues to be associated with an increase in the benefit levels for municipalities with no effect on plans run by municipal authorities. The coefficient on average Democratic vote share, while positive, is not statistically significant at conventional levels of significance in any specification.

RC2: Using vote shares based solely on Presidential elections Voters may consider the performance of their local officials in casting their votes for elections to state-level offices (e.g. Governor). This raises the possibility of reverse causality between the fiscal health of a municipal plan and the level of political competition in that municipality. Voters are however unlikely to consider the performance of their local officials as they decide who to vote for the office of President. Thus, using vote share based solely on Presidential elections minimizes the possibility of reverse causality associated with using data on elections to all national and state-level offices.³⁸ Using just such a measure of political competition, I find that the coefficients on political competition are similar to their previous values.

RC3: Including county-specific linear time trends Each of our specifications for which results were presented thus far have included county (and year) fixed effects, which allow us to control for time-invariant factors at the county level that might affect the generosity of its pension plans. To lend further credibility to our identification strategy, I include a linear time trend for each county thus allowing the level of retirement benefits to evolve separately for each county. Our results for the effects of political competition on pension plan generosity are robust to the inclusion of these trends.³⁹

RC4: Including county-by-year fixed effects In this robustness check that is particularly demanding of the data, I introduce county-by-year fixed effects that allow for each county to be hit by a

³⁸Using a 11-year lag structure also reduces the possibility of reverse causality.

³⁹Results with municipality-specific trends continue to indicate a positive effect of political competition on the generosity of benefits, although the estimated effects are smaller in size.

unique shock in each year and find that our results are robust to the inclusion of these county-by-year fixed effects, with the coefficients on political competition somewhat larger in magnitude.

RC5: Long differences In order to examine if long-run shifts in the intensity of political competition have the same effect as those found using data for all years, I estimate regressions using data from only the first (2003) and the last (2013) year of the sample. The positive relationship between the intensity of political competition and benefit levels for municipal plans holds with this approach as well, and the coefficients are roughly similar in magnitude to those in the base specifications. As before, there are no statistically significant effects for pension plans run by municipal authorities.

We can also combine the use of long differences with municipality fixed effects. The thought experiment underlying the use of municipality fixed effects is different from what we have considered thus far; the question being asked in such an estimation is whether an increase in the level of political competition is likely to result in an increase in the generosity of plan benefits for a given municipality. Given that political competition for a municipality is likely to only change slowly over time, the use of a long differences approach makes sense in such a case. Using municipality fixed effects, the coefficients on political competition are marginally smaller than those estimated in our base specifications and are somewhat less precisely estimated but they too point to a positive relationship between political competition and plan generosity. Of note, the coefficient on log wages at ~ 0.4 (not reported) is less than half what we see earlier, suggesting that unobserved heterogeneity across employers contributes to the observed positive relationship between wages and benefits.

RC6: Only including municipalities that have at least one authority This robustness check is motivated by the fact that not all municipalities which offer a pension plan also have an authority offering their own pension plan. In particular, municipalities that have a municipal authority offering their own pension plan are larger than the typical municipality offering a pension plan. Hence this robustness check limits the estimation only to pension plans run by municipalities that have at least one municipal authority and pension plans run by municipal authorities. Although this causes our sample size to drop to about 40 percent of the original size, we continue to observe that an increase in political competition is associated with an increase in the generosity of municipal pension plans with no effects on the generosity of pension plans run by municipal authorities.

[Table 7 about here.]

Overall the results presented in this section in Tables 2 through 7 offer robust evidence that an increase in the level of political competition is associated with an increase in the generosity of municipal pensions with no effects on the generosity of plans run by municipal authorities.

4.1.4 Alternative Lag Structures

Given that the data on pension benefits are not disaggregated by retiree and includes retirees from various cohorts, it is challenging to associate the average level of benefits received by retirees with the level of political competition for one specific year that corresponds to a unique lag structure. Based on Rauh (2017), I have used a lag structure of 11 years in the paper thus far but that is not the only defensible choice. Novy-Marx and Rauh (2011) suggests that the weighted average duration of pension liabilities is 13 years while Waring (2004a, 2004b) suggests a longer duration of 15 years. Hence in this subsection, I present results with several different lag structures, which correspond to different assumptions about how quickly higher levels of political competition manifest itself in the form of more generous pension benefits. I use lags ranging from 0–3 years in Panels A through D of Table 8 (which implicitly assume a rapid process of adjustment) but also try out longer lags of 13 and 15 years in Panels E and F.

[Table 8 about here.]

As we can see from the results in Table 8, the estimated effects of political competition are not particularly sensitive to the lag structure used.

5 Examining the Effects of Political Competition on Defined Contribution Plans

Anecdotal evidence suggests that political influences are less influential in affecting the parameters for a DC plan compared to a DB plan.⁴⁰ For example, a report prepared in the context of reform of Florida’s Retirement System (FRS) (Florida TaxWatch Report 2013) notes:

Another important benefit of the DC Investment Plan is that it is insulated from political temptations....Any benefit given under a DC plan must be paid for in that same year because it cannot be legally underfunded. This improves the financial health and security of the FRS because retirement assets belong to the individual state employees and are therefore not susceptible to the whims of the state.

In Table 9 therefore, I examine the effects of political competition on the employer contribution rate for all DC plans from Pennsylvania for the period 2003–2013.⁴¹ I choose to focus on the employer

⁴⁰The decision of whether to offer a DB or a DC plan is, in itself, endogenous. In a set of regressions, using both OLS and probit estimation approaches, I find that an increase in political competition makes it more likely that a municipality offers a DB plan as compared to a DC plan. That result is consistent with the view that politicians in politically competitive jurisdictions desire to pass on the costs of pensions to future generations and the structure of DB (but not DC) plans makes that possible.

⁴¹The effects of political competition on the generosity of DC plans are discussed in Table 8 of Bagchi (2017) as well and so in the interest of transparency, I note the difference between the results in that paper and the ones included here. The differences

contribution rate because for DC plans, it is not meaningful to talk of the average pension benefit received on retirement or the ratio of benefits to wages. The employer contribution rate to the DC plan is however a meaningful plan parameter as it reflects the extent to which an employer puts aside money each year and comes closest to our conception of generosity of a DB plan.

I first estimate the effects of political competition on the employer contribution rate using data for all years and for all plans hewing exactly to specification (1). Subsequent rows replicate the robustness checks that were conducted earlier on DB plans in Table 7 with each row corresponding to a different robustness check. Estimates for municipalities are presented in columns (1) through (3), with estimates for municipal authorities in columns (4) through (6). In the interest of brevity, I only present the coefficients on the variable representing the intensity of political competition and omit coefficients on the control variables. The complete results are available from the author on request.

[Table 9 about here.]

As the coefficients on political competition indicate, DC plans appear less susceptible to political influence compared to DB plans. The coefficient on political competition for municipal DC plans is statistically insignificant in each of the 24 specifications presented in the table, in contrast to our previous set of findings on DB plans. This null result likely follows from the fact that with DC plans, it is hard for politicians to pass on the costs of a more generous plan onto future generations of taxpayers; a more generous DC plan requires a higher level of contributions today that have to be met from current tax revenues and politicians are less willing to make a DC plan more generous in order to avoid the risk of alienating voters. Unsurprisingly perhaps, political competition has no effect on the employer contribution rate of DC plans run by municipal authorities given that the insulation of authority boards from political influence is now coupled with the transparency of DC plans.

As an additional robustness check, I vary the lag length.⁴² While the results above employ the 11-year lag structure that has been used earlier as baseline, in Table 10 I experiment with alternative lags that were used when estimating the effects of political competition for DB plans, viz. 0–3 years in Panels A through D and longer lags of 13 and 15 years in Panels E and F. The results in Table 10 confirm the results from Table 9; they suggest that political competition has no effect on the generosity of DC plans, whether run by municipalities or by municipal authorities.

[Table 10 about here.]

primarily pertain to the coverage of the data; first, the dataset used in this paper encompasses a longer period from 2003–2013 (as compared to 2003–2009 in Bagchi 2017) and second, they also include plans run by municipal authorities, whereas the former dataset only included municipal DC plans. The conclusions are however the same using either dataset: in both instances, we see that political competition has no effect on the generosity of DC plans, whether run by municipalities or by municipal authorities.

⁴²This is also a distinction between the results in this paper and those in Bagchi (2017). The latter only considers the case where there is no lag, i.e. a world in which political competition affects the employer contribution rate contemporaneously.

6 A sample-split test examining differential effects based on voter awareness

Models of fiscal illusion rely on the existence of informational frictions. If individuals had perfect information about politicians' platforms and were rational, then the political budget cycles modeled by Rogoff (1990) or Rogoff and Sibert (1988) would simply not exist. The model in Glaeser and Ponzetto (2014), which this paper most directly builds on, also hinges on information asymmetries. As noted earlier, the authors argue that pension obligations are shrouded because of lower availability of information about pensions than wages and because voters find it challenging to understand the impact of unfunded pension obligations on their future tax burdens. This insight forms the basis of an empirical test. By splitting the sample of municipalities into two groups based on the level of voter awareness and information, we can examine if the effects of political competition are larger in places that have a higher proportion of uninformed voters. To operationalize this test, I look for variables that likely reflect variations among the residents of a municipality in their ability to understand the nuances of local politics and local public finance.

A literature review suggests that newspapers have been historically the most important source of information about state and local politics and that this has been true even in the television era (Gentzkow, Shapiro, and Sinkinson 2011). As Hayes and Lawless (2015) note: "When local news outlets like daily newspapers devote less coverage, and less substantive coverage, to politics—whether it be about a House race, state legislative contest, or municipal election—there are few alternative sources to which citizens can turn....In the vast majority of U.S. communities, there is no local Politico, no local Talking Points Memo, no local Hot Air." In stressing the role of local print media, they note that "unlike with national elections, there are virtually no other widely available outlets to which people can turn for information about local politics."

Accordingly, based on this review of the literature, I turn to newspaper penetration as a variable which can help us distinguish places that have a large number of well-informed voters from places with relatively few well-informed voters. Using data on newspaper circulation that were generously provided by the Alliance for Audited Media, I am able to obtain estimates of newspaper penetration at the municipal level and I use that variable to split the sample of plans into two groups.⁴³ The first group includes plans for which their municipality's newspaper penetration is less than (or equal) to the median and a second group that includes plans for which newspaper penetration is higher than the median. In light of our discussion above, I characterize the first group as having a higher proportion of less informed voters and the second group as having a higher proportion of more informed voters.

⁴³These data are at the zipcode level and are based on audits of circulations conducted between June 2010 and June 2012. To obtain estimates of newspaper penetration at the municipal level, I use a Census-created crosswalk from zipcode to municipality.

Table 11 presents the results obtained by splitting municipal plans in the manner described above with Panels A, B, and C providing results for log benefits, the unadjusted “as-is” normal costs, and the ratio of benefits to wages respectively. In all panels, columns (1) through (3) present the coefficient on political competition for plans where newspaper penetration is less than or equal to the median whereas Columns (4) through (6) present the coefficient for plans where newspaper penetration is more than the median. The last three columns of the table examine if coefficients in columns (1)–(3) are statistically different from the corresponding coefficients in columns (4)–(6).

[Table 11 about here.]

The results in Table 11 suggest that the effects of political competition are larger in municipalities where newspaper penetration is less than or equal to the median, whereas they are muted (in fact, absent) in municipalities where newspaper penetration is higher than the median, with the differences in coefficients statistically significant in Panels A and C. Importantly these results do not hinge on places with lower newspaper penetration having more generous plans on average; what these regressions estimate is how plan generosity *varies with the level of political competition* within each sub-sample. Given that our findings hold up in the most complete specification in which I control for a variety of municipal characteristics such as per capita income and homeownership rates, one cannot simply explain away these sample-split results as reflecting differences in socioeconomic characteristics between municipalities that have high newspaper penetration from those with relatively low newspaper penetration rates. Furthermore, when I replicate these steps for plans run by municipal authorities, I observe that across both sub-samples of plans, political competition appears to have no effect on plan generosity reaffirming the view that the differential effects of political competition on municipal plans are being driven by variation in the level of information available to voters rather than by differences in socioeconomic characteristics of the municipalities themselves.⁴⁴

Given that newspaper readership is likely to correlate with voter awareness and engagement, the results in this table suggest that when faced with an electorate that is more aware and informed of the true cost of unfunded pension obligations, politicians are less likely to underfund public pensions. These results are consistent with one of the key assumptions of the model in Glaeser and Ponzetto (2014) as it pertains to limited information on the part of voters and provide an empirical basis for that assumption. The results from Panel A of Table 11 can be captured in the form of Figure 3, which illustrates that the effects of political competition emerge only in places that have a higher proportion of relatively uninformed voters.

[Figure 3 about here.]

⁴⁴ Those additional results for municipal authority sample splits are available from the author on request.

7 Conclusions

This paper proposes that political competition plays a key role in influencing the fiscal health of defined benefit pensions offered to public-sector employees. In their desire to win re-election, politicians in politically competitive jurisdictions promise generous benefits to public-sector workers while failing to make the contributions necessary to fund them fully in order to avoid having to raise taxes. Using a difference-in-differences (DID) approach in which DB plans run by municipalities are compared with DB plans run by municipal authorities, I obtain evidence that is consistent with this hypothesis. I find that an increase in political competition is associated with an increase in the generosity of municipal pension plans, with a one standard deviation increase in the level of political competition associated with an increase of about 3 percent in benefits (about \$426–507 per retiree per year). These results hold up to controlling for variations across plans in their Social Security coverage and across municipalities in their levels of economic prosperity, age structure, income inequality, and ethnic fragmentation, making it unlikely that heterogeneity across municipalities or plans are driving these results. These results are also robust to a host of checks such as the inclusion of county-specific time trends, county-by-year fixed effects, and the inclusion of municipality fixed effects.

In contrast to the robust effects of political competition on the generosity of municipal DB plans, I fail to discern any relationship between the level of political competition of municipal authorities and the generosity of the plans that they offer. This result is likely driven by the fact that members of municipal authority boards are appointed and hence far removed from the electoral will of voters, at least when compared to mayors and council members who make decisions on municipal pensions. The starkly different effects of political competition for municipal authorities when compared with municipalities are in line with papers that have examined differences between appointed and elected officials, such as Lim (2013) who finds that the harshness of sentences awarded by elected judges is strongly related to the political ideology of the voters in their districts, while that of appointed judges is not, or Besley and Coate (2003) who find that public utility regulators who are elected are more pro-consumer in their regulatory policies. Indeed, the idea that holding officials responsible for complex policy areas directly accountable to voters through election can result in lower levels of performance as suggested by Whalley (2013) appears relevant here and introducing a degree of political insulation between voters and officials responsible for making decisions on public pensions seems promising.

The desirability of minimizing the influence of electoral politics on the management of public pension plans is buttressed by the null results of political competition on the generosity of defined contribution plans. Indeed, because a more generous DC plan requires higher contributions today rather than several years in the future, the structure of such plans constrains the ability of politicians to pass on the costs of current labor services to future taxpayers. Thus, moving from DB plans to DC

plans that we find as less susceptible to political influence may be a useful step that preserves inter-generational equity and reduces the likelihood that future taxpayers will experience tax increases or service cuts to make up for shortfalls in the pension fund. Such motivations appear to have been at work for Utah which ended its traditional DB plan for new workers and offered them a choice between a DC plan and a hybrid DB-DC plan or Rhode Island which created a hybrid DB-DC plan with a lower guaranteed pension supplemented by a DC component (McGuinn 2014). Similar reforms continue to be debated and discussed across state and local governments throughout the country reflecting the rapidly growing costs they face for public pensions.

Beyond these policy implications, the paper contributes to the literature of public-sector labor markets by highlighting the role played by political competition in generating compensation structures that are backloaded. However, as our sample-split analysis using newspaper penetration data suggests, voter awareness and engagement can moderate the negative effects associated with political competition and local newspapers can play a crucial role in generating such awareness and engagement. The demise of local newspapers which has been noted by many observers (e.g. Schulhofer-Wohl and Garrido 2013) is therefore of concern for those who care about the health of local democracy.

References

- Alesina, Alberto, Reza Baqir, and William Easterly.** 2000. “Redistributive Public Employment.” *Journal of Urban Economics*. 48(2): 219–241.
- Anzia, Sarah F., and Terry M. Moe.** 2015. “Public Sector Unions and the Costs of Government.” *Journal of Politics*. 77(1): 114–127.
- . 2017. “Polarization and Policy: The Politics of Public-Sector Pensions.” *Legislative Studies Quarterly*. 42(1): 33–62.
- Bagchi, Sutirtha.** 2016. “The Effects of Political Competition on the Funding and Generosity of Public-Sector Pension Plans.” Working Paper. Available: <https://ssrn.com/abstract=2633565>.
- . 2017. “The Effects of Political Competition on the Funding of Public-Sector Pension Plans.” Villanova School of Business Department of Economics and Statistics Working Paper No. 36. Villanova, PA.
- Banzhaf, H. Spencer and Wallace E. Oates.** 2013. “On Fiscal Illusion in Local Public Finance: Re-examining Ricardian Equivalence and the Renter Effect.” *National Tax Journal*. 66(3): 511–540.
- Bennett, James T. and Thomas J. Dilorenzo.** 1982. “Off-Budget Activities of Local Government: The Bane of the Tax Revolt.” *Public Choice*. 39(3): 333–342.
- Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan.** 2004. “How Much Should We Trust Differences-in-Differences Estimates?” *The Quarterly Journal of Economics*. 119(1): 249–275.

- Besley, Timothy and Stephen Coate.** 2003. “Elected Versus Appointed Regulators: Theory and Evidence.” *Journal of the European Economic Association*. 1(5): 1176–1206.
- Besley, Timothy, Torsten Persson, and Daniel M. Sturm.** 2010. “Political Competition, Policy and Growth: Theory and Evidence from the US.” *Review of Economic Studies*. 77(4): 1329–1352.
- Bewerunge, Philipp and Harvey S. Rosen.** 2013. “Wages, Pensions, and Public-Private Sector Compensation Differentials for Older Workers.” *Public Administration Research*. 2(2): 233–249.
- Boyne, George A.** 1998. “Party Competition and Local Spending Decisions.” *British Journal of Political Science*. 28(1): 210–222.
- Bureau of Labor Statistics (BLS).** 2010. “Program Perspectives on Defined Contribution Plans.” *Program Perspectives*. 2(6): 1–4.
- Dehejia, Rajeev H. and Sadek Wahba.** 1999. “Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs.” *Journal of the American Statistical Association*. 94(448): 1053–1062.
- . 2002. “Propensity Score-Matching Methods for Nonexperimental Causal Studies.” *Review of Economics and Statistics*. 84(1): 151–161.
- Department of Community and Economic Development.** 2015. “Municipal Authorities in Pennsylvania.” Governor’s Center for Local Government Services, Harrisburg, PA.
- Diebold, Jeffrey, Vincent Reitano, and Bruce McDonald.** 2018. “Sweat the Small Stuff: Strategic Selection of Pension Policies used to Defer Required Contributions.” *Contemporary Economic Policy*. 36(3), Special Issue on Aging: 505–525.
- Ehrenberg, Ronald G. and Joshua L. Schwarz.** 1986. “Public-Sector Labor Markets,” In *Handbook of Labor Economics*, edited by Orley C. Ashenfelter and Richard Layard, Vol. 2, Chapter 22, 1219–1260. Philadelphia: Elsevier.
- Epple, Dennis and Katherine Schipper.** 1981. “Municipal Pension Funding: A Theory and Some Evidence.” *Public Choice*. 37(1): 141–178.
- Fischel, William A.** 2001. “The Homevoter Hypothesis.” Harvard University Press, Cambridge, MA.
- Fitzpatrick, Maria D.** 2017. “Pension-spiking, Free-riding, and the Effects of Pension Reform on Teachers’ Earnings.” *Journal of Public Economics*. 148(C), 57–74.
- Florida TaxWatch Report.** 2013. “Modernizing the Florida Retirement System: Switching to a Defined Contribution Plan.” Tallahassee, FL.
- Frandsen, Brigham R.** 2016. “The Effects of Collective Bargaining Rights on Public Employee Compensation: Evidence from Teachers, Firefighters, and Police.” *ILR Review*. 69(1): 84–112.
- Gentzkow, Matthew, Jesse M. Shapiro, and Michael Sinkinson.** 2011. “The Effect of Newspaper Entry and Exit on Electoral Politics.” *American Economic Review*. 101(7): 2980–3018.
- Gittleman, Maury, and Brooks Pierce.** 2012. “Compensation for State and Local Government Workers.” *Journal of Economic Perspectives*. 26(1): 217–242.

Glaeser, Edward L. and Giacomo A. M. Ponzetto. 2014. “Shrouded Costs of Government: The Political Economy of State and Local Public Pensions.” *Journal of Public Economics*. 116(C): 89–105.

Gustman, Alan L. and Thomas L. Steinmeier. 1993. “Pension Portability and Labor Mobility: Evidence from the Survey of Income and Program Participation.” *Journal of Public Economics*. 50(3): 299–323.

———. 1995. “Pension Incentives and Job Mobility.” Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Hayes, Danny and Jennifer L. Lawless. 2015. “As Local News Goes, So Goes Citizen Engagement: Media, Knowledge, and Participation in US House Elections.” *Journal of Politics*. 77(2): 447–462.

Heckman, James J. and V. Joseph Hotz. 1989. “Choosing Among Alternative Nonexperimental Methods for Estimating the Impact of Social Programs: The Case of Manpower Training.” *Journal of the American Statistical Association*. 84(408): 862–874.

LaLonde, Robert J. 1986. “Evaluating the Econometric Evaluations of Training Programs with Experimental Data.” *American Economic Review*. 76(4): 604–620.

Lazear, Edward P. and Robert L. Moore. 1988. “Pensions and Turnover,” In *Pensions in the U.S. Economy*, edited by Zvi Bodie, John B. Shoven, and David A. Wise, Chapter 6, 163–190. Chicago: University of Chicago Press.

Lazear, Edward P. 1990. “Pensions and Deferred Benefits as Strategic Compensation.” *Industrial Relations*. 29(2): 263–281.

Lewis, H. Gregg. 1990. “Union/Nonunion Wage Gaps in the Public Sector.” *Journal of Labor Economics*. 8(1), Part 2: Essays in Honor of Albert Rees: S260–S328.

Lim, Claire S. H. 2013. “Preferences and Incentives of Appointed and Elected Public Officials: Evidence from State Trial Court Judges.” *American Economic Review*. 103(4): 1360–1397.

Lovenheim, Michael F. 2009. “The Effect of Teachers’ Unions on Education Production: Evidence from Union Election Certifications in Three Midwestern States.” *Journal of Labor Economics*. 27(4): 525–587.

McGuinn, Patrick. 2014. “Pension Politics: Public Employee Retirement System Reform in Four States.” Brown Center on Education Policy Working Paper. Brookings Institution, Washington DC.

Munnell, Alicia H., Kelly Haverstick, and Mauricio Soto. 2007. “Why have Defined Benefit Plans Survived in the Public Sector.” CRR Working Paper No. 2. Center for Retirement Research, Boston College, Chestnut Hill, MA.

Munnell, Alicia H., Jean-Pierre Aubry, Josh Hurwitz, and Laura Quinby. 2011. “Unions and Public Pension Benefits.” CRR Working Paper No. 19. Center for Retirement Research, Boston College, Chestnut Hill, MA.

Nordhaus, D. William. 1975. “The Political Business Cycle.” *Review of Economic Studies*. 42(2): 169–190.

Novy-Marx, Robert and Joshua Rauh. 2011. “Public Pension Promises: How Big Are They and What Are They Worth?” *Journal of Finance*. 66(4): 1211–1249.

Nuschler, Dawn, Alison M. Shelton, and, John J. Topoleski. 2011. “Social Security: Mandatory Coverage of New State and Local Government Employees.” CRS Report R41936. Congressional Research Service, Washington, DC.

Oates, Wallace E. 1988. “On the Nature and Measurement of Fiscal Illusion.” In *Taxation and Fiscal Federalism: Essays in Honour of Russell Mathews*, edited by Geoffrey Brennan, Bhajan S. Grewal, and Peter D. Groenewegen, 64–82. Australian National University Press, Sydney, Australia.

Oliver, Eric J. and Shang E. Ha. 2007. “Vote Choice in Suburban Elections.” *American Political Science Review*. 101(3): 393–408.

Pennsylvania Public Employee Retirement Commission. Status Report on Local Government Pension Plans. Various years. Public Employee Retirement Commission, Harrisburg, PA.

Public Plans Data. 2001–2016. Center for Retirement Research at Boston College, Center for State and Local Government Excellence, and National Association of State Retirement Administrators.

Puviani, Amilcare. 1903. *Teoria della Illusione Finanziaria [Theory of The Financial Illusion]*. ISEDI Istituto Editoriale Internazionale, Milan, Italy.

Rauh, Joshua D. 2017. “Hidden Debt, Hidden Deficits: How Pension Promises Are Consuming State and Local Budgets.” Hoover Institution Essay. Hoover Institution, Stanford, CA.

Rogoff, Kenneth. 1990. “Equilibrium Political Budget Cycles.” *American Economic Review*. 80(1): 21–36.

Rogoff, Kenneth and Anne Sibert. 1988. “Elections and Macroeconomic Policy Cycles.” *Review of Economic Studies*. 55(1): 1–16.

Sabin, Michael J. 2015. “Backtested Pension Math: An Empirical Look at the Causes of CalPERS Underfunding.” *The Journal of Retirement*. 2(3): 40–54.

Schulhofer-Wohl, Sam and Miguel Garrido. 2013. “Do Newspapers Matter? Short-Run and Long-Run Evidence from the Closure of The Cincinnati Post.” *Journal of Media Economics*. 26(2): 60–81.

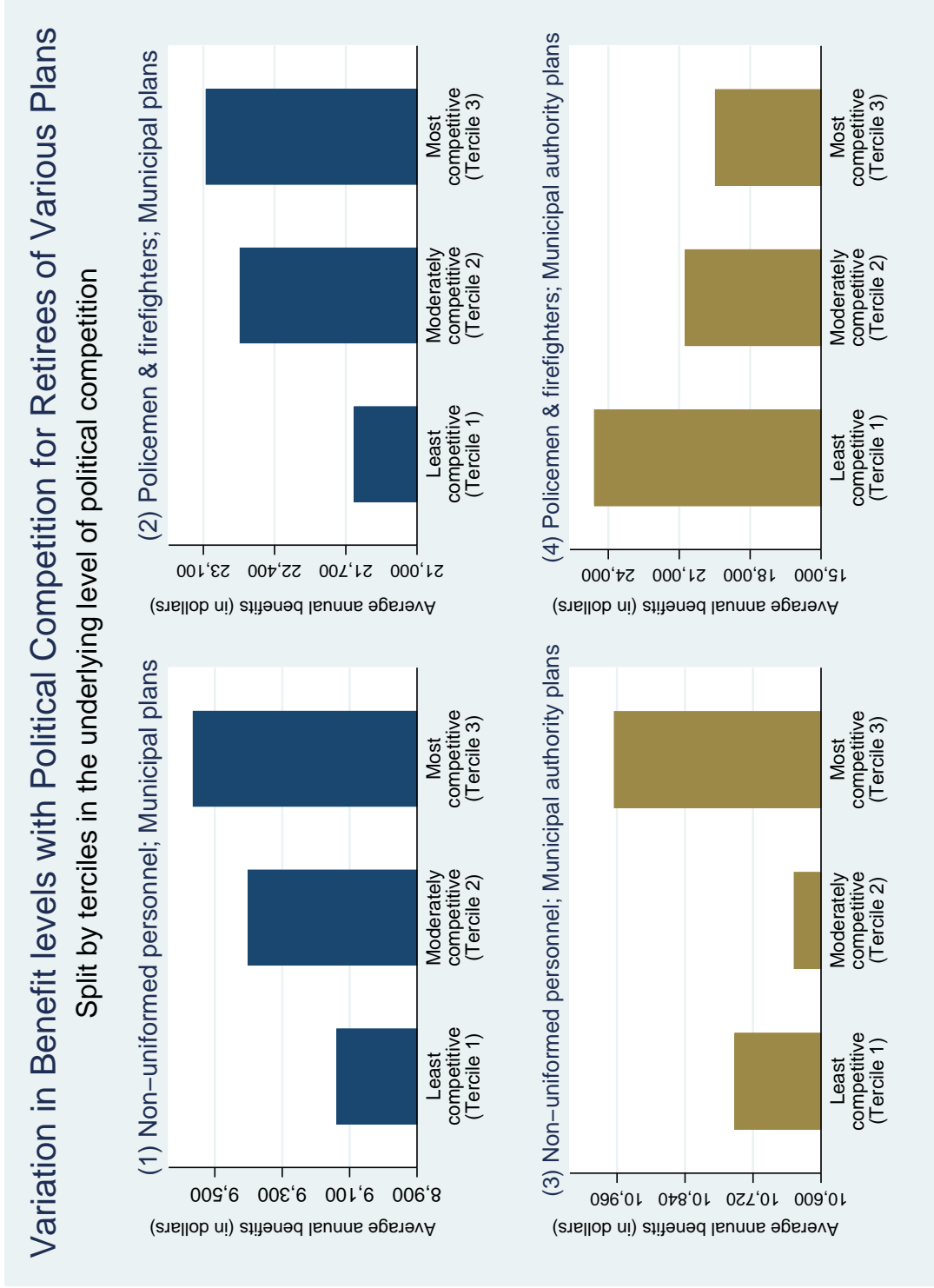
Smith, Jeffrey A. and Petra E. Todd. 2005. “Does Matching Overcome LaLonde’s Critique of Non-experimental Estimators?” *Journal of Econometrics*. 125(1–2): 305–353.

Waring, M. Barton. 2004a. “Liability-Relative Investing.” *Journal of Portfolio Management*. 30(4): 8–20.

——— 2004b. “Liability-Relative Investing II.” *Journal of Portfolio Management*. 31(1): 40–53.

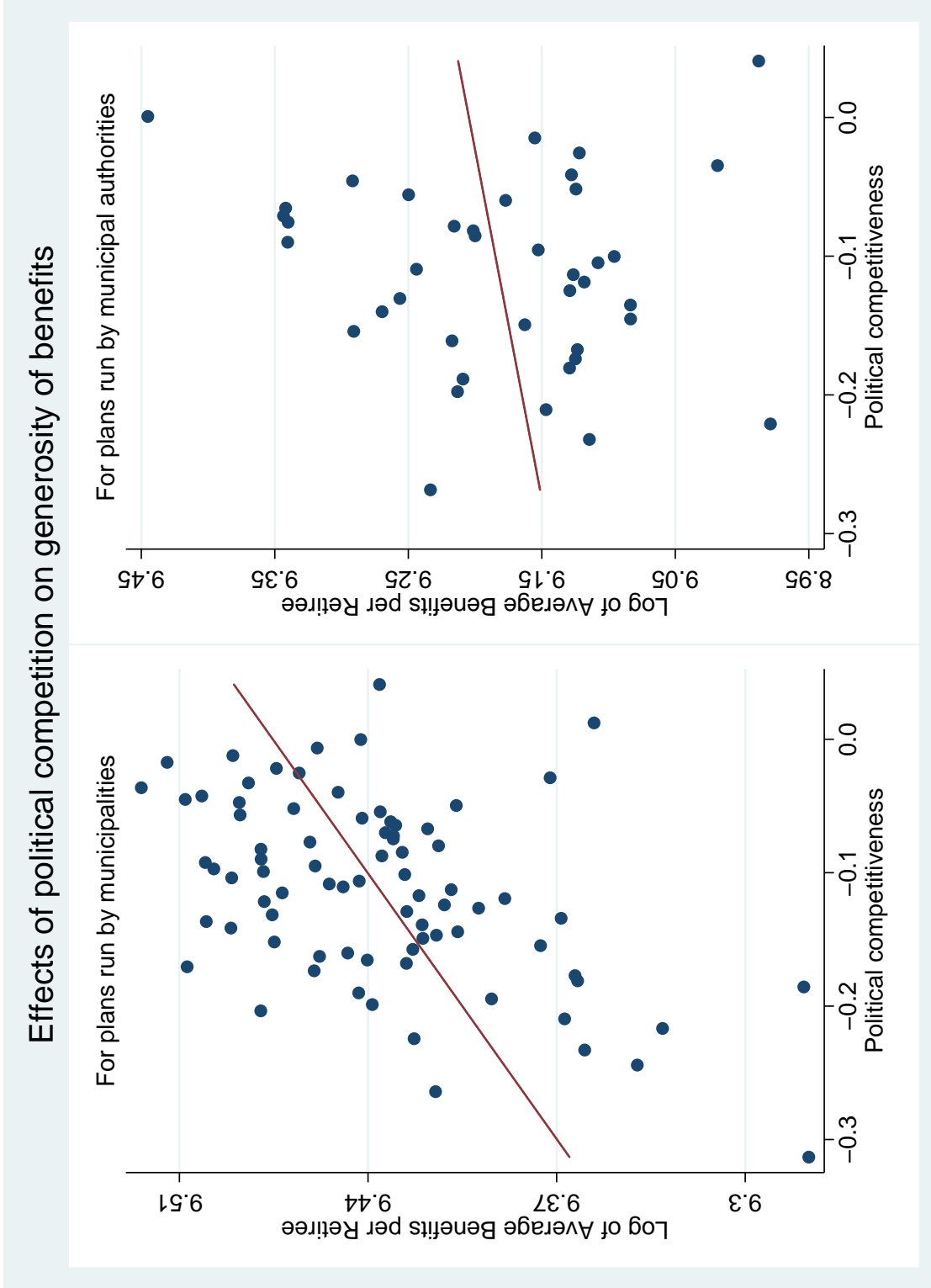
Whalley, Alexander. 2013. “Elected versus Appointed Policy Makers: Evidence from City Treasurers.” *The Journal of Law & Economics*. 56(1): 39–81.

Figure 1: Variation in Benefit Levels with Political Competition for Municipal Plans and Plans run by Municipal Authorities for Various employee-groups



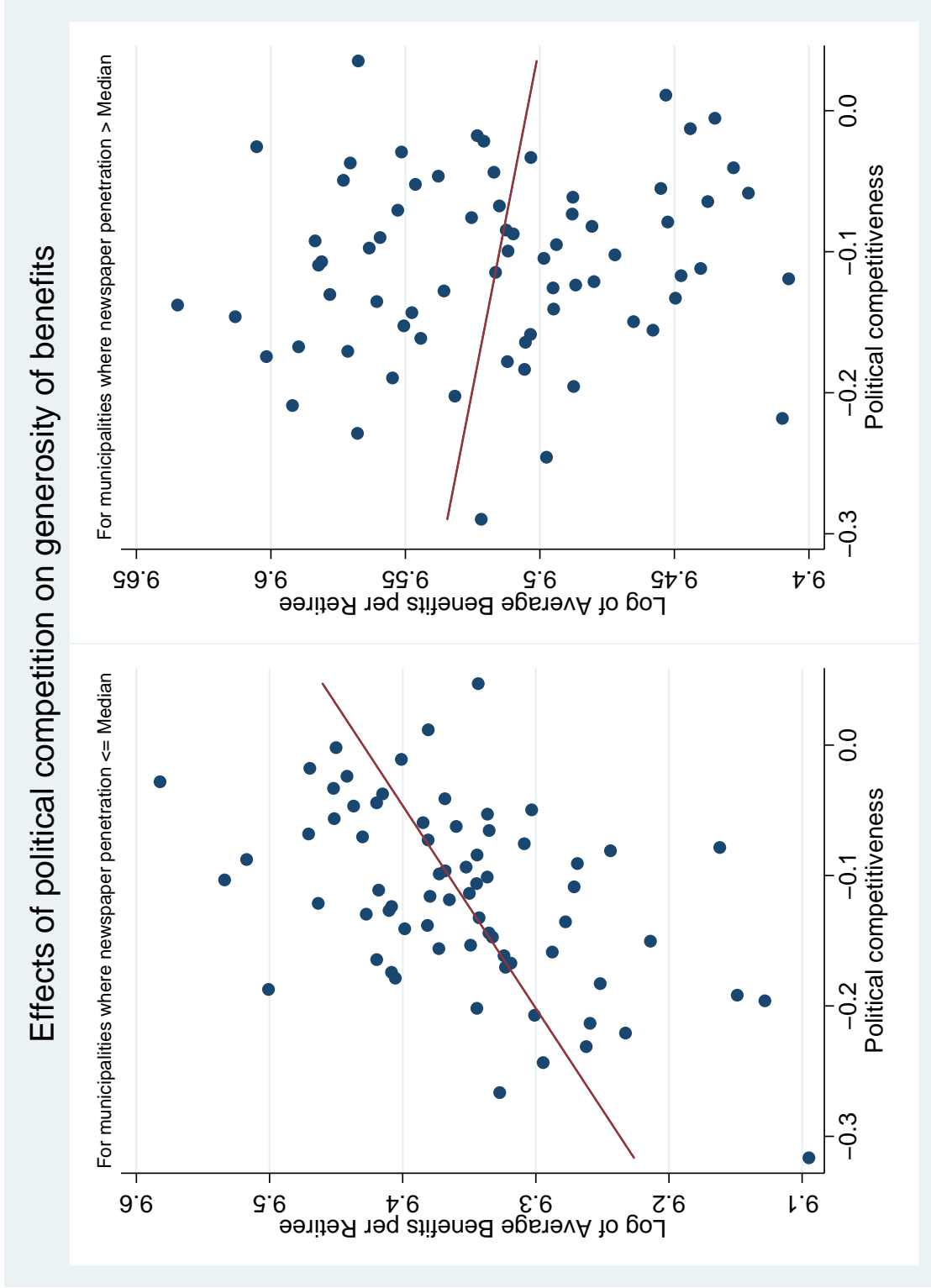
All plans included in the estimation in Table 3 were included for this analysis and then split into three equal-sized groups (or “terciles”) based on their underlying level of political competition. For each of the four panels, I plot the mean benefit levels for plans that correspond to particular combinations of entity and employee-groups and fall in that tercile.

Figure 2: Effects of Political Competition on Benefit Levels for Municipal Plans and Plans run by Municipal Authorities



These plots were drawn using the Stata command, binscatter, with 80 bins used for municipal plans and 40 bins used for municipal authority plans. They correspond to the regression results presented in Columns (3) and (6) of Table 3 in which we regress log average benefit on political competition, controlling for log wages, member contributions to the plan, employee-group dummies, socio-economic controls (the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation), along with dummy variables for the class of municipality, and county and year fixed effects.

Figure 3: Effects of Political Competition on Benefit Levels for Municipal Plans that differ by Voter Awareness



These plots were drawn using the Stata command, binscatter, with 70 bins used for both sub-samples of municipal plans. They correspond to the regression results presented in Columns (3) and (6) of Table 11 in which we regress log average benefit on political competition, controlling for log wages, member contributions to the plan, employee-group dummies, socio-economic controls (the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation), along with dummy variables for the class of municipality, and county and year fixed effects.

Table 1: Summary Statistics

Variable	Units	Mean	Median	Standard deviation	Minimum	Maximum
Pension plan characteristics						
For DB municipal plans:						
Average annual pension	In dollars	16,111	14,342	9,988	1,692	38,544
Normal costs	As a percent of payroll	12.53	12.18	4.71	3.76	23.05
Ratio of benefits to wages	As a fraction	0.32	0.31	0.16	0.022	1.38
For DB plans run by municipal authorities:						
Average annual pension	In dollars	12,355	9,958	8,254	1,692	38,544
Normal costs	As a percent of payroll	9.93	9.47	4.03	3.76	23.05
Ratio of benefits to wages	As a fraction	0.26	0.23	0.15	0.025	1.08
For DC plans run by municipalities:						
Employer contribution rate	As a percent of payroll	7.93	7.72	3.30	2.19	15.50
For DC plans run by municipal authorities:						
Employer contribution rate	As a percent of payroll	7.74	7.00	3.45	2.19	15.50
Plan-level controls						
Coverage in Social Security	0 = No, 1 = Yes	0.771	1	0.420	0	1
Employees covered by collective bargaining	In percent terms	34.58	33.33	33.10	0	100
Controls at the municipal level						
Per capita income	In dollars	25,821	24,171	7,991	14,416	46,643
Taxes spent on debt servicing	In percent terms	19.19	22.20	11.60	0.00	93.12
Unemployment rate	In percent terms	6.99	6.35	2.98	2.08	14.65
Households that are owner-occupied	In percent terms	69.51	70.31	14.35	44.43	94.07
Population aged 65 or older	In percent terms	16.92	16.85	4.23	8.60	28.31
Income inequality	In absolute terms	1.26	1.25	0.10	1.06	1.50
Ethnic fragmentation	In absolute terms	1588	1129	1336	0	4753
Political variables						
Democratic vote share	As a fraction	0.477	0.467	0.133	0.139	0.892
Political Competition	As defined in text	-0.112	-0.103	0.075	-0.392	-0.000

Summary statistics for the dependent variables, average benefits per retiree, normal costs, and ratio of benefits to wages are based on biennial data from 2003–2013 provided by the Pennsylvania PERC. Data on Social Security coverage also come from the Pennsylvania PERC. The percentage of employees organized under collective bargaining is for 1982 from the Employment Summary Statistics of Census of Governments. Per capita income, unemployment rate, percentage of households that are owner-occupied, percentage of the population aged 65 or older, income inequality, and ethnic fragmentation are from the Census and the ACS as described in footnote 20. Following Alesina, Baqir, and Easterly (2000), income inequality is defined as the ratio of mean household income to median household income and ethnic fragmentation is defined as $10,000 - \text{sum of squares of percentages of the population from each race}$. Taxes spent on debt servicing is based on annual data from 2003–2013 from the Pennsylvania DCED. All of these variables have been winsorized at the 2.5% and 97.5% levels. Lastly, the political variables, average Democratic vote share and measures of political competition are based on all elections to national and state-level offices held in even-numbered years and are constructed using successive issues of the Pennsylvania Manual. The precise election years used depend on the lag structure employed, as described in the text.

Table 2: Effect of Political Competition on Log of Average Benefits using the Absolute Difference of the Democratic Vote Share from 50% as the Measure of Political Competition

	(1)	(2)	(3)	(4)	(5)	(6)
	Coefficient for municipal plans		Coefficient for plans run by municipal authorities			
Political Competition	0.617*** (0.155)	0.452*** (0.158)	0.417** (0.167)	0.0277 (0.280)	0.0304 (0.291)	0.0371 (0.315)
County and year FE	✓	✓	✓	✓	✓	✓
Employee-group dummies	✓	✓	✓	✓	✓	✓
Social Security coverage and coverage under collective bargaining		✓	✓		✓	✓
Municipal demographic and fiscal controls			✓			✓
Observations	9500	9500	9500	9500	9500	9500
R ²	0.44	0.47	0.50	0.44	0.47	0.50

Robust standard errors are clustered at the county level and are in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.

Regressions estimated on all defined benefit pension plans from Pennsylvania for the period 2003–2013. The dependent variable is the log of the average benefit received by all retirees (including Deferred Retirement Option Plan (DROP) beneficiaries but excluding disability, surviving spousal, and surviving child beneficiaries). The measure of political competition used is that defined by BPS (2010), viz. $PC_{mt} = -|0.5 - D_{mt}|$ and has been lagged by 11 years. County and year fixed effects, along with employee-group dummies are included in all specifications. Plan-specific controls included in columns (2), (3), (5), and (6) are a dummy variable for Social Security coverage and the fraction of employees organized under collective bargaining. Municipal demographic and fiscal controls included in columns (3) and (6) are the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation, along with dummy variables for the class of municipality. The dependent variables and all control variables have been winsorized at the 2.5% and 97.5% levels.

Table 3: Effect of Political Competition on Log of Average Benefits using the Absolute Difference of the Democratic Vote Share from 50% as the Measure of Political Competition (Baseline Specifications)

	(1)	(2)	(3)	(4)	(5)	(6)
	Coefficient for municipal plans			Coefficient for plans run by municipal authorities		
Political Competition	0.417*** (0.129)	0.353*** (0.130)	0.351** (0.139)	0.0886 (0.249)	0.0892 (0.262)	0.0475 (0.298)
Log of wages and employee contributions to pensions	✓	✓	✓	✓	✓	✓
County and year FE	✓	✓	✓	✓	✓	✓
Employee-group dummies	✓	✓	✓	✓	✓	✓
Social Security coverage and coverage under collective bargaining		✓	✓		✓	✓
Municipal demographic and fiscal controls			✓			✓
Observations	9500	9500	9500	9500	9500	9500
R ²	0.53	0.54	0.54	0.53	0.54	0.54

Robust standard errors are clustered at the county level and are in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.

Regressions estimated on all defined benefit pension plans from Pennsylvania for the period 2003–2013. The dependent variable is the log of the average benefit received by all retirees (including Deferred Retirement Option Plan (DROP) beneficiaries but excluding disability, surviving spousal, and surviving child beneficiaries). The measure of political competition used is that defined by BPS (2010), viz. $PC_{mt} = -|0.5 - D_{mt}|$ and has been lagged by 11 years. County and year fixed effects, employee-group dummies, log of wages, and employee contributions to the pension plan (as a percent of payroll) are included in all specifications. Plan-specific controls included in columns (2), (3), (5), and (6) are a dummy variable for Social Security coverage and the fraction of employees organized under collective bargaining. Municipal demographic and fiscal controls included in columns (3) and (6) are the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation, along with dummy variables for the class of municipality. The dependent variables and all control variables have been winsorized at the 2.5% and 97.5% levels.

Table 4: Effect of Political Competition on Normal Costs

	(1)	(2)	(3)	(4)	(5)	(6)
	Coefficient for municipal plans			Coefficient for plans run by municipal authorities		
Panel A: Normal costs unadjusted (as-is)						
Political Competition	2.064** (0.956)	1.946* (0.979)	1.818* (0.998)	0.0886 (0.249)	0.0892 (0.262)	0.0475 (0.298)
Observations	12226	12226	12226	12226	12226	12226
R ²	0.43	0.43	0.43	0.43	0.43	0.43
Panel B: Normal costs recalibrated assuming a 7 percent discount rate and duration of liabilities = 11 years						
Political Competition	2.891*** (0.912)	2.459*** (0.893)	2.262** (0.936)	-1.058 (1.989)	-1.099 (2.018)	-1.234 (1.771)
Observations	12218	12218	12218	12218	12218	12218
R ²	0.48	0.49	0.50	0.48	0.49	0.50
Panel C: Normal costs recalibrated assuming a 7 percent discount rate and duration of liabilities = 13 years						
Political Competition	3.041*** (0.917)	2.553*** (0.886)	2.345** (0.932)	-1.093 (1.967)	-1.140 (2.015)	-1.286 (1.768)
Observations	12218	12218	12218	12218	12218	12218
R ²	0.49	0.50	0.51	0.49	0.50	0.51
Panel D: Normal costs recalibrated assuming a 7 percent discount rate and duration of liabilities = 15 years						
Political Competition	3.189*** (0.925)	2.645*** (0.881)	2.428** (0.931)	-1.128 (1.950)	-1.180 (2.016)	-1.337 (1.768)
Observations	12218	12218	12218	12218	12218	12218
R ²	0.50	0.51	0.52	0.50	0.51	0.52
County and year FE	✓	✓	✓	✓	✓	✓
Employee-group dummies	✓	✓	✓	✓	✓	✓
Social Security coverage and coverage under collective bargaining		✓	✓		✓	✓
Municipal demographic and fiscal controls			✓			✓

Robust standard errors are clustered at the county level and are in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.

Regressions estimated on all defined benefit pension plans from Pennsylvania for the period 2003–2013. The dependent variable in Panel A is the normal costs reported by the plan “as-is”. Subsequent panels adjust the reported normal costs with respect to a discount rate of 7 percent, corresponding to the median across all municipal pension plans in the sample following the steps laid out in footnote 34. The weighted average duration of liabilities assumed in the recalibration exercise are 11 years, 13 years, and 15 years in Panels B, C, and D respectively. The measure of political competition used is that defined by BPS (2010), viz. $PC_{mt} = -|0.5 - D_{mt}|$ and has been lagged by 11 years. County and year fixed effects and employee-group dummies are included in all specifications. Plan-specific controls included in columns (2), (3), (5), and (6) are a dummy variable for Social Security coverage and the fraction of employees organized under collective bargaining. Municipal demographic and fiscal controls included in columns (3) and (6) are the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation, along with dummy variables for the class of municipality. The dependent variables and all control variables have been winsorized at the 2.5% and 97.5% levels.

Table 5: Effect of Political Competition on Ratio of Benefits to Wages and Log of Ratio of Benefits

	(1)	(2)	(3)	(4)	(5)	(6)
	Coefficient for municipal plans			Coefficient for plans run by municipal authorities		
Panel A: Dependent variable: Ratio of benefits to wages						
Political Competition	0.0847** (0.0375)	0.0743* (0.0381)	0.0766* (0.0384)	-0.0371 (0.0686)	-0.0339 (0.0693)	-0.0383 (0.0720)
R ²	0.29	0.30	0.30	0.29	0.30	0.30
Panel B: Dependent variable: Log of Ratio of benefits to wages						
Political Competition	0.423*** (0.131)	0.345*** (0.130)	0.342** (0.136)	0.0849 0.2482	0.0964 0.2607	0.0494 0.2979
R ²	0.28	0.29	0.31	0.28	0.29	0.31
Employee contributions to pensions	✓	✓	✓	✓	✓	✓
County and year FE	✓	✓	✓	✓	✓	✓
Employee-group dummies	✓	✓	✓	✓	✓	✓
Social Security coverage and coverage under collective bargaining		✓	✓		✓	✓
Municipal demographic and fiscal controls						✓
Observations	9500	9500	9500	9500	9500	9500

Robust standard errors are clustered at the county level and are in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.

Regressions estimated on all defined benefit pension plans from Pennsylvania for the period 2003–2013. The dependent variable in Panel A is the ratio of the log of the average benefits received by retirees to the log of wages received by active members, while in Panel B, the dependent variable is the log of that ratio. The measure of political competition used is that defined by BPS (2010), viz. $PC_{mt} = -|0.5 - D_{mt}|$ and has been lagged by 11 years. County and year fixed effects, employee-group dummies, and employee contributions to the pension plan (as a percent of payroll) are included in all specifications. Plan-specific controls included in columns (2), (3), (5), and (6) are a dummy variable for Social Security coverage and the fraction of employees organized under collective bargaining. Municipal demographic and fiscal controls included in columns (3) and (6) are the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation, along with dummy variables for the class of municipality. The dependent variables and all control variables have been winsorized at the 2.5% and 97.5% levels.

Table 6: Effect of Political Competition on Log of Average Benefits using Alternative Measures of Political Competition

	(1)	(2)	(3)	(4)	(5)	(6)
	Coefficient for municipal plans			Coefficient for plans run by municipal authorities		
Panel A: Measure of political competition: Standard deviation of Democratic vote share						
Coefficient on standard deviation of Dem. vote share	1.102** (0.517)	1.069** (0.504)	1.197** (0.454)	-1.611 (1.377)	-1.706 (1.304)	-1.695 (1.528)
R ²	0.53	0.54	0.54	0.53	0.54	0.54
Panel B: Measure of political competition: Democratic vote share - linear and squared						
Coefficient on Democratic vote share	2.076*** (0.436)	1.662*** (0.440)	1.621*** (0.446)	0.589 (1.062)	0.316 (1.125)	0.209 (1.272)
Coefficient on Democratic vote share squared	-1.770*** (0.428)	-1.543*** (0.442)	-1.527*** (0.479)	-0.184 (0.986)	-0.118 (1.026)	0.131 (1.177)
Democratic vote share at which benefits are maximized	58.6%	53.9%	53.1%	159.9%	134.1%	Undefined
R ²	0.48	0.49	0.50	0.48	0.49	0.50
Panel C: Defining the Democratic vote share by including votes received by third parties & recalculating BPS (2010) measure of political competition						
Political Competition	0.472*** (0.122)	0.359*** (0.122)	0.336** (0.128)	0.131 (0.252)	0.077 (0.270)	0.047 (0.293)
R ²	0.49	0.50	0.51	0.49	0.50	0.51
Observations	9500	9500	9500	9500	9500	9500
Log of wages and employee contributions to pensions	✓	✓	✓	✓	✓	✓
County and year FE	✓	✓	✓	✓	✓	✓
Employee-group dummies	✓	✓	✓	✓	✓	✓
Social Security coverage and coverage under collective bargaining	✓	✓	✓	✓	✓	✓
Municipal demographic and fiscal controls			✓			✓

Robust standard errors are clustered at the county level and are in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.

Regressions estimated on all defined benefit pension plans from Pennsylvania for the period 2003–2013. The dependent variable is the log of the average benefit received by all retirees (including Deferred Retirement Option Plan (DROP) beneficiaries but excluding disability, surviving spousal, and surviving child beneficiaries). The measure of political competition used in Panel A is the standard deviation of Democratic vote share for all elections held to national and state offices within a given year. In Panel B, we use a non-parametric approach including a linear and squared term for the Democratic vote share. In Panel C, we redefine the average Democratic vote share as Votes cast for Democrats/ (Votes cast for Democrats + Votes cast for Republicans + Votes cast for third-party candidates) and recompute the BPS (2010) measure of political competition, viz. $PC_{mt} = -[0.5 - D_{mt}]$. All measures of political competition have been lagged by 11 years. County and year fixed effects, employee-group dummies, log of wages, and employee contributions to the pension plan (as a percent of payroll) are included in all specifications. Plan-specific controls included in columns (2), (3), (5), and (6) are a dummy variable for Social Security coverage and the fraction of employees organized under collective bargaining. Municipal demographic and fiscal controls included in columns (3) and (6) are the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation, along with dummy variables for the class of municipality. The dependent variables and all control variables have been winsorized at the 2.5% and 97.5% levels.

Table 7: Robustness Checks for the Effect of Political Competition on Log of Average Benefits

	(1)	(2)	(3)	(4)	(5)	(6)
	Coefficient for municipal plans			Coefficient for plans run by municipal authorities		
Base Specification	0.417*** (0.129)	0.353*** (0.130)	0.351** (0.139)	0.089 (0.249)	0.089 (0.262)	0.048 (0.298)
RC1: Controlling for average Democratic vote share	0.413*** (0.126)	0.354*** (0.129)	0.351** (0.140)	0.111 (0.275)	0.099 (0.277)	0.055 (0.320)
RC2: Using vote shares based solely on Presidential elections	0.362** (0.163)	0.391** (0.163)	0.425** (0.188)	-0.162 (0.365)	-0.074 (0.395)	-0.141 (0.423)
RC3: Introducing county-specific linear time trends	0.470*** (0.142)	0.401*** (0.145)	0.402** (0.153)	0.168 (0.269)	0.164 (0.280)	0.130 (0.312)
RC4: Introducing county-by-year fixed effects	0.500*** (0.161)	0.426** (0.164)	0.430** (0.172)	0.189 (0.278)	0.178 (0.292)	0.148 (0.331)
RC5: Long differences (only including data for years 2003 and 2013)						
(i) County fixed effects	0.293 (0.190)	0.364* (0.190)	0.385** (0.188)	-0.138 (0.368)	0.017 (0.398)	-0.082 (0.426)
(ii) Municipality fixed effects	0.306* (0.170)	0.314* (0.172)	0.270 (0.199)	0.215 (0.416)	0.206 (0.388)	0.091 (0.404)
RC6: Only including municipalities that have at least one authority	0.542*** (0.146)	0.442*** (0.150)	0.314*** (0.149)	0.135 (0.278)	0.133 (0.299)	0.082 (0.353)
Log of wages and employee contributions to pensions	✓	✓	✓	✓	✓	✓
County and year FE	✓	✓	✓	✓	✓	✓
Employee-group dummies	✓	✓	✓	✓	✓	✓
Social Security coverage and coverage under collective bargaining						
Municipal demographic and fiscal controls						

Robust standard errors are clustered at the county level and are in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Regressions estimated on all defined benefit pension plans from Pennsylvania for the period 2003–2013, unless otherwise noted. The number of observations varies based on specification and equals 9500 for the base specification, RC1, RC2, RC3, and RC4, 3041 for RC5, and 4082 for RC6. The dependent variable is the log of the average benefit received by all retirees (including Deferred Retirement Option Plan (DROP) beneficiaries but excluding disability, surviving spousal, and surviving child beneficiaries). The measure of political competition used is that defined by BPS (2010), viz. $PC_{mt} = -|0.5 - D_{mt}|$ and has been lagged by 11 years. County and year fixed effects, employee-group dummies, log of wages, and employee contributions to the pension plan (as a percent of payroll) are included in all specifications, unless otherwise noted. Plan-specific controls included in columns (2), (3), (5), and (6) are a dummy variable for Social Security coverage and the fraction of employees organized under collective bargaining. Municipal demographic and fiscal controls included in columns (3) and (6) are the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation, along with dummy variables for the class of municipality. The dependent variables and all control variables have been winsorized at the 2.5% and 97.5% levels.

Table 8: Effect of Political Competition on Log of Average Benefits using Alternative Lags

	(1)	(2)	(3)	(4)	(5)	(6)
	Coefficient for municipal plans		Coefficient for plans run by municipal authorities			
Panel A: Assuming no lag (political competition affects benefits contemporaneously)						
Political Competition	0.345** (0.143)	0.405*** (0.143)	0.474** (0.182)	-0.437 (0.274)	-0.289 (0.292)	-0.298 (0.377)
Panel B: Assuming a lag of 1 year between political competition and benefit levels						
Political Competition	0.357** (0.154)	0.427*** (0.155)	0.502** (0.200)	-0.454 (0.345)	-0.295 (0.377)	-0.317 (0.455)
Panel C: Assuming a lag of 2 years between political competition and benefit levels						
Political Competition	0.317** (0.132)	0.363*** (0.136)	0.404** (0.169)	-0.344 (0.300)	-0.217 (0.329)	-0.210 (0.385)
Panel D: Assuming a lag of 3 years between political competition and benefit levels						
Political Competition	0.331*** (0.123)	0.380*** (0.127)	0.417** (0.163)	-0.407 (0.318)	-0.284 (0.351)	-0.283 (0.395)
Panel E: Assuming a lag of 13 years between political competition and benefit levels						
Political Competition	0.322*** (0.113)	0.279** (0.114)	0.281** (0.113)	0.070 (0.282)	0.069 (0.280)	-0.017 (0.274)
Panel F: Assuming a lag of 15 years between political competition and benefit levels						
Political Competition	0.247* (0.130)	0.205 (0.131)	0.214* (0.127)	-0.033 (0.314)	-0.038 (0.312)	-0.126 (0.302)
Observations	9500	9500	9500	9500	9500	9500
R ²	0.53	0.54	0.54	0.53	0.54	0.54
County and year FE	✓	✓	✓	✓	✓	✓
Employee-group dummies	✓	✓	✓	✓	✓	✓
Social Security coverage and coverage under collective bargaining		✓	✓		✓	✓
Municipal demographic and fiscal controls			✓			✓

Robust standard errors are clustered at the county level and are in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.

Regressions estimated on all defined benefit pension plans from Pennsylvania for the period 2003–2013. The dependent variable is the log of the average benefit received by all retirees (including Deferred Retirement Option Plan (DROP) beneficiaries but excluding disability, surviving spousal, and surviving child beneficiaries). The measure of political competition used is that defined by BPS (2010), viz. $PC_{mt} = -|0.5 - D_{mt}|$. County and year fixed effects, employee-group dummies, log of wages, and employee contributions to the pension plan (as a percent of payroll) are included in all specifications. Plan-specific controls included in columns (2), (3), (5), and (6) are a dummy variable for Social Security coverage and the fraction of employees organized under collective bargaining. Municipal demographic and fiscal controls included in columns (3) and (6) are the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation, along with dummy variables for the class of municipality. The dependent variables and all control variables have been winsorized at the 2.5% and 97.5% levels.

Table 9: Effect of Political Competition on Employer Contribution Rate of Defined Contribution (DC) plans

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: Employer Contribution Rate to the DC plan (As a percentage of payroll)						
	Coefficient for municipal plans			Coefficient for plans run by municipal authorities		
Baseline Specification	-1.060 (0.970)	-0.870 (1.016)	-1.225 (1.003)	-2.799 (2.158)	-2.799 (2.158)	-3.368 (2.301)
RC1: Controlling for average Democratic vote share	-0.604 (1.115)	-0.536 (1.154)	-0.661 (1.109)	-3.263 (2.283)	-3.129 (2.267)	-3.665 (2.404)
RC2: Using vote shares based solely on Presidential elections	-1.487 (1.485)	-1.486 (1.515)	-1.311 (1.392)	-1.522 (3.137)	-1.412 (3.036)	0.324 (2.943)
RC3: Introducing county-specific linear time trends	-1.215 (1.098)	-0.989 (1.156)	-1.430 (1.136)	-3.022 (2.265)	-2.980 (2.264)	-3.626 (2.373)
RC4: Introducing county-by-year fixed effects	-1.535 (1.287)	-1.270 (1.354)	-1.836 (1.315)	-3.659 (2.548)	-3.596 (2.543)	-4.359 (2.655)
RC5: Long differences (only including data for years 2003 and 2013)						
(i) County fixed effects	0.872 (1.370)	0.774 (1.346)	1.000 (1.263)	-5.158* (3.037)	-5.097* (2.890)	-4.199 (2.767)
(ii) Municipality fixed effects	0.783 (0.774)	0.804 (0.800)	1.146 (0.986)	-1.383 (1.697)	-1.385 (1.686)	-1.465 (1.720)
RC6: Only including municipalities that have at least one authority	-2.530 (2.227)	-2.436 (1.997)	-3.519 (2.181)	-0.746 (1.974)	-1.047 (1.909)	-1.789 (2.002)
County and year FE	✓	✓	✓	✓	✓	✓
Employee-group dummies	✓	✓	✓	✓	✓	✓
Social Security coverage and coverage under collective bargaining		✓	✓	✓	✓	✓
Municipal demographic and fiscal controls			✓			✓

Robust standard errors are clustered at the county level and are in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Regressions estimated on all defined contribution pension plans from Pennsylvania for the period 2003–2013. The number of observations varies based on specification and equals 4474 for the base specification, RC1, RC2, RC3, and RC4, 1503 for RC5, and 1847 for RC6. The dependent variable is the employer contribution rate to the defined contribution plan, expressed as a percentage of payroll. The measure of political competition used is that defined by BPS (2010), viz. $PC_{mt} = -|0.5 - D_{mt}|$ and has been lagged by 11 years. County and year fixed effects and employee-group dummies are included in all specifications. Plan-specific controls included in columns (2), (3), (5), and (6) are a dummy variable for Social Security coverage and the fraction of employees organized under collective bargaining. Municipal demographic and fiscal controls included in columns (3) and (6) are the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation, along with dummy variables for the class of municipality. The dependent variables and all control variables have been winsorized at the 2.5% and 97.5% levels.

Table 10: Effect of Political Competition on Employer Contribution Rate of Defined Contribution (DC) plans using Alternative Lags

	(1)	(2)	(3)	(4)	(5)	(6)
	Coefficient for municipal plans			Coefficient for plans run by municipal authorities		
Panel A: Assuming no lag, i.e. political competition affects employer contribution rate contemporaneously						
Political Competition	-0.562 (1.349)	-0.421 (1.408)	-0.127 (1.211)	-3.513 (2.572)	-3.476 (2.532)	-0.935 (2.582)
Panel B: Assuming a lag of 1 year between political competition and employer contribution rate						
Political Competition	-0.555 (1.554)	-0.412 (1.610)	-0.0987 (1.384)	-3.688 (3.094)	-3.676 (3.044)	-1.134 (3.165)
Panel C: Assuming a lag of 2 years between political competition and employer contribution rate						
Political Competition	-0.613 (1.322)	-0.441 (1.371)	-0.317 (1.197)	-3.085 (2.592)	-3.064 (2.555)	-1.169 (2.557)
Panel D: Assuming a lag of 3 years between political competition and employer contribution rate						
Political Competition	-0.945 (1.461)	-0.762 (1.488)	-0.681 (1.303)	-2.681 (2.485)	-2.674 (2.470)	-0.888 (2.446)
Panel E: Assuming a lag of 13 years between political competition and employer contribution rate						
Political Competition	-0.797 (0.943)	-0.717 (0.996)	-1.077 (0.994)	-2.130 (2.057)	-2.026 (2.029)	-2.574 (2.050)
Panel F: Assuming a lag of 15 years between political competition and employer contribution rate						
Political Competition	-1.296 (1.083)	-1.261 (1.140)	-1.545 (1.075)	-2.179 (2.438)	-2.022 (2.396)	-1.966 (2.282)
R ²	0.16	0.17	0.19	0.16	0.17	0.19
County and year FE	✓	✓	✓	✓	✓	✓
Employee-group dummies	✓	✓	✓	✓	✓	✓
Social Security coverage and coverage under collective bargaining		✓	✓		✓	✓
Municipal demographic and fiscal controls			✓			✓

Robust standard errors are clustered at the county level and are in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Regressions estimated on all defined contribution pension plans from Pennsylvania for the period 2003–2013. The number of observations varies based on specification and equals 4475 for the panels A, B, C, and D, 4473 for panel E, and 4472 for Panel F. The dependent variable is the employer contribution rate to the defined contribution plan, expressed as a percentage of payroll. The measure of political competition used is that defined by BPS (2010), viz. $PC_{mt} = -[0.5 - D_{mt}]$. County and year fixed effects and employee-group dummies are included in all specifications. Plan-specific controls included in columns (2), (3), (5), and (6) are a dummy variable for Social Security coverage and the fraction of employees organized under collective bargaining. Municipal demographic and fiscal controls included in columns (3) and (6) are the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation, along with dummy variables for the class of municipality. The dependent variables and all control variables have been winsorized at the 2.5% and 97.5% levels.

Table 11: Sample-split test examining the Effects of Political Competition on Plan Generosity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Newspaper penetration <= Median			Newspaper penetration > Median			p-value coefficients differ across samples		
Panel A: Effect of Political Competition on Log of Average Benefits									
Political Competition	0.678*** (0.196)	0.617*** (0.191)	0.643*** (0.193)	-0.0171 (0.155)	-0.0789 (0.157)	-0.102 (0.153)	0.0036	0.0025	0.0013
Panel B: Effect of Political Competition on Normal costs (unadjusted, "as-is")									
Political Competition	2.388* (1.261)	2.233* (1.231)	2.068* (1.197)	0.549 (1.471)	0.482 (1.493)	-0.00538 (1.338)	0.301	0.316	0.211
Panel C: Effect of Political Competition on Ratio of Benefits to Wages									
Political Competition	0.154*** (0.0467)	0.140*** (0.0462)	0.146*** (0.0430)	-0.0235 (0.0452)	-0.0265 (0.0453)	-0.0311 (0.0449)	0.0032	0.0053	0.0041
County and year FE	✓	✓	✓	✓	✓	✓			
Employee-group dummies	✓	✓	✓	✓	✓	✓			
Social Security coverage and coverage under collective bargaining		✓	✓		✓	✓			
Municipal demographic and fiscal controls			✓			✓			

Robust standard errors are clustered at the county level and are in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The p-value in columns (7) - (9) is generated from statistical tests which examine whether the coefficient on political competition in columns (1) through (3) differs from corresponding coefficients in columns (4) through (6). Regressions estimated on all municipal defined benefit pension plans from Pennsylvania for the period 2003–2013. The dependent variable in Panel A is the log of the average benefit received by all retirees (including Deferred Retirement Option Plan (DROP) beneficiaries but excluding disability, surviving spousal, and surviving child beneficiaries). The dependent variable in Panels B and C are normal costs (as-is) and the ratio of the log of the average benefits received by retirees to the log of wages received by active members. The measure of political competition used is that defined by BPS (2010), viz. $PC_{mt} = -|0.5 - D_{mt}|$ and has been lagged by 11 years. The sample splits are based on newspaper penetration constructed using circulation counts provided by the Alliance for Audited Media. These data are at the zipcode level and are based on audits of circulations conducted between June 2010 and June 2012. County and year fixed effects and employee-group dummies are included in all specifications in all panels. Log of wages and employee contributions to the pension plan (as a percent of payroll) are included in Panel A while employee contributions to the pension plan (as a percent of payroll) is included in Panel C. Plan-specific controls included in columns (2), (3), (5), and (6) of all panels are a dummy variable for Social Security coverage and the fraction of employees organized under collective bargaining. Municipal demographic and fiscal controls included in columns (3) and (6) of all panels are the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation, along with dummy variables for the class of municipality. The dependent variables and all control variables have been winsorized at the 2.5% and 97.5% levels.

Appendix: Using a matching-type estimator to estimate the effects of political competition on the generosity of pension plans

I lay out the steps followed in constructing an estimate of the effects of political competition inspired by the literature on matching.⁴⁵ In most applications where matching is used we have a binary treatment variable that distinguishes treated and control units. That is different here given that political competition, our key independent variable of interest, is continuous rather than discrete. We can however use a cut-off value of political competition and use that to split the sample of municipal plans into two groups: one with a “low” level of political competition and another with a “high” level of political competition and then examine if benefits are less generous in the first group with a low level of competition. Where the techniques of matching come in are that rather than comparing these groups as-is, we can construct a matched pair by identifying two plans which look “similar” on their underlying municipal characteristics, and yet differ in their competitiveness such that plan 1 belongs to group 1 with levels of political competition lower than the cut-off and its matched pair belongs to group 2 with levels of political competition higher than the cut-off. More specifically, these are the steps I undertake:

1. Compute the average level of political competition for any municipality that offers a DB municipal pension plan at any point during the sample period (2003–2013).
2. Compute the median of this distribution and split plans into two groups using this value. Group 1 includes plans for which the average level of political competition is less than (or equal to) the median (and is characterized as having “low” levels of political competition) while group 2 includes the remaining plans (and is characterized as having “high” levels of political competition).
3. Construct standardized normal variables for the socioeconomic characteristics used in the regressions: the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, and the level of ethnic fragmentation. Doing so is essential for us to compute Euclidean-distances between any two plans using these characteristics.
4. Calculate distances between all possible pairs of plans in groups 1 and 2 taking care to only match plans that pertain to the same year and the same employee group. The distance measure used is the sum of squares of differences in the values of these characteristics between a plan in group 1 and that in group 2. Retain the match with the lowest distance and discard all remaining matches. This is akin to nearest neighbor matching with replacement.
5. Construct variables which measure the difference in the level of benefits and the level of political

⁴⁵Matching has been used extensively in evaluation of the effectiveness of active labor market programs (e.g. LaLonde (1986); Heckman and Hotz (1989); Dehejia and Wahba (1999, 2002) and Smith and Todd (2005)).

competition between the matched plans in the two groups. Regress the difference in the level of benefits on the difference in the level of political competition, controlling for year and employee-group fixed effects. Augment the regression progressively with more controls, such as the level of wages in the two municipalities, the member contributions to the plans, and the socio-economic characteristics of the municipalities to which these plans belong.

6. The same set of steps laid out can be replicated for municipal authorities in order to examine the effects of political competition on the generosity of plans run by municipal authorities in this matching-inspired framework.

Table A.1 presents the results we obtain following the steps described above. Columns (1) through (4) present the results for municipal plans, with columns (5) through (8) presenting the results for municipal authorities. We do not use regression weights in Panel A, while in Panel B the inverse of the Euclidean-distance between the matched plans serves as a weight.

[Table A.1 about here.]

As we can see, the estimated effects of political competition on municipal plans are positive and statistically significant at the 5 percent level (or better) across all specifications. In the unweighted regressions, the coefficients on political competition are clustered in a range from 0.352–0.446, very similar to the range of 0.351–0.417 we report in our baseline results in Table 3. Considering a one standard deviation change in the independent variable – the difference in the level of political competition between a plan in group 1 and its matched pair in group 2 – the estimated effect of an increase in political competition lies between 2.9–3.7 percent.⁴⁶ When we use weighted regressions, the coefficients are larger in magnitude ranging from 0.512–0.598 and the estimated effect of an increase in political competition by one standard deviation averages 4.6 percent.

The identical exercise when conducted for plans run by municipal authorities confirms that political competition does not have any effect on the generosity of such plans. The coefficients are far from statistical significance and in fact, change signs depending on the controls introduced. Thus, on the basis of the results presented in Table A.1, we can be more confident in our conclusions that an increase in political competition is associated with an increase in the generosity of municipal defined benefit plans, but that does not apply to plans run by municipal authorities.

⁴⁶For example, using the coefficient in col. (1) of 0.446 and multiplying that with 0.0838 corresponding to the standard deviation of the difference in political competition between matched plans, we get 3.74%.

Table A.1: Effects of Political Competition on Plan Benefits for Municipalities and for Municipal Authorities using Matching-type estimator

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Coefficient for Municipal Plans				Coefficient for plans run by municipal authorities			
Panel A: Unweighted regressions								
Political Competition	0.446** (0.185)	0.421** (0.161)	0.365** (0.159)	0.352** (0.161)	0.607 (0.960)	0.105 (0.741)	0.149 (0.718)	-0.0342 (0.577)
Panel B: Weighted regressions where weight = inverse of Euclidean-distance between matched pairs								
Political Competition	0.553*** (0.189)	0.598*** (0.175)	0.525*** (0.166)	0.512*** (0.167)	0.639 (0.785)	0.0617 (0.537)	0.0334 (0.532)	-0.162 (0.491)
Number of observations	4182	4182	4182	4182	760	760	760	760
County and Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Employee-group dummies	✓	✓	✓	✓	✓	✓	✓	✓
Wages and employee contributions of matched plans		✓	✓	✓	✓	✓	✓	✓
Social Security coverage and coverage under collective bargaining for matched plans			✓	✓			✓	✓
Municipal demographic and fiscal controls of matched municipalities				✓				✓

Robust standard errors are clustered at the county level and are in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Regressions estimated on all defined benefit pension plans from Pennsylvania for the period 2003–2013. Columns (1)–(4) pertain to DB plans offered by municipalities and those in columns (5)–(8) pertain to DB plans offered by municipal authorities. The dependent variable is the log of the average benefit received by all retirees (including Deferred Retirement Option Plan (DROP) beneficiaries but excluding disability, surviving spousal, and surviving child beneficiaries). The measure of political competition used is that defined by BPS (2010), viz. $PC_{mt} = -|0.5 - D_{mt}|$ and has been lagged by 11 years. County and year fixed effects, and employee-group dummies are included in all specifications. Columns (2)–(4) and (6)–(8) include the log of wages and member contributions for both plans – those in Group 1 (with “low” political competition) and its matched pair in Group 2 (with “high” political competition). Plan-specific controls included in columns (3), (4), (7) and (8) are a dummy variable for Social Security coverage and the fraction of employees organized under collective bargaining for both plans. Municipal demographic and fiscal controls included in columns (4) and (8) are the log of per capita income, the fraction of tax revenues spent on debt service, the unemployment rate, the percentage of households that are owner-occupied, the percentage of population aged 65 or older, the level of income inequality, the level of ethnic fragmentation, and the class of municipality for both municipalities. The dependent variable and all control variables have been winsorized at the 2.5% and 97.5% levels.