The Limit of Equality Projects: Public-Sector Expansion, Sectoral Conflicts, and Income Inequality in Postindustrial Economies

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Abstract

In this study, we investigate how structural economic changes constrain an equality project, the public-sector expansion strategy. First, we describe a three-stage process in which a growing productivity gap between the private-manufacturing and public-service sectors disrupts traditional class solidarity. We contend that emerging conflicts between private and public sectors due to public-sector expansion and a growing inter-sectoral productivity gap eventually lead to employment and budget crises, as well as the weakening of coordinated wage-setting institutions. Furthermore, political, institutional, and economic transformations originating from sectoral cleavages and imbalance lead to increased income inequality. We test this argument using an unbalanced panel dataset on 16 advanced industrial democracies from 1971 to 2003. We find that public-sector employment has a strong negative effect on income inequality when the productivity gap between sectors is low. In such situations, public-sector employment fulfills its promise of equality and full employment. However, as the inter-sectoral productivity gap increases, the negative effect of public-sector expansion on income inequality evaporates. The findings suggest that severely uneven productivity gaps due to different degrees of technological innovations significantly weaken and limit the effectiveness of left-wing governments' policy interventions through public-service expansion.

Keywords

public-sector employment, sectoral productivity gap, sectoral conflicts, cross-class alliances, income inequality

Recent studies on income inequality in advanced industrial countries follow two trends. One strand emphasizes the role of domestic political and institutional mechanisms in reducing inequality. Previous studies of the welfare state highlight ways in which social policies have successfully reduced income and wealth gaps among citizens. In particular, scholars of power resource theory emphasize the role of traditional social democratic class politics in developing public provisions for social

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welfare and achieving more equal distributions of income. This work shows that welfare states led by left-wing governments and sponsored by strong labor unions have consciously employed redistributive tax and income transfer policies that (controlling for popular measures of globalization) greatly reduced income inequality (Bradley et al. 2003; Hicks and Swank 1984; Huber and Stephens 2001; Korpi and Palme 1998) and poverty (Brady 2005, 2009; Kenworthy 1999; Moller et al. 2003). Research also demonstrates that corporatist wage-bargaining institutions arranged among the state, strong unions, and employers have played decisive roles in decreasing wage inequality in northern and continental Europe (Checchi and Garcia-Penalosa 2008; Garrett and Way 2000). More specifically, the level of wage-setting, the concentration of unions, and the share of the labor force covered by collective bargaining play important roles in accounting for pay differentials across countries (Rueda and Pontusson 2000; Wallerstein 1999).

The second strand of research identifies globalization as the driving force behind increasing income inequality (Alderson and Nielsen 2002). Some proponents of economic globalization argue that it benefits all income groups (Burtless et al. 1998), or at least low-income groups, by providing basic commodities at lower prices (Bhagwati 2004). Many other scholars, however, agree that globalization has had detrimental effects on the poor and the working classes in advanced industrial countries (Hurrell and Woods 1995; Rodrik 1997; Tonelson 2000).

However, these studies fail to detect or explain the increase in income inequality during the past few decades in advanced industrial countries in the context of the contradictions generated by the welfare state itself in its interaction with deep structural changes. We propose an explanatory model that emphasizes the roles of domestic sectoral conflicts and structural imbalance between sectors in limiting a traditional component of left-wing governance: the egalitarian effects of public-sector employment.

The structural imbalances and concomitant political conflicts between private and public sectors, as O'Connor (1977) pointed out, are deeply rooted in the capitalist economy, especially with the development of the modern welfare state. Cleavages between the private and public sectors received a great deal of attention in liberal countries, such as the United States, Canada, Britain, and Ireland during the 1970s and 1980s, when deep economic crises brought to the surface the fundamentally different economic and political conditions between sectors (Blais, Blake, and Dion 1990; Edgell and Duke 1986).

Building on this literature, we argue that sectoral divisions play a critical role in explaining the recent growth in income inequality, not only in liberal and continental European countries, but also in the heart of social democratic countries. By highlighting the role of sectoral politics and structural imbalance between sectors, we hope to explore the structural and political dynamics underlying the previously suggested determinants for income inequality, such as "the decline of wage-setting coordination" (Alderson and Nielsen 2002:1285) and "decreased employment" (Kenworthy and Pontusson 2005:453–54). We argue that an interactive process of public-sector expansion and a growing productivity gap between sectors results not only in employment and budget crises, but also in the weakening of coordinated wage-setting institutions, which, in turn, leads to increased income inequality.

THEORETICAL DISCUSSION

Stage I. The Link between Public-Service Expansion and Income Inequality: A Traditional Model

In postwar advanced industrial democracies, public-sector employment, along with generous social transfers, has effectively reduced income inequality through two mechanisms: increased job opportunities for former labor

market outsiders, and generous pay scales underpinned by coordinated wage bargaining.

First, public-sector employment has reduced income inequality by providing socially and economically marginalized populations with greater employment opportunities. Public-sector expansion absorbs not only the redundant labor force but also socially marginalized populations (e.g., women) and other labor market outsiders into the public delivery of health, education, and social services (Gustaffson and Johansson 1999; Huber and Stephens 2000; Kenworthy 2008). When the formerly unemployed or non-employed enter the labor market, income inequality will drop.

This public employment strategy has been the most effective tool for achieving full employment and equality, not only in social democratic countries but also, to a more moderate degree, in some continental European and liberal countries, such as Austria, Belgium, Canada, Ireland (in the 1980s), and the United Kingdom (in the 1970s). Partisan governments that use this supply-side ''human capital creation'' strategy (Boix 1998; Garrett 1998) have generated numerous jobs in public-service areas such as daycare, eldercare, afterschool programs, and job training programs (Benner and Bundgaard Vad 2000).

Second, welfare states, as employers in public-sector services, reduce income (mainly wage) inequality by providing employees with higher pay than they would receive on the market and by maintaining this generous wage policy through coordinated wage-bargaining institutions. In this political-institutional process of public-service expansion, four actors—public-sector workers, private-sector workers, public-sector employers (government), and private-sector employers—formulate class-based coalitions based on their economic interests. The traditional public-sector expansion strategy should be economically and politically viable as long as all four parties regard it as beneficial. Private-sector unions, especially in manufacturing sectors,

will likely remain in the solidaristic wage-setting arrangement as long as productivity gaps between public and private sectors are low, because the unions can reduce wage gaps in and between sectors through coordinated wage bargaining. In addition, private-sector employers prefer to remain in coordinated wage bargaining, provided (1) their competitive advantage is substantially guaranteed by wage restraint and (2) sound macro-economic environments provide them with a satisfactory level of demand. Public-sector workers prefer to remain with coordinated wage bargaining because governments guarantee them relatively higher wages and fringe benefits than the free market could provide.

The Stage I column in Figure 1 summarizes this process of political and institutional compromise. At this stage, the productivity gap between manufacturing sectors and public-service sectors is relatively small. During this period, centralized blue-collar union confederations in Northern Europe and leading industrial unions in other advanced democracies marshaled coordinated wage bargaining with private-sector business associations. The results of this bargaining became a reference point for white-collar unions, including public-sector unions (Gourevitch et al. 1984; Hicks 1999; Stephens 1979; Swank 1999).[1] With small wage differentials within and between sectors, public-sector expansion under a coordinated wage policy remains effective in reducing overall income inequality. Based on this discussion, we predict the following:

> *Hypothesis 1:* Public-service expansion will have a strong negative effect on income inequality.

Stage II. Increasing Productivity Gaps and the Emergence of Sectoral Conflicts

Notwithstanding Hypothesis 1, we find that when countries pursue a high employment strategy via public-sector employment, it

	Stage I			Stage II			Stage III		
Sectors	Private Manufacturing		Public Service	Private Manufacturing		Public Service	Private Manufacturing		Public Service
Productivity Gap	Low			Increasing			High		
Total Employment	High			Stagnant			Stagnant/Decreasing		
Wage Bargaining[a]	Coordinated Wage Bargaining	Terms Set Up	Follow Bargaining Results in Manufacturing Sectors	Wage Restraint due to Intensified Competitions	Conflicts	Wage Increase Based on Strong Bargaining Power	Industry or Firm-Level Wage Bargaining	Conflicts	Wage Restraint due to Government Budget Crisis
		$\rightarrow$			$\leftarrow\rightarrow$			$\leftarrow\rightarrow$	
Between-Sector Inequality	Low			High[b]			Low[c]		
Within-Sector Inequality	Low		Low	Low		Low	High		High

Figure 1. Three-Stage Process: Increasing Productivity Gap, Decline in Total Employment and Wage Bargaining, and Increased Income Inequality in Advanced Industrial Democracies
[a]All nations do not follow the stages of wage bargaining; some countries (e.g., liberal countries) lack such institutions.
[b]With an increasing productivity gap, wage restraint in manufacturing sectors, and a wage increase in public sectors.
[c]A wage increase in manufacturing sectors, but relative wage restraint in public sectors.

generates conflict between the private and public sectors. Private-sector workers become increasingly discontented with public-sector workers' wage and job security. Union leaders and members in the private sector consider public-sector unions' close relationships with left-party or coalition governments to be unfair, because private-sector unions have to endure more hostile environments (e.g., lay-offs or wage-cut threats). Private-sector workers likely see public-sector workers' privileges as luxurious working conditions sponsored by their tax money (Furåker 1987; O'Connor 1977). Private-sector employers may become increasingly critical of public-sector expansion, because they assume a growth in government employment will decrease profits and investment. These kinds of conflicts between the public and private sectors were salient in liberal countries such as the United Kingdom, Canada, Ireland, and the United States in the 1970s and 1980s, as well as in some social democratic

countries in the 1990s and 2000s, during times of economic crisis.[2]

The fundamental division between the public and private sectors is based on different rates of productivity growth,[3] different levels of organizational and bargaining capacity against employers, and different levels of exposure to world markets. First, the majority of jobs created through public-sector employment are low-productivity service jobs, for which increases in productivity over time are nearly impossible (Baumol 1967). When these jobs' wages are determined only by productivity, service-sector workers suffer from extreme poverty, as is often the case in the United States (Esping-Andersen 1990, 1999).

Second, as public-sector employment increases, so does the power of public-sector unions. Public-sector unions, with strong bargaining power based on high memberships and a close relationship with their employers (i.e., left-wing or coalition governments), often attempt to launch independent wage bargaining efforts, regardless of wage bargaining

in the private sector. Although pay raises without increases in productivity lead to the exit of services from the market in principle, well-organized public-sector unions and labor-friendly, left-wing governments jointly allowed the low-productivity/high-wage public sector to persist for decades.

Third, public-sector workers are not exposed to increasingly competitive world markets; they therefore have more freedom to increase their wages with greater militancy, without being punished by lower employment. More productive private manufacturing-sector workers who are highly invested and trained are unable to seek higher wages, because the coordinated bargaining system suppresses wage increases in private sectors. Higher wages often lead to failure to conform to a world market price, loss of competitiveness, and a consequent decline in employment (Garrett and Way 2000).

Some private-sector unions, witnessing the durable solidarity between public-sector unions and incumbent left-wing or coalition governments, become increasingly disenchanted with their traditional partners. In particular, private manufacturing-sector firms are faced with increasing pressure to accomplish higher levels of production flexibility and quality (Pontusson 1992; Pontusson and Swenson 1996). Employers' needs for higher flexibility weaken existing coalitions based on solidaristic union movements. This decline in intra-class solidarity fosters new firm- or industry-level cross-class alliances between workers and employers. In the early 1970s in Sweden, for example, white-collar unions, including public-sector unions, formed an organization for independent wage bargaining (Flucher 1991) that paved the way toward decentralized wage bargaining in the 1980s and 1990s.

Public-sector expansion, accompanied by a growing productivity gap between the manufacturing and public-service sectors, places two major sectoral actors of coordinated wage bargaining in completely different positions: (1) manufacturing sectors are forced to accept wage constraints that result from intensified competition in the global market and the coordinated wage-bargaining system, and (2) sheltered public-service sectors enjoy wage increases based on their strong bargaining capacity (Iversen 1999). Workers in competitive manufacturing industries are likely to perceive that they are relatively deprived of their right to secure higher wages and benefits, relative to workers in the public sector, because the public sector's high wages reduce the real wage in the private sector (because wages in the public sector are drawn from taxpayers in the private sector). Being increasingly dissatisfied with the lack of remuneration for their international competitiveness, private manufacturing-sector workers put pressure on their union leaders to leave the coordinated wage bargaining.[4]

To summarize, public-sector expansion accompanied by productivity gaps between sectors will lead to a weakening of traditional coordinated wage-bargaining institutions, because employers and workers in the manufacturing sector will withdraw their support (due to their increased discontent with the public-sector's expansion and strength, the concomitant tax burden, and their own desires for wage flexibility and higher wages).[5] The Stage II column in Figure 1 summarizes these processes.

Stage III. Increasing Productivity Gap and Increasing Income Inequality

We argue that the public-service expansion strategy effectively reduced income inequality in advanced industrial economies only until the 1980s; since the 1990s, it has failed to deliver its promised goals. This striking difference across time is due to growing productivity gaps between sectors, the concomitant emergence of sectoral conflicts and cross-class alliances in the 1980s, and the rearrangement of the economic-political solidarity structure between the public and

private sectors in the 1990s and afterward. In this section, we describe how a growing productivity gap nullifies the economic and political/institutional links between public-sector expansion and distributional outcomes.

First, an increasing productivity gap sets limits on the public sector's employment capacity and its contribution to total employment. As the productivity gap between sectors grows, manufacturing sectors will shed increasingly more labor; the public- or private-service sectors should absorb the redundant labor force. However, most public-sector jobs are concentrated in administration or delivery of public services, while redundant workers likely have specific skills that are not easily transferrable across firms or industries (Estevez-Abe, Iversen, and Soskice 2001; Hall and Soskice 2001). This structural imbalance, or mismatch in skills between sectors (Jackman and Roper 1987; Layard, Nickell, and Jackman 1991; Turvey 1977), makes it difficult for unemployed workers to find alternative jobs, even in expanding public-service sectors. With a lack of jobs in the private-service sector (which is also due to the development of the public-service sector), redundant workers become long-term unemployed and rely on welfare state transfers.[6] This increasing financial burden on welfare states contributes to governmental budget crises,[7] which eventually makes it difficult for governments to behave as generous employers for redundant workers and their own employees.[8] We therefore expect that an increasing productivity gap sets limits on the public sector's employment capacity and its contribution to total employment (and its virtuous effects on distributional outcomes).

Second, a public-sector employment strategy may foster inter-sectoral conflicts and cross-class alliances more severely in an economy with large productivity gaps between sectors. In highly competitive private manufacturing industries, unions and employers will achieve high productivity growth.

They will have greater incentive to bargain at the firm or industry level, rather than the national level, so that their co-investment in highly productive organizational routines and firm- or industry-specific skills can be more directly rewarded on the basis of their own performance criteria. These unions and employers will prefer independent firm- or industry-based bargaining over centralized wage bargaining, so that they do not have to tolerate lower wages than (they believe) they deserve or the high wages that public-sector workers earn relative to their low productivity.

Employers in the highly competitive and productive manufacturing or high-tech sectors will also have greater incentives to avoid traditional collective wage-bargaining and to establish their own wage and benefit structures to enhance their employees' commitment levels (Pontusson and Swenson 1996).[9] In addition, some employers at the highest levels of productivity and competitiveness can afford to pay for their employees' intensive investment in firm- or industry-level skills without being concerned about wage levels. Therefore, at Stage III in Figure 1, both workers and employers in private manufacturing sectors will walk away from traditional solidaristic wage policy and form alliances based on industry- or firm-specific skill investment (Esteves-Abe et al. 2001; Hall and Soskice 2001).

In addition, left-wing governments will feel constrained by new structural limits and thus be more likely to relinquish their long-held policy priority—equality—in favor of budget restraint. For incumbent governments, pushing down wages or allowing pay differentiation in the public sector is politically less costly than reducing generous social transfers. Lowering pay for the public sector applies only to a small segment of the population with whom governments can bargain directly (e.g., part-time female employees in public-service jobs), while existing social transfers (e.g., social insurance) benefit large segments of the population. Because voters will be displeased with losing benefits (Brooks and

Manza 2007; Pierson 1996), politicians are more likely to cut and differentiate pay for public-sector workers than to reduce existing social welfare programs. During budget crises, left-wing governments will voluntarily cut back spending on wages for public-sector employees and ''increase pay differentiation in the public sector to reduce budget deficits'' (Swenson 1991:385).[10]

As the productivity gap widens and sectoral conflicts increase, manufacturing sectors begin industry- or firm-level wage bargaining with requests for high wage increases, and public sectors are forced to cut wages or differentiate their wage scales. In this way, the (negative) effect of public-service expansion on income inequality disappears in some advanced industrial economies. Fundamental structural changes weaken traditional coordinated wage-bargaining institutions and foster wage flexibility in the manufacturing and public sectors.[11]

To summarize, increasing productivity gaps transform the traditional fabric of left-wing governance via two mechanisms—decreasing total employment and weakening coordinated wage-bargaining institutions—and thereby change the proposed negative relationship between public-sector employment and income inequality, at least to a lesser or non-negative relationship at the highest levels of the productivity gap.[12] This leads to the main hypothesis of this study:

> *Hypothesis 2:* The size of the negative effect of public-service expansion on income inequality will diminish and eventually evaporate as the productivity gap between the private manufacturing and public-service sectors increases.

DATA

Dependent Variable

Our dependent variable is the Gini coefficient of post-tax, post-transfer (disposable) income inequality.[13] Previous studies using OECD wage inequality data (e.g., Rueda

and Pontusson 2000; Wallerstein 1999) cannot address an overall picture of income distribution in a society because the data not only ''fail to capture the distributive effects of unemployment, underemployment, and labor force exit'' (Kenworthy and Pontusson 2005:452) or the effects of total employment increases, but they also fail to consider income from self-employment and other sources such as property (e.g., interest and dividends).[14]

In addition, wage inequality data do not take into account welfare states' progressive taxation and social transfers, which are an important element of variations we will explain in this study. We ultimately concur with Kenworthy's (2010:411) claim that ''the distribution of disposable income among households is what researchers and policy makers should be most interested in understanding.''

We draw the post-tax and post-transfer income inequality data from the World Income Inequality Database (WIID) version 2.0c built by World Institute for Development Economics Research of the United Nations University (UNU-WIDER 2008a). The UNU-WIDER WIID database version 2 replaces WIID1 by adding ''the new data of Deininger & Squire (2004), the unit record data of the Luxembourg Income Study (LIS), the Transmonee data by UNICEF/ICDC, [and] Central Statistical Offices and research studies'' (UNU-WIDER 2008b:8). The database aims to maximize longitudinal and cross-sectional comparability by increasing the precision of the definitions underlying the inequality estimates and by updating the documentation of data sources. Reflecting the purpose of this study and the recommendations of UNU-WIDER, we define and select quality estimates of income inequality as follows: (1) estimates scored 1 (the highest quality) in the quality rating of WIID2; (2) estimates based only on disposable income or disposable monetary income; and (3) estimates with the income sharing unit being household or family.[15] With respect to (1),

WIID2 rates the quality of a data-point highest when the underlying concepts are known and the quality of the income concept and survey can be judged (for more specific criteria, see UNU-WIDER [2008b:13–14]). Regarding (2), we include only disposable income, not only because it fully takes into consideration welfare state efforts (i.e., delivery of social services mainly through public-sector employment as well as taxation and transfers), but also because it maximizes the sample size, as countries more frequently report income data on the basis of disposable income.[16]

Main Independent Variables

Public-sector employment rate captures welfare states' efforts as employers to achieve full employment and equality. This variable plays the role of igniter of sectoral conflicts, depending on the size of the productivity gap between sectors. We calculate it as the size of general government employment as a percentage of the total population age 15 to 64 years.[17] We draw general government employment data primarily from the OECD (2009a). The data include "those employed in all departments, establishments and other bodies of central, state and local governments, which engage in such activities as administration, defense, health, educational and social services and the promotion of economic growth. . . . Included are social security schemes in respect of large sections of the community, imposed, controlled or financed by government non-profit institutions entirely or mainly financed and controlled by general government"(OECD 1986:541). Although this measure does not include individuals employed in state-owned companies, it embraces all other employees in health, education, public administration, the legal system, and social welfare activities. Over-time variations of this measure are predominantly driven by welfare-state-related sectors. We use Scharpf and Schmidt's (2000) data on a supplementary

basis for the country-years not reported in the OECD electronic database.

Sectoral labor productivity difference measures structural imbalance between sectors within a national economy. We hypothesize that the productivity gap between sectors will play the role of a conditional factor, by which public-service-sector expansion will have different effects on income inequality. We define this variable as the rate of labor productivity of the manufacturing sector and of the community, social, and personal-service sectors. We compute sectoral productivity as the ratio of value added in a sector to the employment size in the sector.[18]

We assume these measures will largely capture the labor–productivity gap between the private manufacturing sector and the public-service sector, because "community, social and personal services (ISIC 75-99) include mainly non-market activities such as public administration, education, and health" (OECD 2006:36)[19] and the welfare state is the key employer for the bulk of the labor force in these sectors. This measure "reflects the joint influence of changes in capital, as well as technical, organizational efficiency change within and between firms, the influence of economies of scale, varying degrees of capacity utilization and measurement errors" (OECD 2001:15). Data on employment and value added by sectors are from the OECD STAN database (2005b), which uses "a standard industry list (ISIC Rev. 3) for all countries to facilitate international comparisons."

Control Variables: Internal Development Model and Labor Market Structural Changes

Based on Kuznets (1955) and Nielsen and Alderson (1995), we introduce three measures to capture the effects of labor force composition and shift on income inequality. The first two measures, *agricultural labor force* and *sector dualism*, represent a structural

shift from traditional to industrial society. We expect the former to be negatively associated with income inequality, because a greater share of agricultural employment typically leads to more equal income distribution (Nielsen 1994; Nielsen and Alderson 1995). We measure *agricultural employment* as the size of employment in agriculture as reported in the OECD (2005b). We calculate *sector dualism* by the formula |p–L|, where p is the proportion of the labor force in agriculture and L is agriculture's share of GDP. This measure captures differences in average income between sectors (Nielsen 1994). We draw all estimates of p and L from the OECD (2005b). We expect sector dualism to affect income inequality positively.

We introduce the third measure, *labor force in financial sector*, to capture the effects of labor force composition on inequality in postindustrial, finance-dominant economies (Greenwood and Jovanovic 1990; Li, Squire, and Zou 1998). We expect that the greater the size of the financial labor force, the higher income inequality will be. Controlling for this variable is essential because the recent upturn in income inequality is often attributed to the financial sector's explosive growth and their ''over-paid'' CEOs and employees. We measure *financial labor force* as the size of employment in the financial sector as a percentage of total employment. Employment data are from the OECD (2005b).

We expect the *unemployment rate* to increase income inequality. With rapid deindustrialization, high unemployment will be concentrated in low-skill jobs because employers are less likely to lay off more skilled workers. Therefore, high unemployment will disproportionally affect the unskilled, low-paid working class and contribute to higher income inequality. We measure the *unemployment rate* as the size of total unemployment as a percentage of the total labor force as reported in the OECD (2008).

Female labor force participation rate may either reduce or increase income inequality. Some scholars contend that a higher female presence in the labor market captures the rising share of female-led households, which will lead to higher inequality (especially in the United States) (Gottschalk and Smeeding 1997). Other researchers, however, note that higher rates of female participation serves as a proxy for women-friendly social and labor-market policies and therefore will be negatively associated with inequality (Rueda and Pontusson 2000). We calculate this measure as the size of the female labor force as a percentage of the female population age 15 to 64 years. We draw data from Huber and colleagues (2004) and the OECD (2005a).[20]

Control Variables: Internal Political and Institutional Factors

We control for two political variables: *left party share* and *Christian democratic party share* in government cabinets, both of which prove to have negative effects on post-tax and post-transfer reduction in inequality (Bradley et al. 2003). We code these variables as 1 when a single party forms the entire cabinet; when these parties have coalition partners in a cabinet, they are scored between 0 and 1 (a fraction of their share in the entire cabinet). We cumulate these scores from 1950 to the corresponding year of Gini index being used; data come from Swank (2009).

We introduce a measure of welfare state effort, the *welfare benefit generosity index* (Scruggs 2004), which not only revises but updates Esping-Andersen's (1990) decommodification index. We also employ *union density*, measured as the size of net union members (i.e., total union members reported minus self-employed, retired, and unemployed members) as a ratio of the total dependent labor force, which includes employees and the total unemployed labor force. Data are from Golden and Wallerstein (2006) and Visser (2006). We expect all four variables to have negative effects on inequality (Bradley et al. 2003). Because they are highly correlated with each other (see the correlation coefficient

table in Part D of the online supplement) and with our main independent variable (i.e., public-sector employment), we introduce two political variables and two institutional variables separately.

Control Variables: Globalization

We control for four measures of globalization: net migration rate, outward foreign direct investment, southern import penetration, and capital market openness. We expect all of these variables to contribute to recent upward trends in inequality in advanced industrial countries. International migration should increase inequality by increasing the low-skill, low-wage labor force (Alderson and Nielsen 2002). We measure this by *net migration rate*, that is, the total number of immigrants minus the annual number of emigrants, in the total population (per 1,000 people). We use population data from the World Bank's *World Development Indicators* (Various Years) to compute this variable.

We also expect trade with developing countries, especially manufactured imports, to seriously lower domestic workers' wages (Wood 1994). We measure *southern import penetration* as manufactured imports (in current U.S. dollars as a percentage of GDP) from countries other than the 23 advanced industrial countries. Import data are from OECD International Trade by Commodities Statistics (OECD 2009b).We define manufactured imports as Standard International Trade Classification (Revision 2) groups 5, 6, 7, and 8 in the statistics.

Outward investment should affect inequality positively because it decreases domestic demands for labor, especially in manufacturing industries. This contributes to deindustrialization, higher unemployment (Alderson and Nielsen 2002), and diminished union power. We calculate *foreign direct investment* as the size of direct investment abroad in a given year divided by the size of the total labor force (log base 10). Direct investment data are from

the IMF's *Balance of Payments Yearbook* (Various Years). Total labor force data come from Huber and colleagues (2004) and the OECD (2005a).

We expect *financial openness* to worsen domestic distributional outcomes by increasing investment opportunities for high-income groups and limiting governments' macroeconomic policy choices to fight for unemployment (Huber and Stephens 2001; Mahler 2004). The variable is expressed as Chinn and Ito's (2006, 2008) financial openness index, which measures a country's degree of capital account openness. This index takes on higher values as a country is more open to cross-border capital transactions.

METHODS

The dataset is an unbalanced panel dataset that contains 239 observations for 16 advanced industrial countries over 33 years between 1971 and 2003. Under this panel structure, errors are likely to be correlated with each other within each unit. When these unmeasured time-invariant components are not systematically represented by appropriate methodological treatments, such as in ordinary least squares (OLS), they will transfer to the error term, causing heterogeneity bias and underestimated standard errors for regression coefficients (Greene 2000; Hsiao 1986; Stimson 1985).

The most popular approaches employed for this data structure are the random effects model (REM) and the fixed effects model (FEM). The REM and the FEM differ from each other in many respects. The REM represents the unmeasured time-invariant factors by systemizing the random error terms, α_i ($i = 1, 2,\ldots,N$; N = number of units), while the FEM achieves the same goal by systemizing unit-specific intercepts with $N - 1$ indicator variables. The REM has an important advantage over the FEM: the REM can accommodate time-invariant and slowly time-varying institutional factors, while the

FEM cannot deal with such variables because of the perfect correlation between the time-invariant variables and the unit-specific indicator variables. Given that even a slowly time-varying covariate often loses its meaningful level of statistical significance in the FEM context, it may be highly problematic to employ the FEM for cross-national studies that aim to analyze historically time-invariant factors.

In spite of this advantage, the REM does not have any safeguard in case the key assumption of the REM (i.e., the random effect error term, α_i, is uncorrelated with the existing covariates) is violated. In such a case, the REM estimation will result in inconsistent parameter estimates (Greene 2000; Halaby 2004). The FEM, on the other hand, does not have the strict assumption, which allows regressors to be correlated with the country-specific indicator variables. As a result, in spite of its conservative (inefficient) approach, the FEM tends to generate more consistent and unbiased estimates when researchers suspect there may be systematic correlations between existing covariates and unmeasured time-invariant components.[21]

Scholars typically find that income inequality data contain more variations between units than within units (Alderson and Nielsen 2002; Beckfield 2006). In this particular study, however, the proposed interaction model hypothesizes that a public-sector-expansion strategy interacting with an emerging productivity gap between sectors will generate sectoral conflicts and structural imbalance, leading to higher income inequality over time. Therefore, our substantive logic is primarily dependent on within-unit variations. Considering the advantages and disadvantages of each estimation strategy (including the potential violation of the REM assumption), and more importantly, the implications of our theoretical framework relying on over-time variations, we report the results from the FEM in the text and the results from the REM in the online supplement.

RESULTS

Descriptive Statistics

Figure 2-1 shows income inequality trends (Gini based on household disposable income) in Nordic countries. The figure illustrates strikingly similar over-time trajectories of inequality: income inequality declined during the 1970s and 1980s in Denmark, Finland, and Norway (Sweden is the exception). After some stagnant years during the 1980s, however, income inequality began to increase from the early 1990s onward in all four countries. Public-sector employment steadily increased in all Nordic countries during the 1970s and 1980s; it then maintained considerably high levels compared with other countries since the 1990s, with the exception of Finland (see Table 1). Although Sweden suffered a slight decline in the 1990s, it still maintains the largest public-sector among advanced industrial democracies. Productivity gaps between sectors are pronounced in Sweden (1.89) and Finland (1.81), where productivity in the manufacturing sector is roughly twice as high as that in the public-service sector. However, relatively low levels and growth rates of the productivity gap between sectors in Denmark suggest there might be less serious sectoral conflicts. Therefore, high levels of public-sector employment are not likely to contribute to serious declines in total employment or wage-setting institutions. The descriptive statistics in Nordic countries suggest there could be a high level of interactive effects between public-sector employment and productivity growth on income inequality.

Income inequality trends in liberal countries diverge (see Figure 2-2). New Zealand, the United Kingdom, and the United States suffered substantial increases in inequality. In Canada, income inequality slightly decreased in the 1980s but has increased since the 1990s, although at a slow rate. In Australia in the 1990s, distributional outcomes improved slightly compared with the 1970s. With the exception of the United Kingdom,
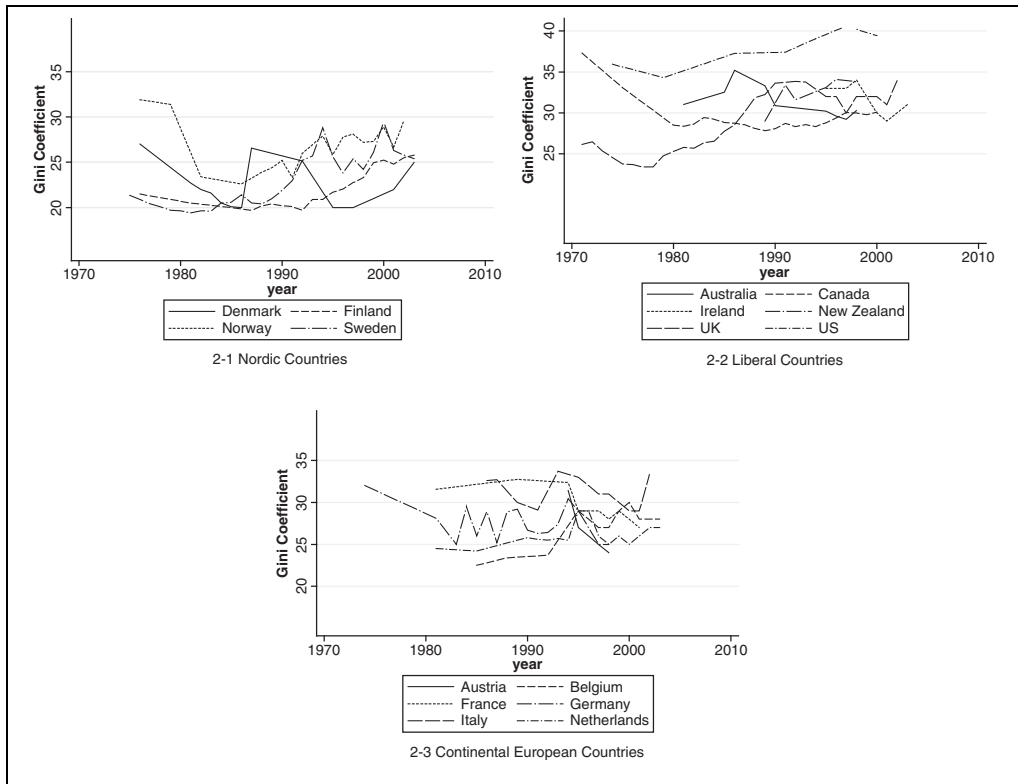
Figure 2. Over-Time Inequality Trajectories

which curtailed public-sector employment significantly in the 1980s through privatization, other liberal countries maintained relatively small (New Zealand < 10) to moderate (United States, Canada, and Australia > 10) public sectors. The productivity gap increased most dramatically in Canada and Ireland, but other countries also experienced increased productivity gaps between sectors.

Income inequality trajectories in continental European countries are more diverse than those in Nordic countries. Figure 2-3 shows that Belgium and the Netherlands experienced slight increases, while inequality remained stable (Italy) or decreased considerably (Austria) or slightly (France and Germany) in other countries. The size of the public sector in these countries went through neither substantial gains nor significant losses, but most countries experienced substantial increases in the

productivity gap (overall, though, the productivity gap in these countries remained narrow).

In general, descriptive statistics for liberal and continental European countries suggest that in some of these countries (e.g., Belgium, the United States, the United Kingdom, and Canada), medium-sized public-sector employment may have interacted with medium to high levels of the productivity gap. In these countries, although wage-bargaining institutions either functioned effectively (mainly at the industry level in continental Europe) or did not play a critical role in wage restraint (liberal countries), the descriptive trends suggest that structural imbalances and sectoral cleavages may have evolved and contributed to increased income inequality (mainly through employment and budget crises).

Overall, descriptive results suggest that the proposed public sector–productivity gap

Table 1. Over-Time Changes in the Average Values of the Key Variables by Decades

	Country	Income Inequality (Gini)[a]			Public-Sector Employment[b]			Sectoral Productivity Gap[c]		
		1971 to 1982	1983 to 1992	1993 to 2003	1971 to 1982	1983 to 1992	1993 to 2003	1971 to 1982	1983 to 1992	1993 to 2003
Nordic	Sweden	20.1	21.4	26.1	24.1	27.2	23.4	1.35	1.63	1.89
	Norway	28.9	24.2	27.7	16.8	20.6	23.4	1.30	1.43	1.51
	Finland	21.0	20.0	23.4	13.6	17.0	16.5	1.37	1.42	1.81
	Denmark	23.9	22.3	21.6	20.9	22.7	23.3	1.05	1.18	1.27
Continental	Belgium		23.2	28.3		11.2	11.0		1.47	1.64
	Netherlands	24.5	25.3	26.5	8.6	8.3	8.1	1.11	1.46	1.60
	Italy		31.1	31.3		8.9	9.1		1.34	1.32
	Austria			26.7			14.1			1.22
	France	31.6	32.8	28.9	12.4	13.5	14.2	1.47	1.57	1.63
	Germany	30.1	27.2	27.3	9.2	9.9	9.6	1.07	1.28	1.30
Liberal	UK	24.9	30.5	32.2	18.5	15.8	13.0	1.27	1.61	1.69
	US	35.1	37.3	39.7	10.6	10.9	11.1	1.53	1.57	1.78
	New Zealand		31.3	33.7		9.4	8.7		1.44	1.52
	Canada	31.2	28.6	29.4	14.6	14.6	13.6	1.21	1.39	1.74
	Australia	31.0	33.0	29.8	10.7	11.4	10.0	.97	1.27	1.39
	Ireland			31.9			8.3			2.56

Note: All figures are average values of available observations for corresponding periods, 1971 to 1982, 1983 to 1992, and 1993 to 2003.
[a]Gini based on post-tax, post-transfer (disposable) income. Different sources of income definitions are not adjusted.
[b]The size of general government employment as a percentage of the total working age population (ages 15 to 64 years).
[c]The rate of the productivity of the manufacturing sector to that of the community, social, and personal service sectors. We compute sectoral productivity as the ratio of the value added in a sector to the employment size in the sector.

interaction effect on distributional outcomes is most salient in some Nordic countries (i.e., Finland and Sweden), but it is also observable in some liberal countries (and Belgium). Next, our multivariate regression analyses test whether the proposed interaction effect contributes to the ineffectiveness of public-sector-expansion strategies in advanced industrial democracies.

Multivariate Analyses

In Model 1 of Table 2, we introduce public-sector employment in the presence of the simplest set of control variables: two period indicator variables and five indicator variables describing different income definitions. Model 1 shows that, as expected,

public-sector employment has a strong negative effect on income inequality. This suggests that a public-service-expansion strategy is generally effective in reducing income inequality. The period indicators are positive and highly significant, suggesting that inequality increased continuously over time during the past two decades, compared to the 1970s (i.e., 1971 to 1982).

Models 2 to 4 tell a different story. We separately tested the effect of public-sector employment on inequality by splitting the original sample into two groups, one covering 1971 to 1992 ($N = 120$) and the other 1993 to 2003 ($N = 119$). In Model 2, public-sector employment still has a very strong negative effect on inequality, but the effect becomes statistically nonsignificant in Model 3 when more recent data are tested. The results

Table 2. Unstandardized Coefficients from the Fixed Effects Models of Income Inequality (the Gini) on Selected Independent Variables: 16 Countries, 1971 to 2003

	Model 1	Model 2 (1971 to 1992)	Model 3 (1993 to 2003)	Model 4	Model 5	Model 6
Decade Indicator 1983 to 1992	1.217	1.699		−1.410	.499	.568
	(3.18)**	(4.22)**		(1.04)	(.99)	(1.26)
Decade Indicator 1993 to 2003	2.551			−1.562	2.032	1.749
	(6.28)**			(1.08)	(3.16)**	(3.09)**
Unit of Analysis – Family	2.240	1.300		1.242	2.795	.909
	(2.58)*	(.94)		(1.35)	(2.86)**	(1.00)
Unit of Analysis – Household	3.237	.880	5.378	2.584	.496	3.253
	(3.23)**	(.66)	(2.92)**	(2.54)*	(.47)	(3.34)**
Equivalence Scale – Household	.896	1.175	−.148	−.558	1.777	−.433
	(1.19)	(.92)	(.13)	(.62)	(2.12)*	(.54)
Equivalence Scale – Household per Capita	3.281	2.446	3.584	3.193	3.501	3.171
	(5.96)**	(3.12)**	(2.25)*	(5.89)**	(5.66)**	(5.91)**
Income Definition – Monetary Income	1.328	2.625	.051	.995	.968	1.136
	(2.06)*	(3.29)**	(.03)	(1.53)	(1.34)	(1.80)
Public-Sector Employment	−.728	−1.018	.489	−.902		−1.551
	(7.72)**	(7.67)**	(1.17)	(7.87)**		(6.55)**
Productivity Gap					2.022	−6.839
					(1.76)	(3.02)**
Interaction Term Public Sector × Productivity Gap						.556
						(3.83)**
Interaction Term Public Sector × Decade 1983 to 1992				.151		
				(2.00)*		
Interaction Term Public Sector × Decade 1993 to 2003				.262		
				(3.00)**		
Constant	35.304	40.278	21.063	39.514	21.080	47.194
	(21.40)**	(17.78)**	(3.24)**	(18.00)**	(13.70)**	(11.63)**
Total Observations	239	120	119	239	239	239
Number of Countries	16	14	16	16	16	16
R-squared	.48	.48	.20	.51	.35	.52

Note: Absolute value of t statistics in parentheses.
*$p \leq .05$; ** $p \leq .01$ (two-tailed tests).

suggest that fundamental changes occurred during the past couple of decades that rendered the formerly effective equality project dysfunctional.

Model 4 re-merges the split samples and introduces two interaction terms between public-sector employment and two period indicators, which turn out to be positive and significant. The results suggest that the strong negative effects of public-sector employment on income inequality are significantly moderated for both the 1983 to 1992 and 1993 to 2003 periods; the larger size of the coefficient for the second interaction term (.262) relative to the first one (.151) suggests that the positive effects of the interaction term become stronger over time. Overall, results in Table 2 support the baseline predictions of Hypotheses 1

and 2. Models 1 and 2 demonstrate that public-sector expansion was an effective policy tool that achieved full employment and equality. Models 3 and 4, however, suggest that some fundamental structural changes encroached on the traditional basis of left-wing politics in advanced industrial democracies throughout the 1980s. In the 1990s, these changes dismantled the mechanism by which left-wing governments intervened in economies to achieve full employment and more equal income distribution.

To investigate why the public-service-expansion strategy lost its effectiveness over time, Model 6 introduces an interaction variable between public-sector employment and the productivity gap. The interaction term tests Hypothesis 2, that is, sectoral conflicts

originating from growth in the productivity gap will change the proposed negative causal link between public-service expansion and income inequality into a lesser or non-negative one.

Results in Model 6 lend credence to our theoretical prediction: the two main terms and the interaction term are highly significant and the signs of relevant variables are all consistent with our expectations. The highly significant, positive effect of the interaction term suggests that a public-service-expansion strategy is effective only when productivity gaps between the private-manufacturing and the public-service sectors are small. At this stage, coordinated wage bargaining flattens wage gaps between and within sectors, while formerly marginalized populations gain access to market income thanks to the high level of total employment sustained by public-sector expansion. However, when the productivity gap widens, public-service expansion leads to sectoral conflicts and to poorer employment performance. In turn, this eventually leads to higher income inequality due to wage dispersion within sectors and employment/budget crises.[22]

Figure 3-1 illustrates how the slopes of the government employment variable differ depending on the level of the productivity gap. When the rate measure of sectoral productivity difference is fixed at "K" for Model 6, the coefficient of public-sector employment is determined by $(-1.55 + .56 \times K)$. As the productivity gap changes from a low (–2 standard deviations below the mean) to a high level (+2 standard deviations above the mean), the public-sector employment coefficient approaches from –1.55 to nearly zero (when K = 2.77). This suggests that, at the highest level of productivity gap between sectors, the negative effects of public-sector expansion on inequality completely evaporate (as shown in the second panel of 3-1).[23]

Figure 3-2 presents the marginal effect (Brambor, Clark, and Golder 2006) of public-sector employment on income inequality as productivity difference changes. The graph shows that the size of the marginal effect decreases continuously as productivity difference increases. Ninety-five percent confidence intervals around the solid line suggest that the marginal effects of public-sector employment on income inequality are statistically significant when the productivity difference changes from 0 to 2.3 (without controls) or 1.8 (with controls). Within the range, the upper and lower bounds of the confidence intervals remain below the zero line. The negative marginal effect disappears, however, when the productivity difference changes between 2 and 3 for both graphs in Figure 3-2.

Overall, the results support our key argument that a fundamental structural change rendered the conventional left-wing strategy of public-sector expansion ineffective. Our findings show that in countries with high levels of sectoral productivity differences, public-sector expansion does not effectively reduce income inequality.

The variables introduced in Models 7 to 11 in Table 3 test whether the proposed public sector–productivity gap model is robust in the presence of other domestic structural, institutional, political, and international factors. Model 7 controls for five factors related to internal development and structural changes: labor force in agricultural sector, sector dualism, labor force in financial sector, unemployment rate, and female labor force participation rate. The results show that the main model is robust in the presence of these five variables.

The next two models test whether the proposed interaction model survives after controlling for political and institutional factors. Model 8 introduces two political partisan cabinet effects—cumulative left party and Christian Democratic party cabinet shares—that research has found to play critical roles in reducing income inequality in advanced industrial democracies (Bradley et al. 2003). The results show that the main model is not affected by the inclusion of these variables; both variables are (incorrectly)
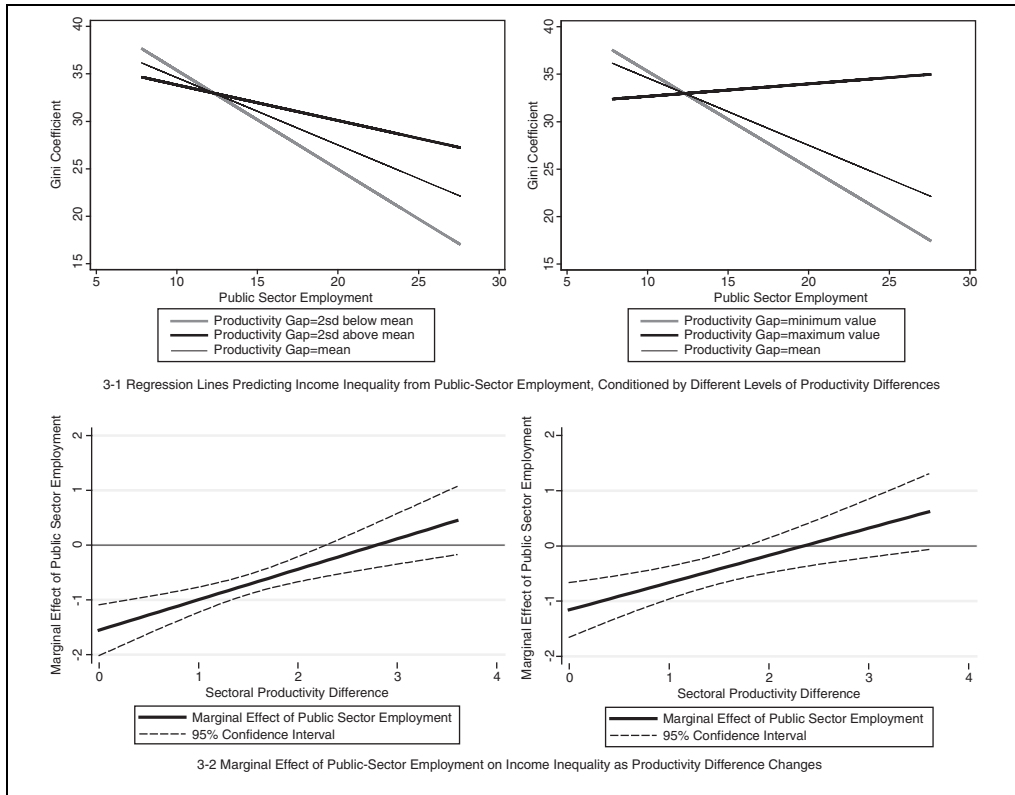
3-1 Regression Lines Predicting Income Inequality from Public-Sector Employment, Conditioned by Different Levels of Productivity Differences

3-2 Marginal Effect of Public-Sector Employment on Income Inequality as Productivity Difference Changes

Figure 3. Presentation of Interaction Effects

Note: The first panel in 3-1 shows the diminishing effects of public-sector employment on income inequality as the sectoral productivity gap changes from −2 to +2 standard deviations. The second panel in 3-1 shows the same changing slopes as the productivity gap increases from a minimum to a maximum value. Both panels are based on Model 6 in Table 2. The first panel in 3-2 is based on Model 6 with decade and income definition indicator variables only. The second panel in 3-2 is based on Model 11 with all control variables.

positive-signed (presumably due to high multi-collinearity). We believe that the main term of public-sector employment (which also captures the effects of wage-setting level on income inequality) captures the egalitarian role of left-party incumbency or cabinet participation. Model 9 includes union density and the welfare benefit generosity index. The welfare generosity (decommodification index) score captures the effects of more generous social benefits and entitlements on income inequality trends. As expected, welfare generosity has a strong negative effect on income inequality, but the coefficients of our main

interaction model are largely consistent and robust. This suggests that our public sector–productivity interaction model represents independent causal effects on inequality that cannot be captured by conventional welfare states' redistributive effects. Insignificant effects of union density are largely attributable to its multi-collinearity with other variables (i.e., government employment, the welfare generosity index, and female labor force participation).

Model 10 introduces popular measures of globalization that have been tested in previous studies: southern import penetration (Hurrell and Woods 1995; Wood 1994), foreign direct

Table 3. Unstandardized Coefficients from the Fixed Effects Models of Income Inequality (the Gini) on Selected Independent Variables: 16 Countries, 1971 to 2003

	Model 7	Model 8	Model 9	Model 10	Model 11
Decade Indicator 1983 to 1992	.392	.484	.713	.365	.822
	(.66)	(.81)	(1.19)	(.61)	(1.42)
Decade Indicator 1993 to 2003	.763	.768	.743	.743	.945
	(.90)	(.91)	(.86)	(.89)	(1.18)
Unit of Analysis – Family	−.151	−.315	−.387	.776	.482
	(.16)	(.32)	(.42)	(.77)	(.50)
Unit of Analysis – Household	3.328	3.444	3.216	2.778	2.791
	(3.49)**	(3.47)**	(3.40)**	(2.92)**	(3.05)**
Equivalence Scale – Household	−2.810	−3.043	−3.892	−2.462	−3.805
	(3.07)**	(2.96)**	(4.15)**	(2.65)**	(4.05)**
Equivalence Scale – Household per Capita	3.409	3.545	3.716	3.468	3.878
	(6.58)**	(6.38)**	(7.25)**	(6.78)**	(7.73)**
Income Definition – Monetary Income	.719	.608	.821	.520	.575
	(1.17)	(.93)	(1.36)	(.86)	(.98)
Public-Sector Employment	−1.337	−1.404	−1.208	−1.230	−1.126
	(5.17)**	(5.35)**	(4.76)**	(4.79)**	(4.44)**
Productivity Gap	−7.277	−7.575	−7.553	−6.366	−6.140
	(3.07)**	(3.10)**	(3.13)**	(2.72)**	(2.72)**
Interaction Term Public Sector × Productivity Gap	.510	.540	.520	.453	.442
	(3.41)**	(3.48)**	(3.39)**	(3.04)**	(3.05)**
Labor Force in Agriculture	−.002	−.002	−.001	−.002	−.002
	(1.59)	(1.79)	(1.35)	(1.61)	(1.51)
Sector Dualism	86.409	102.841	84.327	104.080	118.956
	(2.68)**	(3.01)**	(2.67)**	(3.22)**	(3.55)**
Labor Force in Financial Sector	57.274	52.087	67.608	38.167	46.468
	(2.87)**	(2.25)*	(3.45)**	(1.64)	(2.05)*
Unemployment Rate	−.070	−.081	−.025	−.114	−.091
	(1.14)	(1.31)	(.41)	(1.68)	(1.29)
Female Labor Force Participation	−.160	−.166	−.149	−.138	−.122
	(2.54)*	(2.62)**	(2.39)*	(2.20)*	(2.01)*
Left-Party Cabinet Share (Cumulative)		.007			
		(.08)			
Christian Democratic Party Cabinet Share (Cumulative)		.161			.152
		(1.49)			(1.35)
Union Density			−3.553		
			(.79)		
Decommodification			−.259		−.270
			(3.69)**		(3.80)**
Net Migration Rate				.089	.080
				(1.21)	(1.07)
FDI per Capita (log 10)				−.098	−.120
				(.15)	(.19)
Southern Import Penetration				−.165	−13.015
				(.01)	(.63)
Financial Openness				.663	.769
				(3.09)**	(3.65)**
Constant	52.891	53.853	58.522	50.357	54.101
	(10.79)**	(10.88)**	(10.30)**	(10.30)**	(11.36)**
Total Observations	239	239	239	239	239
Number of Countries	16	16	16	16	16
R-squared	.57	.58	.60	.60	.63

Note: Absolute value of *t* statistics in parentheses.
*$p \leq .05$; ** $p \leq .01$ (two-tailed tests).

investment outflows, net migration rates (Alderson and Nielsen 2002), and financial openness (Mahler 2004). Of these four globalization variables, only financial openness is positive and significant. All three terms of the proposed public sector–productivity gap interaction model are still significant and robust in the presence of the four globalization factors.

Model 11 drops cumulative left-party incumbency and union density (again due to multi-collinearity concerns), which were statistically non-significant in previous models, but includes all other control variables. The results show that our main model remains intact in the presence of currently known popular predictors of income inequality.

CONCLUSIONS

This study investigates the political-structural mechanism of increasing income inequality trends in advanced industrial democracies. By focusing on deep structural changes in an economy and their interaction with traditional class politics, we substantiate our claim that an increasing inter-sectoral productivity difference alters the negative relationship between public-sector expansion and income inequality.

We proposed two important intervening theoretical links between the public-sector expansion–sectoral productivity gap interaction model and income inequality: total employment performance and the role of coordinated wage bargaining. First, we suggested that the role of public-service expansion in decreasing income inequality by providing job opportunities for the economically and socially marginalized has been significantly diminished by an increasing inter-sectoral productivity gap and structural imbalance between sectors.

Second, we argued that when increasing productivity differences arise between private-manufacturing and public-service sectors, a public-sector-expansion strategy could disrupt an important institutional mechanism of

wage restraint—coordinated wage bargaining—that had undergirded the dominance of corporatist politics after the postwar period (Cameron 1984; Garrett 1998; Hicks and Kenworthy 1998; Western 1997). Once the coordinated wage-setting institutions are weakened, wage flexibility in highly competitive sectors severely worsens distributional outcomes. We conclude that a decline in employment potential and wage coordination leads to increased income inequality. Our findings demonstrate that our public sector–sectoral productivity gap interaction model accounts for the variations in within-country income inequality over the past three decades.

Overall, we revisited the conventional wisdom stating that public-sector employment will decrease income inequality. This idea has been taken for granted as a formal, macro-economic formula for equality projects in many countries. We found that the effect of equality projects based on public-service expansion is conditional on a structural factor: the inter-sectoral productivity gap. In a sense, our findings are consonant with Block's (1977) classic dictum that (welfare) state managers' opportunities and capacity to rationalize the economy and integrate (working-class) electorates through employment and redistribution will be structurally constrained and adjusted by the confidence of business communities. It is not a coincidence that public-sector reform projects become central policy agendas for both left- and right-wing parties in many advanced industrial countries (Garrett and Way 2000; Pontusson, Rueda, and Way 2002). Whereas the United States under Reagan and Britain under Thatcher provide classic stories of the privatization of public firms, Britain's Labour Party under Blair and Germany's Christian Democratic Party add new examples of reform projects that aim to introduce greater competition and liberalization of public-service sectors. We are skeptical, however, whether these right-wing and center-left governments' renewed drive for privatization and liberalization of formerly state-owned firms and monopolies will ameliorate the

sectoral conflicts originating from the inter-sectoral productivity gap. As Iversen (2005) notes, reforms targeting telecommunications and postal services are not likely to affect social and community services—which constitute the majority of the public sector and are therefore responsible for the bulk of employment—and thus an inter-sectoral productivity gap (and sectoral conflicts) will persist and even increase in postindustrial economies.

Our findings are not limited to the impressive strength of the public sector–productivity gap interaction model. The strong negative effect of welfare benefit generosity on inequality reconfirms the role of generous welfare regimes in fighting for equality through progressive taxation and generous social transfers (Alderson and Nielsen 2002; Bradley et al. 2003). This has been the single most important determinant for reducing inequality across advanced industrial democracies, even since the 1980s, when the public-sector employment strategy began to show its adverse effects in some liberal and social-democratic countries. Welfare states' role in protecting citizens vulnerable to rapid technological innovations and intensified global competition through generous transfers and entitlements should not be discounted. If the public-sector-expansion strategy becomes increasingly ineffective in achieving egalitarian agendas, leftist and reformist governments may resort to more generous social spending in areas such as non-insurance assistance programs (Pontusson et al. 2002) or job training programs (Boix 1998; Garrett 1998; Huber and Stephens 2001).

Furthermore, these findings do not suggest the complete failure of the traditional equality project focusing on job creation in the public sector. The public-service-expansion strategy, although it recently resulted in worse macroeconomic performance and distributional outcomes in some countries, has achieved its promise for gender equality (Huber and Stephens 2000), income equality, and full employment at a large scale for several

decades. Despite the limitations of this strategy, for some liberal and continental European countries in which public-sector employment has not reached its limit, an increasing supply of human capital formation (Boix 1998) in such areas as childcare and preschool services, formal education, job training, and employment services through public employment should remain a vital policy alternative for achieving "a high-employment and high-equality society" (Kenworthy 2008:279).

As long as public-sector expansion has not "coincided with (too rapidly) increasing exposure to the global economy" (Garrett and Way 2000:289), it will remain one of the most attractive policy choices for reformist parties. In the same vein, when reformist governments are faced with incentives to buffer populations vulnerable to increasing globalization (Rodrik 1997), policymakers should be aware that pursuing a public-service-expansion strategy could generate unintended consequences—that is, encroachment on their institutional bases. This study suggests that policymakers, under increasing structural constraints, need to consider not only the positive effects of public-service expansion, such as expanding the electoral base to new sectors of the population, but also its negative effects, such as alienating traditional bases of support.

Acknowledgments

Notes

1. For example, in Sweden until the mid-1960s, Tjänstemännens Centralorganisation-Swedish Confederation of Professional Employees (TCO) and Sverigers Akademikes Centraloganisation-Swedish Confederation of Professional Association (SACO) accepted the rate of wage increase determined by bargaining between Landsorganisationen-Swedish Trade Union Confederation (LO) and Svenska arbetsgivareföreningen-Swedish Employer Association (SAF) as the reference point for their own rate of wage increase (Gourevitch et al. 1984).

2. For similar points, see Hardiman (2002) for Ireland; Blais and colleagues (1990) for the United States; Langford (1996) for Canada; and Edgell and Duke (1986) for Britain. These authors note that cleavages in liberal countries between the public and private sectors grew on the basis of different employer–employee relationships, union strengths, political significance/influences, and attitudes toward taxation.

3. A reviewer pointed out that ''an enormous increase in the scope of information technology'' may bring about productivity growth in ''record-keeping and routine administration,'' which leads to questions about whether productivity growth in the public sector actually has been slow for the past few decades. Our investigation of this matter shows that productivity in the public-service sector steadily increased along with the manufacturing sector until the 1970s, but its upward trend flattened out since the mid-1980s; the manufacturing sector maintained a stunningly steady growth pattern. The productivity gap between the manufacturing and public sectors has greatly widened since the 1980s, especially in countries with highly competitive private manufacturing industries (for average and country-specific trends of sectoral productivity, see Part A in the online supplement [http://asr.sagepub.com/supplemental]).

4. For instance, in 1983, Swedish Metal Workers (Metall) decided to make separate agreements with their employers outside the conventional LO-SAF bargaining (Iversen 1996).

5. In countries such as Canada and the United States (primarily in the 1980s), where wage bargaining institutions were not formalized, sectoral conflicts between the private and public sectors may have contributed to more frequent changes in the ruling party—from liberal to conservative—which, in turn, led to radical reductions in the welfare state and public-sector size in the interest of business and exacerbated distributional outcomes (Olsen 2002). Because this political process model (as an intervening mechanism) through partisan politics is not universally observable beyond liberal countries (i.e., in continental European and Nordic countries, right-wing parties did not necessarily reduce welfare states, and left-wing parties did not necessarily protect welfare states, during times of economic crisis), we do not pursue this causal path as our main explanatory model.

6. The unemployed involved in this structural mismatch are predominantly male workers who are not likely to take jobs in women-dominant public services. This gender-based division may have contributed to the increasing sectoral conflicts between the private and public sectors.

7. Many neoclassical economists contend that higher income and corporate taxes to expand the public sector results in less profits and investment and more redundant workers in private sectors (Friedman 1979). In turn, this leads to bigger burdens for the public sector because redundant workers must be absorbed by the public sector or supported by welfare state transfers. These scholars argue that this inefficiency eventually leads to a combination of government budget crises, higher unemployment, and lower economic growth.

8. A reviewer pointed out that as relative prices in the fast-growth sector fall, consumers will buy more products from the fast-growth sector and fewer products from the slow-growth sector. The lack of demand for services and goods from the public sector will eventually put governments under pressure to cut services or keep wages down. This mechanism of relative price–demand change may also contribute to governmental budget crises.

9. Under coordinated wage bargaining, firms in internationally competitive manufacturing industries suffer a shortage of skilled labor and a serious decline in workers' morale and commitment. For instance, Volvo and other leading firms with high productivity had severe absenteeism from the late 1970s (Pontusson 1992). The decline in high-skilled workers' morale led employers in the high-tech, export-led industries to bring coordinated wage bargaining to an end (Ahlén 1989; Alexopoulos and Cohen 2004).

10. In this way, welfare states maintain all three policy goals—generous transfers, full employment, and budget restraint—but sacrifice the equality principle, the most essential policy goal for left-wing governments (Iversen and Wren 1998).

11. Not all rich democracies follow this coordinated wage-bargaining route. Increases in income inequality in some rich democracies (e.g., liberal countries) are more attributable to the other causal route, the decline (or limit) in total employment capacity due to structural imbalance and government budget crises.

12. Tables S-B1 and S-B2 in the online supplement test the roles of two intervening theoretical links: coordinated wage bargaining and total employment capacity. Table S-B1 shows the significant moderating effects of an increasing productivity gap on the linkage between public-sector employment and the level of wage bargaining and the linkage between public-sector employment and total employment capacity. Table S-B2 shows that both wage bargaining and total employment capacity have substantial negative effects on income inequality.

13. Our theoretical framework highlighting sectoral conflicts and ensuing wage flexibility within private

sectors requires a measure that is more sensitive to change near the middle of the income distribution than at the tails. Therefore, we use the Gini rather than other common measures of income inequality such as the decile9/decile1 ratio.

14. The former aspect is critically important because one important causal link between public-sector employment and income inequality is the activation of a formerly nonactive labor force, which is not likely to be captured in wage inequality data. In addition, the exclusion of non-wage-earner asset holders at the highest level of the income bracket is another crucial drawback of wage inequality data, given that the recent upward income inequality trends in advanced industrial countries are attributable to this group's increasing share of wealth and income.

15. Out of a maximum 1,387 unbalanced observations for the 18 OECD countries, we selected 262 quality observations from 1970 to 2003 using a set of criteria for maximum coverage and consistency. After an additional reduction of the sample due to 23 cases missing values in the key independent variables, our analyses include an unbalanced total of 239 observations on 16 OECD countries from 1971 to 2003 (see Part C in the online supplement for descriptive statistics of income inequality before and after the list-wise deletion).

16. We introduce several indicator variables for different income sharing units to provide a conservative safeguard against potential bias resulting from the unmeasured unit effects of different income sources and from measurement errors. (Some of these indicator variables are automatically dropped from regression analyses using Stata 10, due to high multi-collinearity.) Introducing indicator variables is a conservative strategy because they absorb the effects of the main independent variables of which causal mechanisms are correlated with the different definitions of income sources. To resolve remaining skepticism about the quality of WIDER data regarding its mixture of different sources of inequality data (Atkinson 2004; Atkinson and Brandolini 2001; Cameron 2010), we test our models on the subsample composed solely of cases with the same income definitions in terms of income sharing units and equivalence scale used (see Table S-B3 in the online supplement). The results show that our main model remains highly significant even with this smaller subsample ($N = 181$).

17. Because another conventional denominator—total labor force (or total employees)—is heavily influenced by female labor force participation (which tends to increase the numerator and denominator together), recent studies use working-age population as the denominator of total, sectoral, or government employment measures (see Huber and Stephens 2001; Iversen 2005; Scharpf and Schmidt 2000). With this denominator, public-sector size in continental European countries, in which women's labor force participation is traditionally discouraged by culture and institutions, will be smaller than if we used total labor force or employees as the denominator.

18. Although employment size in the sector is not the most ideal measure of labor input, data with further adjustments made for part-time work and hours worked per worker are not available for all countries and years (OECD 2006). Therefore, we use another OECD-recommended measure of industry-level labor productivity, value added per person employed in a sector (OECD 2001, 2006).

19. According to International Standard Industrial Classification (ISIC Rev. 3), this sector includes public administration and defense; compulsory social security; primary, secondary, higher, or other education; health or social work activities; other community, social, and personal service activities such as sewage and sanitation; membership organizations; activities of private households with employed persons; and extraterritorial organizations and bodies. Not all of these activities (e.g., private households with employed persons) are necessarily considered the public sector, but we assume these personal household-related activities, if underestimated, represent a miniscule fraction of the entire amount of value added in the sector (e.g., .6 percent in the United States in 2000 or not even measured at all in many other countries, being recorded as 0).

20. We tested other variables as controls: natural population increase, secondary school enrollment, income per capita (and its squared term), government expenditures, government consumption, total government social expenditures, social security transfers (instead of welfare generosity), and the size of the elderly population (over 65 years). These are mostly statistically nonsignificant, and our main theoretical model is not affected by including these additional controls.

21. We conducted a Hausman test to see if REM and FEM produce any systematic differences in their estimates of coefficients. Our test for the full model (Model 11) rejects the null hypothesis that there is no systematic difference (Chi-square [dif = 15] = 105.63 and Prob [>Chi-square] = .000), which suggests that FEM should be preferred. However, as results in the text and Table S-B4 in the online supplement show, there are few substantial differences in the effects of the main theoretical model across the two estimation strategies.

22. Because all three terms are significant, some might think it would be possible to interpret public-sector employment as a conditional factor and treat the productivity gap–income inequality relationship as

the main causal link, but we do not develop such an interpretation. The productivity gap, when introduced alone in Model 5, is statistically nonsignificant. Therefore, the negative (significant) coefficients of the variable in the subsequent models should not be interpreted independently. They are significant only as a conditional factor that converts the effects of public-sector employment on income inequality from negative to less or non-negative; they merely contribute to the decreased size of the constant.

23. None of these minimum or maximum values are identified as influential outliers in our regression diagnostics based on Cook's D, DFITS, Welsch's W, or DFBETA (Belsley, Kuh, and Welsch 1980) (see Part E in the online supplement), which means the regression model fits these cases reasonably.

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