Class Context and Pension Response to Demographic Structure in Advanced Industrial Democracies*

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This paper readdresses debates over the competing influence of class power and size of the aged population on pension spending by considering how the corporatist/pluralist dimension of interest representation shapes the effects of age and class. Corporatism, taken as the degree to which officially-designated representatives of class groups are integrated within and organized by the state for mediation in national policy formation, provides the context in which age and class mobilization may influence pension spending. After measuring the degree of corporatism for 18 advanced industrial democracies, we estimate pooled time-series cross-section models for the period 1959-1980 in which dynamic determinants of pension spending vary with corporatist context. The results support the theoretical predictions that (1) the positive effects of age structure on pension spending are diminished by corporatism (and increased with pluralism) and (2) the effect of class variables such as partisan party rule and business profits are increased by corporatism (and decreased by pluralism). This suggests theoretical integration of diverse explanations of pension spending by specifying the context in which each best applies.

A long and contentious literature on the welfare state has debated the relative influence of class and demographic structures on public pension and social welfare spending in the advanced industrial democracies. There has been a distinct tendency to pit competing theories or variables against one another, implying that the success of one view implies the failure of the other. In this paper we pursue a different strategy, identifying the conditions under which class and demography influence pension spending. Some contexts may be more conducive to interest mobilization along class lines, others to mobilization along age lines. This would be consistent with recent work indicating that whether and how classes become institutionally formed and mobilized is at least partially contingent on relevant policy-making structures and characteristics of national politics (Przeworski 1985; Griffin, O'Connell and McCammon 1989; Stryker 1990). The task is to identify policy-making contexts that shape the political expression of interests rather than to claim the superiority of one across all contexts.

One strategy to integrate competing perspectives is to examine how corporatist structures that represent classes in policy-making and that organize class conflict around that policy-making shape the process of pension spending. Corporatism intertwines class actors and state managers in ways that likely shape the expression and efficacy of both class and age demands. Since the structures themselves have emerged as relatively stable institutions in advanced industrial democracies during the post-war period, they do not covary over time with spending and have shown little direct influence on spending (Friedland and Sanders 1986; Pampel and Williamson 1988). However, in combination with dynamic variation in age structure or class strength the stable structures may help explain public spending. The class character of national policy-making structures—the degree to which they organize, represent, and respond

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to classes in policy making—as well as the size and strength of labor and capital may thus need to be separated analytically and studied empirically along with demographic structure.

To test these arguments, we present models of pension spending for 18 advanced industrial nations over the period from 1959 to 1980. While the interactive arguments we present have broad applicability to a variety of public programs, pensions deserve special scrutiny because the debates over age and class have been especially focused in this area. Demands of older citizens for current support and of workers and union members for future protection (i.e., in the form of deferred wages) offer plausible explanations for the remarkable growth of public old age pensions in recent years. Pensions comprise the largest social insurance program in these nations, having increased even during periods of fiscal problems and general welfare retrenchment. It is thus important to understand the macro-level age and class sources of such spending patterns. Moreover, given that governments often project pensions primarily on the basis of projected age structure, the study of how such relationships may vary across contexts becomes especially useful.

Prior Research

Competing age and class perspectives have provided a means to organize a diverse and sometimes fragmented literature on the welfare state. First, most studies of the welfare state remain wedded to a class resources explanation of variation in public spending. Class theories locate welfare state outcomes more precisely in the power resources of labor and capital (Korpi 1983, 1989). Members of the working class are viewed as primary proponents and supporters of the welfare state; their influence on policy stems from centralized union organizations that mobilize political support for social democratic and socialist parties (Shalev 1983). While workers lack economic power relative to the numerically smaller capitalist class, their numerical size may translate into political power resources in democratic parliamentary politics (see Hicks and Swank 1984; Hewitt 1977; Esping-Andersen 1985b; Friedland and Sanders 1986). Some argue that leftist party rule implements labor demands for public provisions that lessen vulnerability to labor market change (Stephens 1979); others argue that rightist party rule blocks such provisions, suggesting center and religious parties join leftist parties in support of the welfare state (Castles 1982; Esping-Andersen 1985a).

Support for these class arguments, however, is far from complete. Huge increases in pensions among nations with limited leftist rule (e.g., Netherlands) and/or weak unions (e.g., France) suggest that the effects of class and class-party rule are more complex than these theories suggest. Esping-Andersen (1989) discounts the supposed one-to-one correspondence between percent union membership or years of leftist rule and welfare output as failing to capture the contextual environment in which class may interactively shape public policy. Indeed, the class character of this institutional context may be treated as shaping and specifying the demands of variable interest groups (Hicks, Swank, and Ambuhl 1989).

Second, research emphasizing age structure has developed in some ways independently of and in opposition to class-based research. Wilensky’s (1975) classic study found that proportion of the population age 65 and over had strong effects on social insurance spending, in part because pension and medical care spending directed most often at the aged dominate other programs for unemployment or social assistance. Pursuing a functionalist argument, Wilensky suggested that governments respond more or less automatically to economic change and to needs for support of an increasingly large nonworking population. More recently, Pampel and Williamson (1985, 1988, 1989) have offered a political interpretation of demographic influences on this social welfare spending. They argue that the effect of percent aged reflects the potential political influence of an increasingly large, politically active group with common interests in higher benefits. Moreover, the support for pensions—as opposed to say social
assistance or unemployment benefits—comes from middle-class persons who provide the legitimacy and political influence needed for higher spending. At the same time, the effects of class appear smaller than suggested in earlier studies when thorough controls for demographic structures and political outlets of expression are used.

Still others have adopted viewpoints consistent with arguments for the political impact of the aged. Weaver (1987) shows that funding deficits of public pension systems have grown in nearly all high income nations, not only because of demographic accounting, but also because of policy changes that increase benefits for the aged (Holzman 1988). Preston (1984) notes that the expanded size and political influence of the elderly has contrasted with growing poverty and reduced benefits of children. The rise of age-politics—intermingled with age-based socioeconomic differentials—reflects the importance of demographic change for public policy in general and for pension policy more specifically.

Yet something more than demographic determinism seems needed to understand the variety of public policy responses of high income nations. Several European nations have experienced sharper drops in fertility and mortality and have substantially larger percentages of aged than the United States, but do not exhibit the same age-based patterns of benefit redistribution (Palmer, Smeeding, and Torrey 1988). Concerns with low fertility, gender inequality, and social solidarity all have contributed to attempts in some European nations to direct public benefits to the young as much as to the aged (Kamerman and Kahn 1988). It would appear, then, that policy responses to demographic change show both similarities and dissimilarities across nations (Myles 1984; Furniss 1986).

The failure of either the class or demographic theory to obtain consistent empirical support has led some to a different strategy. The spending response to growth of the aged population and to the changing constellation of class power may be argued to differ depending on the nation-specific institutional context that organizes class and age forces (Pampel and Stryker 1988). Given the variety of forces that influence welfare spending, and the complexity of inter-relationships that exist in real-world processes, a completely specified model can emerge only incrementally. Still, the emergence of certain class-linked structures of organization of interests as relatively stable, institutional features of advanced democracies may account for divergence in spending and suggest a promising approach (Goldthorpe 1984a). When integrated with previous research on age and class, the literature on the effects of institutional context for policy making can move traditional debates onto new ground.

Class Intermediation Structures and Pension Spending

The dimension of national policy-making context in advanced industrial democracies that has received the most attention is the corporatist/pluralist arrangements for class and interest group organization, representation in policy-making, and political mediation. Corporatism (or sometimes neo-corporatism, democratic corporatism, or societal corporatism) is defined as participation in state-sponsored, societal-level negotiation and bargaining over state policy by officially-sanctioned organizational representatives of business and labor (Schmitter 1979). Corporatist arrangements discipline as well as represent class actors (Lehmbruch 1984), giving rise to claims that regulation of labor rank-and-file under corporatist agreements may benefit capital more than labor (Panitch 1980; Griffin, O’Connell, and McCammon 1989). Whatever the distribution of benefits, it is clear that these structures officially recognize, represent, and mediate between classes, thereby (1) reinforcing the class organization of society and

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1. A common complaint concerns the lack of agreement on the definition of corporatism (Grant 1985). The terms used here are meant to distinguish the narrow intermediation definition from broader ones equating corporatism with fascism or state control of business and labor.
institutionally-centralized class bargaining over public policy, and (2) facilitating class compromise over national economic and social policy.

In contrast, pluralism does not involve the state-sanctioned participation of class organizations in public policy-making. Rather, class and other social groups attempt to influence policy by organizing themselves into an unspecified number of nonhierarchical, voluntary, and competitive organizations, none of which is officially sanctioned either for the purposes of constituency building or for national policy-making (Schmitter 1979). Because pluralist pressure groups have goals of varying type and scope, multiple and cross-cutting policy relevant cleavages may develop, with the classes and groups organized by one policy issue being simultaneously disorganized by another (Stryker 1990). Thus, the societal-level bargaining and compromise of classes in the economic arena and the formation of ruling coalitions in the political arena in corporatist nations such as Sweden contrasts with the economic conflict across a variety of industries, regions, and occupations, and with political competition among a bewildering array of specialized interest groups and lobbyists in pluralist nations like the U.S. Between the extremes lie differences of degree in the extent to which class cooperation and interaction exist at the leadership level (Schmitter 1982).

More than an arrangement between private actors, corporatism in essence is a state-sanctioned collaboration (Panitch 1980; Schmitter 1985). Corporatism represents an overlap of state and societal factors and therefore is difficult to classify as a state-based or societal-based force. Both dimensions are involved and neither is reducible to the other. State and class interests seek out one another and over time more formal procedures evolve for negotiation and bargaining (Schmitter 1985). Class representatives gain benefits of legitimacy and monopoly in negotiation: the state gains in its influence over the private sector. The source of state alliance with representatives of capital and labor may stem from late industrial development in which diverse labor and capital interests could more rationally be centralized (Stephens 1979), from small population size and export dependence that makes all groups vulnerable to world-wide business fluctuations unless organized to respond appropriately (Katzenstein 1985), or from the existence of constitutionally-mandated consociational governments that promote political compromise (Lijphart 1984). More important for our argument here is whether or not the state-based process for mediating between conflicting class interests is institutionalized (Shalev 1983).

The result of structural mechanisms for class compromise has been the formation of consensus around policy goals in corporatist nations. The process over time seems to yield trade-offs in which capital gains profit-making economic growth and labor quiescence in return for providing full employment and countenancing an increased "social wage" for labor (Cameron 1984). Corporatism thus enhances state capacity for welfare effort by building institutional mechanisms and a policy-making culture promoting consensus around the goal of an enhanced social wage (Goldthorpe 1984b). Corporatist consensus limits public backlash against expenditures and creates conditions for further welfare expansion (Wilensky 1976).

Contextual, stable structures of class compromise alone would not appear to generate welfare spending without external demands from societal groups for more spending. Whether or not class-linked institutional capacities across nations are exercised should depend in part on the economic and social environment in which that capacity exists. They may interact with dynamic forces such as age structure, union membership, or capitalist strength, but differ analytically from them. Conceptualized thusly, class reflects more than union density or political party rule. Its importance also comes from the ways classes are organized for national policy making—centralized or fragmented, at national or local and industrial levels, officially represented in state negotiation or merely one of many unofficial pressure groups. Explicitly distinguishing the institutional context shaping class organization from variation in class size and party rule helps to clarify the multiple meanings of class used in the comparative literature and to understand how class formation may influence spending.
We make the following predictions concerning the interaction of corporatist context with
dynamic class and age variables in their effects on pensions. Class-related variation in union
size, capital strength, and partisan party rule should most influence spending in nations
where union and capital interests are articulated within, mediated by, and centralized by
corporatist structures. Centralization of class bargaining over policy, even for an age-related
program such as pensions, makes classes the dominant cleavage, source of identification, and
organizational line of mobilization. Once mobilized for institutional conflict along class lines,
political conflict tends to further social solidarity within classes and to mobilize labor support
for additional spending (Esping-Andersen 1985a). Thus, emergence of corporatist structures
for policy formation demarcates interests in ways that highlight class associations relative to
other lines of conflict. Furthermore, even given similar levels of class mobilization, the existence
of centralized structure eases the enactment of expanded program spending. Corporatism
makes bargaining and compromise easier because a limited number of encompassing actors are
involved in the process. It also lessens backlash with solid class support for negotiated
outcomes, and minimizes parochial opposition to larger class goals (Wilensky and Turner
1987; Goldthorpe 1984b). Institutionalized corporatist structures should thus make pension
spending more responsive to class organization.

Conversely, age structure and nonpartisan variables may prove less important in corpo-
ratist contexts and more important in pluralist contexts. The lack of centralized structures for
mobilization of interests along class lines—indeed, having fragmented class groupings and
pluralist bargaining—tends to promote emergence of a variety of specialized interests that
transcend or cut across class interests. As a result, groups with direct interests in particular
programs—the aged for pensions, business for regulatory agencies, labor for unemployment—
become more influential in policy outcomes (Olson 1982). Further, local political processes
emerge as more important than national bargaining as groups seek to influence local repre-
sentatives to support their interests. A fragmented power structure makes it difficult to insu-
late politicians from parochial demands, or to favor encompassing group interests. In pluralist
contexts, then, mobilization along nonclass lines is likely to make pension spending less re-
sponsive to class strength, and more responsive to size of the aged population.

We therefore offer the following hypothesis: The influence of class groups increases with corpo-
ratism while the influence of the aged population decreases with corporatism. The hypothesis already
presumes additive influences of class and age groups and concentrates explicitly on how corpo-
ratism shapes that influence. Other variables influence welfare spending and may interact
in certain ways with corporatism, but here we only consider class and age effects.

**Dimensions of Interest Group Representation**

Our arguments assume that various socially and demographically defined groups exist, at
least latently, with the potential for political mobilization, and that it is the way these groups
are formed that affects the process of welfare spending. We are not in a position to describe
the historical forces behind the emergence of different interest representation structures, but
must at minimum demonstrate that the institutional structures we describe exist.

To do so, we begin with several measures of corporatism that attempt to tap national
differences in the existence of institutionalized structures for class compromise. Wilensky
(1976), Schmitter (1981), Schmidt (1982), Lehmbuch (1984), and Bruno and Sachs (1985) all
offer related classifications. The conceptual and theoretical overlap in the measures reflects at
least some consensus among scholars. Small European nations tend to be corporatist, central-
ized, and structurally integrated. The English speaking nations occupy the opposite end of the
classification—they are decentralized and fragmented in structure. Other Western European
nations generally fall somewhere in between the extremes. At the same time, however, the
measures are not identical, indicating some disagreement in coding and conceptualization. While analysis of all measures individually would be redundant because of the overlap, selection of one measure would be arbitrary because of the differences.

Our solution to this dilemma is to use factor analysis to (1) demonstrate the existence of an underlying, shared dimension among all the measures and (2) create a scale of the dimension. The results of a principal components analysis show the existence of a single significant dimension on which each of the five measures loads strongly. The factor loadings are .903 (Bruno and Sachs), .879 (Schmitter), .860 (Lehmbruch), .778 (Schmidt), and .628 (Wilensky). The loadings on the latent factor eliminate idiosyncratic coding by weighting each measure according to its contribution to the shared underlying dimension.

Creating a scale for the factor by multiplying each variable (after it has been standardized) by standardized factor loadings provides values for each nation (Table 1). The scale has the advantages of (1) providing a summary of similar and related variables, (2) minimizing idiosyncratic results inherent in the use of individual variables that may include measurement error, and (3) simplifying tests of already complex interactive hypotheses. Not unexpectedly, the values on the scale are highest among the Scandinavian and small central European nations; liberal, pluralist, and English speaking nations score lowest. Figures in Table 1 on percent aged and two measures of pension spending show only a modest direct relationship with the scale (the correlations are, respectively, .42, .45, .35). However, the factor scale, when treated as a measure of an independent underlying dimension of class organized and mediated policy making, may facilitate or inhibit the influence of other determinants of welfare spending.

Methods: Data, Measures, and Estimation

In order to test our hypotheses, to estimate variation in model parameters across corporatist contexts, we use yearly time-series data from 1959-1980 for the 18 advanced industrial or affluent democracies listed in Table 1 (the Western European nations plus Canada, the United States, Japan, Australia, and New Zealand). The time span—limited by the unavailability of consistent series for several of the independent variables before 1959 and the dependent variable after 1980—covers periods of major growth and retrenchment of mature welfare states. Combined with the 18 nations, the 22-year time span provides a potential sample size of 396. Pooling maximizes both time-series and cross-sectional variation, and offers the opportunity for analyses of both temporal and cross-national subgroups.

2. Schmidt divides nations into weak, medium, and strong corporatism during the 1974-1978 period, and we assign scores of 1, 2, and 3, respectively, to the categories. Lehmbruch distinguishes five categories of nations: (1) strong corporatist, (2) medium corporatist, (3) weak corporatist, (4) concentration without labor, and (5) pluralist. It is not clear that Lehmbruch's category of concentration without labor should be ranked between the category of weak corporatism and pluralism. However, calculation of group-specific means on welfare spending shows that the ordering of the categories on the means is identical to the coding we use. Further, the relationship of Lehmbruch's categories to spending, as shown by comparison of the ANOVA eta (.53) with the linear correlation coefficient (.52), is approximately linear. The scores from Wilensky's scale, varying between 0 and 12.5, are taking as given. Scores from Schmitter and Bruno and Sachs also define a continuous scale, but are hampered by missing data (Bruno and Sachs exclude Ireland; Schmitter Australia, New Zealand, and Japan). We attempted to deal with the problem in three ways: eliminating measures with missing data, estimating the missing cases from the other scales, and assigning mean values to the missing cases. The first strategy we eliminated because it ignores important information on all other nations. The second method risks overstating the degree of agreement among the measures. The third minimizes the influence of the missing cases on the factor analysis, but may dampen variation in the resulting factor scale. Experimenting with the last two methods showed that the factor scores assigned to each nation are virtually identical \( r = .998 \). We arbitrarily use mean substitution but emphasize the results are not changed by the assignment of missing data.

3. The relatively low loading for Wilensky's measure is not surprising given controversy over its reliance on central state appointment power as a component of the scale and the relatively high scores it gives to France and Italy. Because of this divergence, the influence of Wilensky's measure on the final scale is small compared to the others.
Table 1 • Nation Values of Corporatism, Percent Aged, and Pension Spending

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<tbody>
<tr>
<td>Austria</td>
<td>1.56</td>
<td>12.0</td>
<td>15.1</td>
<td>4.6</td>
<td>8.8</td>
<td>38.4</td>
<td>58.3</td>
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<tr>
<td>Norway</td>
<td>1.55</td>
<td>11.1</td>
<td>14.3</td>
<td>2.4</td>
<td>7.5</td>
<td>21.7</td>
<td>52.2</td>
</tr>
<tr>
<td>Sweden</td>
<td>1.42</td>
<td>12.0</td>
<td>15.9</td>
<td>3.6</td>
<td>9.7</td>
<td>29.7</td>
<td>61.0</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1.14</td>
<td>8.7</td>
<td>11.2</td>
<td>3.6</td>
<td>11.2</td>
<td>41.4</td>
<td>99.7</td>
</tr>
<tr>
<td>Denmark</td>
<td>.67</td>
<td>10.6</td>
<td>14.0</td>
<td>3.7</td>
<td>7.8</td>
<td>35.1</td>
<td>56.0</td>
</tr>
<tr>
<td>Finland</td>
<td>.50</td>
<td>7.3</td>
<td>11.5</td>
<td>2.2</td>
<td>6.2</td>
<td>30.5</td>
<td>54.1</td>
</tr>
<tr>
<td>West Germany</td>
<td>.39</td>
<td>10.8</td>
<td>14.8</td>
<td>6.0</td>
<td>9.5</td>
<td>55.4</td>
<td>64.3</td>
</tr>
<tr>
<td>Belgium</td>
<td>.38</td>
<td>12.0</td>
<td>14.0</td>
<td>3.0</td>
<td>6.6</td>
<td>25.4</td>
<td>46.8</td>
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<tr>
<td>Switzerland</td>
<td>.11</td>
<td>10.2</td>
<td>13.3</td>
<td>2.1</td>
<td>7.5</td>
<td>20.4</td>
<td>56.6</td>
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<tr>
<td>Japan</td>
<td>-.12</td>
<td>5.7</td>
<td>8.6</td>
<td>0.2</td>
<td>2.2</td>
<td>4.1</td>
<td>25.0</td>
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<tr>
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<td>-.51</td>
<td>11.2</td>
<td>11.0</td>
<td>2.3</td>
<td>5.3</td>
<td>20.6</td>
<td>47.8</td>
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<tr>
<td>New Zealand</td>
<td>-.74</td>
<td>8.7</td>
<td>9.1</td>
<td>3.5</td>
<td>6.7</td>
<td>40.5</td>
<td>73.5</td>
</tr>
<tr>
<td>Australia</td>
<td>-.78</td>
<td>8.5</td>
<td>9.1</td>
<td>2.2</td>
<td>3.8</td>
<td>26.1</td>
<td>42.0</td>
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<td>Italy</td>
<td>-.85</td>
<td>9.1</td>
<td>13.0</td>
<td>3.1</td>
<td>9.8</td>
<td>33.7</td>
<td>75.2</td>
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<td>-.94</td>
<td>11.6</td>
<td>13.8</td>
<td>2.6</td>
<td>7.7</td>
<td>22.7</td>
<td>55.9</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-.16</td>
<td>11.7</td>
<td>14.6</td>
<td>3.0</td>
<td>4.8</td>
<td>25.6</td>
<td>32.7</td>
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<tr>
<td>United States</td>
<td>-.30</td>
<td>9.2</td>
<td>10.9</td>
<td>2.3</td>
<td>3.9</td>
<td>25.1</td>
<td>35.7</td>
</tr>
<tr>
<td>Canada</td>
<td>-.31</td>
<td>7.5</td>
<td>8.9</td>
<td>1.9</td>
<td>2.9</td>
<td>25.3</td>
<td>32.4</td>
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We rely here on the commonly used measure of pension expenditures from the International Labour Organization (1985). While not including all sources of public income for the elderly—medical care, housing, or energy assistance are unavailable or measured separately—it does include public retirement benefits for workers and citizens. It does not include special social assistance programs for the needy or private pensions. Spending levels do not capture all dimensions of the generosity and universality of systems, and others have made efforts to construct more detailed indices (Day 1978; Myles 1984; Palme 1988). Still, spending is certainly a necessary if not sufficient condition for a quality system, and worth study in its own right.

The typical measure of pension effort divides pension expenditures by gross national product. To control for automatic increases in spending due to increases in the number of pensions recipients, we can also divide pension expenditures by percent aged population. This not only provides a more severe test of the political influence of percent aged by controlling for demographically-induced spending increases, but also offers a straightforward interpretation of the meaning of the variable. It is equivalent to pension expenditures per aged person as a ratio to national product per capita, or to average pension benefit relative to the standard of living. We examine results both for this relative measure of pension benefits and for the simpler and more general ratio to national product.

The independent variables relate to class and demographic groups, societal resources, economic fluctuations, and political articulation of demands. Given detailed literature on this topic, the use of nearly all the variables in previous studies, and the already lengthy development of this paper, we limit discussion to a brief description of the variables. More detailed defense of the measures can be found in references and sources. Briefly, percent of the population age 65 and over measures age structure. Nonpartisan measures of political participation include electoral participation (i.e., voters as a percentage of the population age 20 and over).

4. The algebra is straightforward: (Pen/GDP)/(Old/Pop) is equal to (Pen/Old)/(GDP/Pop).
and party electoral competition (i.e., index of the equality of votes received among parties receiving votes). The partisan, class-based measure cumulates right party rule since 1945 on the basis of the classification by Castles (1982). For a program like pensions, which includes predominantly middle-class recipients, the distinction between leftist and other parties proves less useful than the distinction between rightist and other parties. A more direct measure of labor strength is union density; for capital strength, we rely on measures of operating surplus over GDP—a crude proxy for profits—and capital formation over GDP. These latter variables, along with those for party rule, capture variation of class-based strength to some degree independent of more stable corporatist structures. Finally, several variables related to temporal and cross-national variation in economic circumstances are included. Unemployment is measured as a percentage of the labor force and inflation as the consumer price index.

Use of time-series and cross-sectional data creates problems of serial correlation and heteroscedasticity of the errors, and may make ordinary least-squares estimates unbiased but inefficient without a lagged dependent variable (and biased and inefficient in the presence of a lagged dependent variable). Accordingly, we estimate a modified fixed-effects version of generalized least-squares (GLS) that assumes first-order autoregressive processes and error variances unique to each nation. The two-stage procedure uses OLS residuals to estimate the error parameters, and then uses the generalized least-squares matrix to weight nations in inverse proportion to their error variance and to subtract out overtime redundancy in the variables responsible for correlated errors (Kmenta 1986; Stimson 1985).

Estimation of accurate pooled models, however, often requires control for between-nation heterogeneity in the form of fixed-effects or varying intercepts. In our case, time-invariant, nation-specific effects are in part captured by the corporatism variable which itself is time invariant and nation specific. Instead of representing heterogeneity with a set of dummy variables for each nation, we rely as much as possible on the theoretically defined concept. Still, preliminary tests indicate that corporatism does not capture all the heterogeneity and that a subset of nation-specific dummy variables is needed for unbiased estimation of autocorrelations, variances, and coefficients. Rather than include dummy variables for all nations, which would be collinear with the country-specific, time-invariant corporatism measure, we tested for the significance of each country dummy variable one at a time. This conservative procedure isolated six nations as deviating most from the model predictions. Accordingly, the estimation technique allows the intercepts to vary for Belgium, Italy, Japan, the Netherlands, New Zealand, and Switzerland. The program to estimate the GLS model with these dummy variables was written by the senior author using Regression Analysis of Time Series (RATS) software (Doan 1988).

**Spending Models by State Structure**

An additive model for pensions that treats the newly-scored corporatism scale as an in-

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5. The electoral competition index measures how closely the distribution of votes for each party in national elections corresponds to the standard of equality (i.e., where each participating political party gets an equal percent of votes). The formula sums the squared deviations of each party's vote from that expected under equality, and then subtracts that value from one. For both electoral competition and voting turnout, both of which depend on electoral data, we calculate moving averages of the figures over the five years up to and including the year of measurement.

6. Ideally, this variable would include profits only of private corporations; the inclusion of publicly-owned organizations in the figures published by the Organization for Economic Cooperation and Development (OECD) may attenuate its influence. It would also be ideal to gather a sector-specific variable since monopoly capital (or economic structuralism) theory suggests that governments respond to profit cycles in the monopoly sector. Again, however, such data are not available.

7. The structure of the residuals warrants the assumption of a first-order autoregressive process. The residual decay function for each nation declines exponentially with the length of the lag.
dependent variable expands previous studies by using yearly time series data, but otherwise shows results similar to those already found in the literature. According to the GLS estimates in Table 2, pension spending is highest when political and economic conditions are most conducive. When the aged population is large, and the population participates actively in elections, pension spending increases (intense competition among multiple parties, however, lowers pensions). Economic conditions of high inflation and high national product also increase spending. High profits and high capital formation, common during periods of economic expansion and in nations with concentrated capital, reduce pension spending. While these indicators of capital strength inhibit public pension spending, as expected, the effects of other class measures are less clear. Union density has no effect, in part because it is related to the existence of corporatist structures, which has a clear positive effect. The sign of right rule shows increases in pensions with rightist rule, perhaps reflecting the bourgeois character of the program in many nations.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pensions/GDP</th>
<th></th>
<th>Pensions/Old</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Additive</td>
<td>Interactive</td>
<td>Additive</td>
<td>Interactive</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>b b</td>
<td>b</td>
<td>b b</td>
</tr>
<tr>
<td>Intercept</td>
<td>-.094</td>
<td>-.118</td>
<td>-.834</td>
<td>-.813</td>
</tr>
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<td>GDP/Pop.</td>
<td>.377**</td>
<td>.198</td>
<td>.220**</td>
<td>.058</td>
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<tr>
<td>% Aged</td>
<td>.376**</td>
<td>.380</td>
<td>.194**</td>
<td>-.119*</td>
</tr>
<tr>
<td>Elec. Comp.</td>
<td>-.042*</td>
<td>-.117</td>
<td>-.020*</td>
<td>.001</td>
</tr>
<tr>
<td>% Vote</td>
<td>.043**</td>
<td>.260</td>
<td>.044**</td>
<td>.028**</td>
</tr>
<tr>
<td>Right Rule</td>
<td>.083**</td>
<td>.298</td>
<td>.109**</td>
<td>.055**</td>
</tr>
<tr>
<td>% Union</td>
<td>.005</td>
<td>.030</td>
<td>.004</td>
<td>-.013</td>
</tr>
<tr>
<td>Unemploy.</td>
<td>.023</td>
<td>.022</td>
<td>.036</td>
<td>.031</td>
</tr>
<tr>
<td>Inflation</td>
<td>.011**</td>
<td>.170</td>
<td>.016**</td>
<td>.008**</td>
</tr>
<tr>
<td>Profits</td>
<td>-.051**</td>
<td>-.128</td>
<td>-.051**</td>
<td>-.032**</td>
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<td>Capital Form.</td>
<td>-.039**</td>
<td>-.069</td>
<td>-.033**</td>
<td>.007</td>
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<td>Corporatism.</td>
<td>.056*</td>
<td>.024</td>
<td>-.043</td>
<td>.194</td>
</tr>
<tr>
<td>CountryEffects</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>-.239**</td>
<td>-.205**</td>
<td>-.312**</td>
<td>-.286**</td>
</tr>
<tr>
<td>Italy</td>
<td>.123</td>
<td>.381**</td>
<td>1.58</td>
<td>4.67**</td>
</tr>
<tr>
<td>Japan</td>
<td>-.072</td>
<td>-.117**</td>
<td>-2.66**</td>
<td>-4.58**</td>
</tr>
<tr>
<td>Netherlands</td>
<td>.395**</td>
<td>.473**</td>
<td>5.07**</td>
<td>5.21**</td>
</tr>
<tr>
<td>New Zealand</td>
<td>-.141</td>
<td>.074</td>
<td>2.48</td>
<td>3.52**</td>
</tr>
<tr>
<td>Switzerland</td>
<td>1.06**</td>
<td>.943**</td>
<td>10.9**</td>
<td>7.76**</td>
</tr>
<tr>
<td>R2 - OLS</td>
<td>.904</td>
<td>.928</td>
<td>.874</td>
<td>.905</td>
</tr>
<tr>
<td>df</td>
<td>378</td>
<td>368</td>
<td>378</td>
<td>368</td>
</tr>
</tbody>
</table>

Notes:

a. p < .05; ** p < .01
b. Standardized Coefficients
c. Coefficients for multiplicative interaction terms

If our arguments are correct, this model provides only a starting point for the analysis. Multiplicative interaction terms of the corporatist scale times each of the other variables in

8. The additive effects of unemployment are weak, but positive. The weak effect may result, in part, because unemployment cycles relate closely to profits. When the profits variable is deleted from the model, the additive and interactive effects of unemployment become stronger.
the model are added to the basic equation in Table 2. The full model (in columns 3 and 4) thus includes 27 variables—10 additive terms, corporatism, 10 multiplicative interaction terms, and 6 dummy variables. The interaction terms significantly increase the variance explained (F = 12.3). The coefficients for the interaction terms represent the change in the slope of each variable for a one standard deviation increase in the interacting corporatism dimension. The additive terms represent the effect of the dynamic variables on pension spending when corporatism has a zero value (in other words, at the mean of the factor score). Therefore, the estimated slope of each variable for any single nation or any value on the corporatism dimension can simply be obtained by multiplying the interaction term by the appropriate corporatism z-score and adding that value to the additive slope. The interaction term coefficients parsimoniously summarize much information, can be used to calculate separate models for individual nations, and avoid the sometimes arbitrary groupings of nations when continuous interaction terms are not used.

These interaction coefficients provide considerable support for the hypothesis both in terms of statistical significance and substantive meaning. First, the results show that the strong positive impact of percent aged weakens at higher levels of corporatism. At the midpoint of class compromise, a one percent increase in percent aged raises pension spending as a percent of GNP by .194. At 1.55 standard deviations above the mean, at the approximate value of Austria and Norway, the effect of percent aged falls to .009. For pluralistic countries like the United States or Canada, the effect of percent aged nearly doubles, from .194 to .349. Thus, the institutional variation in the responsiveness of pensions to demographic structure appears substantial: the aged are most influential in pluralist societies where classes are not organized to participate in processes of policy formation.

The model for the relative pension measure, which is standardized for changes in the size of the recipient population, is presented in the last columns of Table 2. If the effect of percent aged on this variable varies across contexts, it would suggest that the political influence of the aged, above and beyond demographic change alone, is shaped by the class character of policymaking processes. In fact, the negative interaction term for percent aged is significant for this dependent variable. The additive effect is considerably smaller (the standardized coefficient is less than half the size of the coefficient in the previous model) since the demographic relationship is removed. Still, the effect of percent aged becomes strong and positive for the pluralist nations, strong and negative for the corporatist, and zero for those in the middle. Because corporatist structures are not directly responsive to the political clout of the aged, whereas policy making for pensions in pluralist contexts is likely to bypass class to organize and respond to the politics of age, politically-based influences of age structure emerge as important only for the subset of noncorporatist nations. In highly corporatist nations, the low responsiveness to growth of the aged population may result in a negative effect of percent aged as the population grows faster than the benefits per person.

Turning now to the results for class variables, we find mixed support for the hypothesis. First, in support of the predictions, the negative effect of profits on pensions increases in absolute value with corporatism. The counter-cyclical pattern of pension spending with profits becomes even stronger with structures for class compromise (the same does not hold for capital formation). If, as the additive results suggest, capital most favors expanded spending when threatened economically, and needs it least during financial prosperity, then the ability to realize those interests appears strongest in corporatist nations rather than pluralist nations. Second, the positive effect of rightist parties is stronger in corporatist nations. The effects of right rule, suggesting support of bourgeois parties for a largely middle-class pension program, are strongest in nations where labor has a more important role in corporatist negotiation. The structures may thus move rightist parties more leftward in their policies. Otherwise, there is little evidence of either the additive or interactive effect of union density.

Besides these results for age and class variables, Table 2 shows some intriguing findings
that are less easily predicted from the existing literature. Voting turnout and inflation both have stronger positive effects on spending when corporatism is high. The policy-making structures in corporatist nations thus appear to respond most decisively to changes in nonpartisan political and economic circumstances.

Since complex interaction models are subject to instability from high correlations among the additive and interaction terms and from potentially excessive influence of outlying cases, sensitivity tests are needed to validate our findings. First, we reestimated the models for the relative pension measure 18 times, each with one nation (and 22 time points) deleted. The negative interaction effect of percent aged remains significant in all equations. Further estimation of jackknifed significance tests using the separate equations (Mosteller and Tukey 1977) shows the same results. Second, we reestimated the model deleting all cases whose residual as an absolute value is greater than three times the standard error. Deleting the resulting five outliers does not reduce the significance of the effect of percent aged. Only the interaction effect of percent voting, which falls to insignificance, changes. All in all, the interaction effects of the age and class variables appear stable and meaningful.

Another test of sensitivity—one likely to show more variation in results—is to compare models across time periods. The pooled models assume relationships, whether interactive or additive, that are the same throughout the 22-year time span. Hicks, Swank, and Ambuhl (1989) distinguish between the expansionary phase of advanced economies up to 1972 and the stationary phase of economic shocks, recession, inflation, and high unemployment that followed in the mid-to-late 1970s. To test for how such changes in economic climate may have shifted government pension response to age and class forces, we reran our models for the two time periods. The latter time period is short enough to include only 144 cases (18 nations times 8 time points) compared to 252 cases (18 times 14) for the earlier and longer period, but both provide a sufficient number of cases for multivariate analysis. Table 3 presents the coefficients for the full interactive model for the two periods using relative pensions as the dependent variable (models for pensions over GDP show differences only in the size of the additive effect of percent aged). As in Table 2, the interactive model includes 27 terms: 11 additive terms and 6 dummy variables presented in the first columns of Table 3, and 10 interaction terms presented in the last columns. Overall, estimating separate period models significantly reduces the error sum of squares for all equations ($F = 5.36$). For single variables, the standard errors for the coefficients can be used to calculate $t$-ratios for differences in the regression coefficients across periods (also presented next to the period coefficients in Table 3).

The additive effects, which show the influence of the independent variables at the mean of corporatism, differ significantly across the periods in several instances. In general, the effects of most variables—percent aged, electoral competition, percent voting, and capital formation—have stronger effects (in absolute value) during the more recent period of economic stagnation. This suggests that the demographic, political, and economic conditions for pension growth become especially important during periods of fiscal strain. Pensions may grow regardless of conditions when optimism exists over the economic future, but in the absence of such optimism, spending depends more on the existence of conducive structural conditions. Hence, the increased size of the coefficients in the later time periods. Exceptions to this principle include the declining effect of national product and unemployment.

Changes in the way corporatism facilitates or inhibits the determinants of pensions appear less strong than in the additive coefficients. Still, Table 3 shows most impor-

9. Collinearity among the original additive variables appears not to be a problem: the tolerance (or variance unexplained in each independent variable by the others) always exceeds 25 percent. The interaction terms are, of course, more highly correlated with their additive terms. This is appropriate as the interaction must add to the variance explained by the additive terms. To the extent that the interaction terms vary little from the additive terms, the interactive hypothesis faces a severe test. Given the significant interaction effects in Table 2, the potential for idiosyncratic results sensitive to particular cases or nations is of more concern.
Table 3 - Period-Specific Unstandardized Coefficients for GLS Estimates of Additive and Interactive Models of Relative Pension Spending (Pen/Old)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Additive Effects</th>
<th>Interactive Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>59-72</td>
<td>73-80</td>
</tr>
<tr>
<td>Intercept</td>
<td>-.942</td>
<td>-1.54</td>
</tr>
<tr>
<td>GDP/Pop.</td>
<td>3.36</td>
<td>.503</td>
</tr>
<tr>
<td>% Aged</td>
<td>-.082</td>
<td>-1.09</td>
</tr>
<tr>
<td>Elec. Comp.</td>
<td>.032</td>
<td>.283</td>
</tr>
<tr>
<td>% Vote</td>
<td>.276</td>
<td>.685</td>
</tr>
<tr>
<td>Right Rule</td>
<td>.696</td>
<td>.900</td>
</tr>
<tr>
<td>% Union</td>
<td>-.141</td>
<td>-2.31</td>
</tr>
<tr>
<td>Unemploy.</td>
<td>1.020</td>
<td>.161</td>
</tr>
<tr>
<td>Inflation</td>
<td>.177</td>
<td>.111</td>
</tr>
<tr>
<td>Profits</td>
<td>-.223</td>
<td>-.405</td>
</tr>
<tr>
<td>Capital Form.</td>
<td>.002</td>
<td>-.745</td>
</tr>
<tr>
<td>Corporatism.</td>
<td>-.270</td>
<td>.124</td>
</tr>
</tbody>
</table>

R^2 - OLS: 3914 1797
SSE - OLS: 224 116

Notes:
a. T-ratios for cross-period coefficient difference (b2 - b1)

Importantly that the inhibitory effect of corporatism on percent aged grows during the 1970s. Corporatist nations appear even more committed to withholding demographically driven demands for higher pension spending during the period of fiscal crisis than in the less trying circumstances of the 1960s. Conversely, fiscal crisis would seem to increase the influence of demographic structure in more pluralist contexts. The political context of age demands varies not only across countries, but becomes even more important during the period of economic problems. The growing importance of corporatism also affects class variables. The effect of percent union becomes positive during the period of crisis in corporatist nations. Our arguments about the facilitative effects of corporatism on class may fit best during times of political struggle over welfare policy. In summary, even though differences between corporatist and pluralist nations—country-specific divergence in other words—exist over the full time period of study, they appear to increase during the turbulent period of the 1970s.

Discussion

Taking corporatism as a varying contextual characteristic accounting for divergent processes of pension development, we proposed the following hypothesis: the existence of corporatist institutional arrangements that organize, represent, and mediate between classes in economic and social policy formation will increase in absolute value the impact of dynamic class variables and reduce the effect of age structure on pension spending. Conversely, pluralist representation of interests—in which classes are not organized into national policy
formation as unitary, centralized actors, but rather are fragmented and cross-cut by other policy relevant cleavages—will reduce in absolute value the effect of dynamic class variables on pension spending. In the competing policy issues that clamor for the citizenry's attention in pluralist settings, pensions are likely to be most responsive to the needs of the aged, both because the aged have the clearest and most direct stake in entitlements for which age is a criterion, and because pension programs in pluralist settings may consciously or unconsciously reinforce the politics of age. In short, because class organization in, and by, state institutional frameworks for policy-making varies across corporatist and pluralist settings, corporatist and pluralist policy-making institutions shape the impact that dynamic demographic and class factors have on pension expenditures.

The results show substantial, if not complete, support for the predictions. Models estimated with pooled cross-section time series data for 18 advanced industrial democracies, in which the dynamic determinants of pension spending multiplicatively interact with a measure of corporatism, add significantly to the variance explained by an additive model. The effect of age structure is strongest for high pluralist nations such as the United States, Canada, or the United Kingdom, and weakest for high corporatist nations such as Austria, Norway, or Sweden. Moreover, the influence of age structure on a measure of pension spending standardized by age structure still varies across context, suggesting that not only demographic effects, but also political effects of a large aged population, are conditioned by corporatism. Finally, the results show stronger positive effects of right party rule and stronger negative effects of corporate profits in high corporatist nations.

Overall, these results are consistent with the view that there are multiple paths to higher pension spending. In some nations, the upward trend is demographically driven, and in some nations it is class driven. Although it is likely that we have not identified the exact configuration of national differences most relevant for policy concerns, there is substantial evidence that the policy-making processes for pensions do indeed differ. More effort is certainly needed to identify country differences in pension response to class and demographic structure. Still, we know that English-speaking nations with a long history of democracy, fragmented classes, and more influential special interests are highly responsive to demographic change and age-based political forces. Other nations, particularly Scandinavian nations with strong social democratic rule, seem only slightly responsive to demographic change and more attuned to class power. Still other nations may reflect a combination of forces.

Our goal has been to address controversies among divergent neo-Marxist and neo-industrialist theories of pension development, and in so doing shed light on the relationships of age structure and class formation. Rather than competing, the class and demographic-based theories, and the class and age variable effects, may be complementary once the theoretical scope of each is specified. Interests potentially may be mobilized in a number of ways, but the actual emergence of influential interest groups depends on historical forces that lead to corporatist bargaining or pluralist competition in particular nations. This institutional context then conditions the impact of variations in class formation, age structure, and age and class resources on pension spending. Both class and demographic theories are correct, but must be delimited in their application to particular contexts or nations. While still preliminary, we hope this effort can lead to further specification of scope conditions for particular age and class effects on social welfare spending, and also to an integration of what have previously—but not completely correctly—been viewed as competing theories.
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