PUBLIC SECTOR GROWTH
AND LABOR MARKET FLEXIBILITY:
THE UNITED STATES VS.
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ABSTRACT

This paper investigates whether a larger public sector limits labor market adjustment, using data from the United States and the United Kingdom, two countries with quite different public/private employment trends. The results indicate that the two countries have a similar mix of occupations and workers in the public versus the private sector. Both countries have experienced some overall convergence of the public/private wage differential over the 1980s, although the extent of this differential varies substantially by occupation and gender. Both countries have also seen wage inequality in the public and private sectors increase over the past decade. Variability in public sector employment and wages over time is generally as great as in the private sector, although the cyclical patterns are different. The US public sector, however, seems more responsive to private sector demand changes than does the public sector in the UK. The paper concludes that the public sectors of both countries show a substantial amount of change and adaptation, particularly over the past decade.

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I
Introduction

Expansions in transfer and income security programs have direct effects on the behavior and well-being of those who are eligible for them. But such expansions also have indirect economic effects that may be equally important to understand in evaluating the impact of these programs. In most cases these programs are run through the public sector and produce an increase in government expenditure and in public sector employment. If public sector labor markets operate differently than private sector labor markets, then expansions of the public sector can change the nature of labor market equilibrium. This could happen, for instance, if public sector jobs require a different set of worker skills, if the public sector wage setting process is different, or if the elasticity of public employment and wages to demand changes is lower.

Major expansions of government-run programs throughout the industrialized world in the post-World War II era resulted in increases in the size of the public sector. Table 1 compares the share of government outlays in GDP and the share of public employment in total employment for six

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advanced industrial countries over the last three decades.[1] Most European countries experienced a large increase in the relative size of the public sector and in public employment between 1960 and 1980, while the United States experienced more moderate growth in the public sector over these two decades. In contrast, the expansion of the public sector stops or slows substantially in all countries in the 1980s.

This paper investigates the implications of changes in the relative size of public and private sector labor markets in the United States and the United Kingdom. These two countries provide a particularly interesting comparison for at least three reasons. First, they both have relatively unregulated private sector labor markets,[2] thus public/private differences between these countries will primarily reflect differences in the public sector. Second, the composition of the public sector in each country is quite different. The US has a larger military sector, while the UK has more publicly-owned industries, including a nationalized health sector. This potentially allows me to investigate the extent to which public/private differences can be ascribed to the different mix of goods produced in the public sector. Third, the pattern and timing of public and private sector growth has been quite different in the two countries. Both countries had similarly-sized public sectors in 1960, but the United Kingdom saw greater relative public sector growth than the United States over the 1960s and 1970s, and a greater decline in the public sector over the 1980s. The

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question is whether these differences have had differential effects on employment patterns and employment flexibility.

In the 1980s, the political winds in the two countries have blown in similar directions, as both countries witnessed the election of conservative political leadership at the end of the 1970s. Both Ronald Reagan and Margaret Thatcher promised to shrink the size of government, to create greater competitive pressures in the public sector and to better align public and private wages. In the United Kingdom, Thatcher embarked on major privatization efforts. Over the 1980s, more than 20 companies moved out of public ownership, while those companies that remained publicly owned were restructured to encourage more competitively-based operations.[3] In addition, Thatcher implemented major changes in the wage setting process in the public sector. Local governments were given more control over wage setting for local government workers. The structure for public wage-setting was altered, as existing definitions of public/private comparability were changed. One of the more visible symbols of these changes was Thatcher's very public de-unionization of a group of civil servants in the General Communication Headquarters (GCHQ) in 1984.

The Reagan Administration made fewer nationally-mandated changes in public sector labor markets over the 1980s. Because the US never had the nationalized industries that existed in the UK, no major federal privatization occurred, although a number of state and local governments experimented with

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privatizing certain services, such as publicly-owned jails or hospitals. Similar to Thatcher's GCHQ incident, the event which became the symbol of Reagan's concern about high wage levels in the public sector was the so-called "PATCO incident" in 1981, in which he fired all unionized air controllers and de-certified their union. The largest changes of the 1980s occurred at the state and local level, where large numbers of jurisdictions conducted major comparability studies and realigned public and private sector wages, typically as an outgrowth of the discussion over comparable worth.[4]

This paper investigates the effect of the public sector on labor market flexibility in three ways. First, the paper compares the differences in employment and wages in the two sectors and investigates whether these differences simply reflect a different mix of product demands in the two sectors. Second, the paper investigates the nature of public/private wage differentials in the two countries, and tests whether these differentials decreased over the 1980s when both countries made an effort at greater "wage alignment." Third, the paper looks at the long-term adjustment process of employment and wages in both countries, and investigates whether there is evidence of substantially different responses to aggregate demand changes in the two sectors.

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II
Should the Public Sector Differ?

If there were no difference in the operation of the public versus the private sector, it would matter little whether services were provided by one or the other. In fact, however, there are at least three reasons why the labor markets in these two sectors could differ. First, many researchers have suggested that there is less market competition within the public sector. The public sector disproportionately provides public goods or creates and maintains monopolies in the production of goods, limiting the amount of market competition for public sector workers and their services.[5] The result might be public/private differences in the level and distribution of pay, in the quantity of workers hired and retained, and in the adjustment in pay and employment as demand changes. For instance, this lack of competition may increase the tendency toward strong internal labor markets in the public sector, (i.e., the Civil Service or the military), which typically increases pay rigidities. Similarly, the monopolistic provision of socially necessary goods such as police or fire protection may lead to different levels of unionization and worker bargaining power. In recognition of this problem, many public sector wages in both countries are set through comparability surveys, designed to determine pay levels for equivalently skilled private sector workers whose wages are assumed to be market-based.

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Second, the public sector might have more diverse employment goals than the private sector. While the private sector's primary concern is profit maximization, the government may be pursuing social welfare goals or political goals as well as production-related goals in its employment decisions. For instance, the public sector might seek to reverse historical patterns of discrimination in the employment and promotion of women or minority workers. Alternatively, non-market political pressures may affect pay determination and expenditure decisions by public officials whose primary concern is the next election. These political and social concerns could result in different relative employment and wage levels among workers in the public sector.

Third, because the goods provided by the public sector differ from those provided by the private sector, there may be differences in the skill demands generated by public sector versus private sector expansions. In essence, the government buys a different bundle of goods and services than do consumers. To the extent that there is a tradeoff between public demand and private demand, increases in public sector demand will disproportionately benefit those workers whose skills are more useful in the production of public than private goods. Some observers have further suggested that public sector goods, because they are heavily service-oriented, are less likely to experience productivity-enhancing technological change. In this case, a growing public sector will have long-term productivity and cost implications for the economy.

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Modelling the behavior of the public versus the private sector is a complex problem. To fully capture the complete set of possible differences, one would have to account for differences in the competitive environment, in the type of goods produced, and in the decision-making process of government versus private sector employers. While models have been developed that investigate each of these issues separately, there is no "integrated model" of public sector behavior currently available.

This paper is primarily an empirical exploration, investigating differences in the employment and wage outcomes in the public sector versus the private sector. To the extent that these findings shed some light on theoretical predictions of different causal theories, that will be noted. But these theories are impossible to empirically disentangle in any satisfactory manner with the data available for this paper.

III
Public Sector Employment and Wages in
the US and the UK

Aggregate employment patterns in the US and the UK have been very different over the past several decades, as have patterns of public sector employment. Table 2 shows trends in employment in the public and private sectors in both countries. All of the employment data discussed in this section come from the National Income and Product Accounts (NIPA) data of the two

countries. This data is available from 1961 to 1990 for the United Kingdom, and from 1948 to 1990 for the United States.[6]

Within the United Kingdom, private employment was virtually flat throughout the 1960s and 1970s and has shown an increase only in the 1980s. In contrast, public sector employment grew steadily, to a peak in 1979, and has declined while private employment grew in the 1980s. Local government employment grew faster in the 1960s while central government employment grew faster in the 1970s. Employment in nationalized industries was largely constant until 1980, although its share fell as other public employment expanded. After 1980 it fell steeply as many of these industries were privatized. Figures 1a through 1d depict employment patterns in these sectors in the United Kingdom.

Within the United States, private employment grew strongly over the past three decades, almost doubling between 1960 and 1990. Public sector employment showed equally strong growth from 1960 through 1980, thus the share of public sector employment remained almost constant. Over the 1980s public employment has grown, but less steeply than private employment, leading to a fall in the public share. Within the public sector, federal employment peaked in 1968, due to the large military buildup during the Vietnam War. State and local employment grew strongly over this entire time period, more than doubling in size. Employment in public enterprises in the United States is extremely small compared with the United Kingdom, and grew

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at about the same rate as overall employment.[7] Figures 2a through 2d depict the employment patterns in these sectors in the US.

Table 3 analyzes the changing composition of employment within different parts of the public sector.[8] In the United Kingdom, the military's employment share steadily declines, while the National Health Service (NHS) expands to over 50 percent of central government employment by 1990. At the local level, education has accounted for approximately half of all local employees in the United Kingdom since 1970. The share of employees in social services has expanded steadily over time, as has the share in police services.

In the United States, the military accounts for a much larger share of federal employment, although this share has fallen as the size of the armed forces has shrunk. At the state and local level in the US, education accounts for a little over half of all employees. As in the UK, this share has been relatively flat since 1970.

In short, the United States experienced far more overall employment growth, both public and private, over the last three decades, while UK private sector labor markets were virtually stagnant for much of this period. Within the United Kingdom, the central government has twice the share of total employment as in the United States in 1990. This occurs despite much larger armed forces employment in the US, and partially reflects the presence of National Health Service workers as central government employees in the UK.

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As a share of total employment, local employment in the UK is about equivalent to state and local employment in the US and seems to be composed of similar types of spending. Government enterprise in the UK accounts for a much larger share of total employment than in the US, even after extensive privatization over the last decade.

It is worth noting that the most rapid public sector employment growth in both countries has occurred at the state and/or local level. Much of this is due to the expansion of public employment in education, which increased particularly rapidly in the 1960s as both countries experienced strong population growth among the young.[9] This makes it difficult to attribute the overall sluggish labor market growth within the private sector of the UK to the larger public sector employment share in that country. In fact, the public sector component (local employment) that was growing most rapidly in the United Kingdom grew just as rapidly in the United States, accounted for just as much total employment, and clearly did not prevent private sector employment growth in that country.

The US NIPA data include average annual earnings as well as employment by sector, but the UK NIPA data do not. From 1978 on, the New Earnings Survey (NES), a random national sample of workers in the UK, provides information on average gross weekly earnings among private and public sector workers.[10] Public and private sector wage trends from these two data sources are presented in table 4.[11]

Within the United Kingdom, there is little evidence of public/private earnings differences in the NES data, except in public enterprise in 1980. Between 1980 and 1990, relative public/private sector earnings decline among all public sector workers. Figure 3a graphs public and private earnings trends from 1978 to 1990. Figure 3b graphs earnings trends among central government, local government, and public enterprise workers. Real earnings generally increase among all workers over this time period.

Within the United States, there are positive public/private earnings differentials among federal workers and public enterprise workers. Unlike the UK, there is no evidence of a decline in these differentials over the 1980s, and in fact they appear to grow somewhat. Figure 4a graphs public and private earnings trends in the US from 1948 to 1990. Figure 4b graphs trends in federal, state/local, and public enterprise earnings over this time period. Real earnings rise substantially among all groups of workers during the 1950s and 1960s and the 1980s.

The public/private earnings comparisons in table 4 are somewhat difficult to interpret, since they do not control for hours of work over the year, or for differences in worker skills and characteristics between sectors. We will investigate public/private wage differentials more closely in section V of this paper, using microdata samples of workers in each country.

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The bottom part of table 5 shows the occupational distribution of jobs in the public and private sectors in the two countries, using roughly comparable occupational categories. Similarities in the public/private occupational distribution of the two countries are apparent. Over one quarter of public sector employees are health, education and welfare professionals, while less than 5 percent of private employees are in this area. The public sector has a higher proportion in service occupations, and a much lower proportion in sales and blue collar occupations. In the UK, the public sector also has a smaller share of workers in general management positions, although in the US the two sectors are about equivalent. Conversely, in the US the public sector appears to employ a greater share of clerical workers, while the shares are equivalent in the UK.

Even within specific occupational groups, public sector workers are typically more highly educated and older. The greater use of non-white workers in the US public sector is apparent among all US occupations, while the greater use of part-time workers in the UK public sector is particularly concentrated among manual workers. Within the US data, where I have enough observations to look at quite detailed occupational categories (such as "elementary school teacher"), these sectoral differences remain. This implies that there are probably differences in the entire labor market process by which employees are hired and retained in the public sector.

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I have also looked at the changes in relative worker characteristics over time. As discussed above, there were major efforts to retrench the public sector in both the UK and the US over the 1980s. As it turns out, there are few changes in the relative age or education levels in these two sectors over these years in either country. In the US, there is also little evidence of changes in the relative use of part-time or minority workers in the two sectors. In the UK there is an increase in the relative use of both part-time and female workers in the public sector.

It is clear from table 5 that expansions in the public sector will lead to growth in the share of white collar, clerical and service-sector jobs.[15] If there is any trade-off between public and private sector growth, blue collar male workers will be most negatively affected by public sector expansion. Such expansion would increase the employment of women and (particularly in the US) minority workers. These sectoral differences, however, reflect both demand and supply effects. There is evidence from the US that women and minorities are much more likely to select public sector jobs (Blank, 1985). To the extent that the public sector provides more attractive job opportunities to workers (women and minorities) who are often considered disadvantaged in the labor market, this may increase long-term labor market productivity. Public sector expansions in the UK will also increase the share of part-time jobs, which may provide jobs to workers who would otherwise be unemployed. This could be viewed as increasing labor market flexibility, but the

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disadvantage of such flexibility is a larger share of the workforce is in lower paid employment.

V
Public/Private Wage Differentials and
Their Changes Over Time

If public/private differences are solely due to differences in demand mix, then there is little reason to worry about the size of the public sector; if the private sector produced these goods, it would also demand the same mix of workers. If, however, these employment differences reflect an entirely different wage/employment equilibration process within the public sector, then this will be reflected in public/private wage differentials, even among workers in relatively similar jobs.

Most research in the US indicates that substantial public/private wage differentials exist (Ehrenberg and Schwarz, 1986), although this work has largely not tried to test underlying theories about these differences.[16] Initial work in the United States by Smith (1977) suggested that federal workers had higher wages than comparable private workers; state and local workers showed less consistent differences. Women and minorities were almost uniformly better paid in the public sector. More recent work has suggested that the wage advantage has eroded for federal workers, due primarily to the erosion of federal wages among more skilled employees (Freeman, 1987,

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Krueger, 1988a, Katz and Krueger, 1991). Public/private wage differentials remain substantial even after controlling for selectivity into the public or private sector (Venti, 1987, Gyourko and Tracy, 1988).

Within the United Kingdom, there is much less empirical research on public/private wage differentials. Looking at raw public/private wage differences, Gregory (1990) finds higher pay for white-collar workers and lower pay for manual workers in the public sector, with no clear trends over time between 1970 and 1982. Recent attempts by the British government to substantially alter the determination of comparable pay levels has led to much discussion of how effective public pay determination should be done (Cappelli, 1983, S. Kessler, 1983, I. Kessler, 1990), but there is little empirical work testing the effects of these changes.[17]

This section investigates both aggregate and occupation-specific differences in public and private sector wages in the US and the UK. Four selected occupational groups are used to provide more detailed information on the nature of public/private wage differentials: senior managers and professionals, professionals in health, education or welfare-related occupations (hereafter HEW professionals), clerical workers, and manual workers. All of these occupational groups have substantial employment in both the public and private sectors. Appendix II defines these four groups in more detail.

I am particularly interested in changes in public/private wage differentials over the 1980s. As noted above, there was an effort in both

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countries to better align public and private sector wages during this decade. If the public sector was indeed "out of line" in its wage payments and if reforms over the 1980s were well-directed, then the result should be a decline in public/private wage differences over the 1980s.

It is worth noting that wage changes might differ in the two sectors if productivity changes are occurring at a different rate among public and private sector jobs. Baumol (1967) first suggested that public sector jobs might experience little productivity change because of their labor-intensive nature. Empirical investigation of this issue, however, has indicated that public sector jobs experienced substantial productivity growth in recent decades[18], and there is little reason to believe that productivity in the public sector has grown more slowly.

Table 6 presents the simple differences in log wages between the public and private sector in the early and late 1980s in columns 1 (UK) and 3 (US).[19] There is a substantial difference in the level of public and private pay in the UK in 1983 in this data, larger than that reported in the New Earnings Survey which shows essentially no public wage advantage. These two surveys are reporting on somewhat different samples; most notably, the New Earnings Survey includes only full-time workers, includes elderly workers, and excludes very low-wage workers. But the magnitude of the difference is problematic. In the 1983 GHS data, public sector workers receive 23.5 percent higher wages than private sector workers. Senior managers in the public sector are

paid 11.2 percent more, while clerical workers are paid 34.1 percent more. Between 1983 and 1987 all of these differences decline substantially.

The log difference in public/private sector wages in the US in 1979 (column 3) is substantially smaller. These CPS data are consistent with the public/private earnings differences in the NIPA data and indicate a public wage advantage of 9.0 percent. Among HEW professionals and clerical workers, US public sector workers appear to be paid less. Quite in contrast to the UK, between 1979 and 1989 overall public/private pay differences rise on average in the US, from 9.0 percent to 18.1 percent. These unadjusted differences in pay, however, may reflect differences in the skills needed on public and private sector jobs, and therefore may reflect productivity-related differences in the group of workers hired into public versus private jobs. Column 2 presents the log wage regression coefficient on a dummy variable equal to 1 if a worker is employed in the public sector in the UK, controlling for education, experience, sex, region, race, marital status, and part-time employment. Thus, the regression coefficient measures any public/private difference in wages that remains after holding constant other standard determinants of wages. Column 4 presents a similar log wage regression coefficient on a public sector dummy variable in the US. Columns 5 and 6 estimate separate public sector coefficients for federal and state/local workers in the US.

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The results in column 2 for the UK indicate that controlling for worker and job characteristics reduces public/private wage differences, although it does not eliminate them. The regression-adjusted public/private wage difference declined 3.5 percent between 1983 and 1987, thus, in the United Kingdom, relative public/private wages did move closer together over the 1980s. This trend did not occur uniformly overall all occupations, however. Clerical and manual workers saw little change in their public sector wage advantage. HEW professionals saw a clear decline, from a 24 percent wage advantage to a 16 percent wage advantage. But senior managers went from relatively comparable wages to public sector wages that were significantly lower than those in the private sector by the late 1980s.

Within the United States, the public sector coefficients (column 4) are also smaller than unadjusted differences.[20] Once worker characteristics are controlled for, there is no public sector advantage in 1979, and a small 3.1 percent public sector advantage in 1989. There is little evidence in column 4 that the 1980s brought the wages of public sector workers more in line with their private sector counterparts. Senior public managers saw their wages go out of alignment, HEW professionals remained in alignment, and low-skilled manual workers saw substantial increases in their public sector advantage.

With the US CPS data I can estimate adjusted public wage differentials within the federal and the state/local sectors. The last two columns in table 6 do this. The results provide strikingly different conclusions than one would

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reach looking only at the aggregate public/private regression coefficients in column 4. The reason why there appears to be no net public sector wage differential is not because there is no difference in public/private wages, but because there is a significant positive public wage advantage at the federal level, offset by a significant negative public wage disadvantage at the state/local level. While the federal wage differential does not change over the 1980s, the negative state/local differential appears to come into better alignment with regard to public/private wages. Thus, the overall public sector wage differential appears to worsen, but this is entirely due to aggregation between federal and state/local effects.

Several conclusions should be drawn from table 6. First, both countries appeared somewhat successful at bringing wage levels more in line between the public and the private sector over the 1980s, although in the US, this consisted more of bringing state/local workers up to private sector wage levels, while in the UK this was the result of bringing down higher relative public wages. To the extent that both countries pursued a goal of bringing public and private wages into better alignment, this appears to have been achieved. Second, in both countries, senior public managers saw extensive relative wage declines. HEW professionals in the UK also experienced wage declines, but this did not happen in the US. Third, the US saw substantial relative wage gains among less-skilled manual workers, although this trend was not apparent in the UK. The result of these changes among more and

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less-skilled public sector workers in both countries should be to narrow the relative wage distribution in the public sector versus the private sector, a point I will pursue further below. Fourth, the substantial differences in the behavior of the federal and the state/local sectors in the US should create hesitation about drawing strong conclusions from the aggregate UK public/private wage changes. Disaggregating the UK public sector coefficient into the effects within the central, local, and public enterprise subsectors of the economy could result in a very different picture of public/private pay movements. In particular, privatization efforts within the UK could have changed the nature of jobs and workers within the public sector over these years, thus changing the selectivity of workers into the public sector. It would be extremely useful to be able to separate changes in public enterprises from changes in other public sector jobs, but unfortunately, the data does not allow this.

Table 7 presents results similar to those in table 6, but focuses on differences between male and female workers. We noted above that women appear to be disproportionately more likely to be hired by the public sector. In table 7 we can investigate whether women in the public sector also receive a greater wage advantage. Columns 1 and 4 of table 7 repeat the aggregate "public sector wage effect" estimated from a regression controlling for worker and job characteristics in the UK and the US, respectively. Columns 2 and 5 present similar results for male workers in the two countries, and columns 3 and 6 present results for female workers.

The primary conclusion from table 7 stands out sharply for both countries and for all occupations: Women have larger public sector wage advantages than men, or they have smaller public sector wage disadvantages in virtually all occupations and years. Male public sector workers in the UK in 1983 have an 8.0 percent wage advantage, while female workers have a 21.4 percent advantage. In the US in 1979, men have a 7.3 percent wage disadvantage in the public sector, while women have a 7.6 percent advantage. This wage advantage could be one reason for the greater presence of women in the public sector. In results not shown here, I have estimated probit models of public sector employment, including expected public/private wage differences in the regression. While the wage differences are important, women are more likely to be in the public sector, even after controlling for their larger public/private wage differential. This could imply that women prefer public sector work, beyond its wage advantages, or it could indicate that public sector employers both give hiring preferences to women and pay them better than their private sector alternatives. (I.e., it is difficult to judge whether the additional propensity of women to select into the public sector is coming from the supply or the demand side of the labor market.)

There are at least three important omitted variables in the regressions reported in tables 6 and 7 that might be affecting these results. First, as many have speculated, there may be substantial differences in the non-wage characteristics of public and private sector jobs, such as job security, fringe

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benefits, or work environment. If these differences are substantial, wage alignment between the two sectors might actually be an indication that total compensation is not in alignment. Unfortunately, I have no information on the non-wage characteristics of jobs in my data sets.

One way to infer information about total compensation is to look at the demand for public sector jobs. Katz and Krueger (1991) use US federal applications data to indicate that there are appear to be far more applications per job for blue collar federal jobs than for white collar federal jobs. Krueger (1988a, 1988b) also shows evidence of queues among federal workers in jobs with wage advantages. This implies that the pay differences we observe translate into total compensation differences, increasing the demand among workers for these jobs.

A second possible omitted variable is union status in the public and private sectors. Some have argued that public sector unions might be able to achieve higher wages because they can threaten to disrupt vital citizen services. Again, I do not have information on this variable in my data sets. Within the United States, there is little consistent evidence of greater public/private wage differences among unionized workers (Ehrenberg and Schwarz, 1986; Trejo, 1991), although some differences in wages and employment appear to occur under different bargaining arrangements (Zax, 1989, Ichniowski, et al., 1989). In the United Kingdom, there is little empirical work on this issue. Dickerson and Stewart (1992) have found few

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differences in the propensity of public sector unions to strike, once other factors are controlled for. Major changes in legislation and regulations governing trade unions in the UK over the past decade are generally believed to have weakened public sector union power (Saran and Sheldrake, 1988, and Towers, 1989).

A third omitted variable problem is more amenable to investigation. It has been suggested that some of the public/private sector differences are due to differences in the average size of public versus private sector establishments. Existing research in labor economics indicates that larger establishments tend to offer different labor market contracts than smaller establishments.[21] Larger corporations are likely to be more bureaucratic in their behavior, to have more strongly developed internal labor markets, and may be better able to smooth cyclical fluctuations. Some of the difference between public and private sector workers may be due to the fact that public sector jobs are more comparable to jobs in large corporations than in small firms. In this case, an establishment size variable would act as a proxy for the different types of jobs and job contracts available in larger firms.

In the US CPS data, I have no way to control for establishment size, but the UK GHS data includes this information. The GHS data for 1987 show that public sector workers are indeed more likely to be in larger establishments, with the following frequency distribution:

Establishment Size	Public Sector Workers	Private Sector Workers
1-24 workers	21.0 percent	39.0 percent
25-99 workers	26.2 percent	23.6 percent
100-999 workers	35.4 percent	27.8 percent
1000+ workers	17.4 percent	9.6 percent

If there are differences in the labor market contracting arrangements of smaller and larger establishments, it is clear that the public/private wage differential will reflect these differences.

Table 8 presents the regression coefficients for public sector jobs, interacted with establishment size. Rows 1 through 4 report the results from a single regression, which interacts the public sector dummy with four dummy variables for each of the four establishment sizes coded into the GHS data. The results in the first four rows of table 8 appear to indicate that there is a differential wage level in public sector jobs that grows as establishment size increases, among both men and women. Workers in public sector establishments with over 1000 workers received 15.6 percent higher wages in 1987, while workers in public sector establishments of less than 25 workers, received only 4.9 percent higher wages.

If the wages of all workers differ by establishment size, however, this first regression might be misleading. The last four regressions presented in table 8 estimate separate wage regressions for workers in each size of

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establishment. These regressions tell quite a different story, indicating that both public and private workers in large establishments get higher wages. Within establishment size groups, the largest wage advantage for public sector workers appears to occur in the smallest establishments. In fact, in establishments of 25 workers or more, there are relatively small and frequently insignificant coefficients on the public sector dummy variable.

The results in table 8 confirm that establishment size is an important omitted variable in regressions that attempt to measure the impact of public sector employment on relative wages. As the bottom row of table 8 indicates, if I take the estimated public sector effects by establishment size, based on the four regressions at the bottom of table 8, and weight them by the share of public sector employment in each establishment size, I get an aggregate public/private wage differential of 4.3 percent in 1987. This compares to an estimated aggregate wage differential among all workers in 1987 of 10.5 percent when establishment size differences are not controlled for (table 6). In 1983, the estimated aggregate public wage differential is 6.8 percent, compared to an estimate of 14.0 percent when establishment size is not controlled for. Thus, differences in labor market payments by establishment size seem to explain a little more than half of the public/private wage difference in the UK. On the other hand, significant public/private wage differences still remain, albeit at a smaller level, even after establishment size is controlled for. In addition, the same over-time trends are visible in the size-

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adjusted public sector effects as the UK public/private differential shrinks by about one third between 1983 and 1987.

The evidence in table 8 indicates that, in the UK, a little over half of the public/private wage difference is due to differences in wage contracts between establishments of different size, where public sector workers are disproportionately likely to be in larger establishments. The evidence that public sector workers in large establishments are paid similarly to private sector workers in large private firms provides little evidence of a less market-oriented public sector. On the other hand, there do appear to be wage advantages for public sector workers in smaller firms, which could indicate a greater degree of bargaining power or market protection than such workers have in the private sector. At least in part, this must be due to the fact that many public sector workers in the UK have their wages set through national agreements, and thus there are smaller wage differences between public sector workers in large and small establishments than among private workers employed in different establishment sizes.

VI
The Distribution of Public and Private Sector Wages

Both the US and the UK experienced changes in the wage distribution over the 1980s. In the US there were real increases in the wages of more

skilled workers and real decreases in the wages of less skilled workers (Danziger and Gottschalk, 1993). Within the UK, there is also evidence of widening in the earnings distribution (Schmitt, 1992), but the trends appear to be somewhat less pronounced than in the US. One test of "sectoral differences" is to see whether the public sector mirrored the private sector in these distributional changes. The results in table 6 indicate that more skilled public workers saw declining relative wages and less-skilled public workers saw increasing relative wages over the 1980s. This indicates that the public wage distribution did not widen as rapidly as the private wage distribution. Katz and Krueger (1991) have already confirmed this phenomenon for the United States.

Table 9 presents direct evidence on the relative wage distribution in the two sectors. It shows public and private wages at the 10th and the 90th percentile, and the ratio of these wages to mean wages for both countries over the 1980s. Thus, the first row of table 10 indicates that the ratio of wages at the 10th percentile in the UK to mean public sector wages was 0.30 in 1983, while the equivalent ratio at the 90th percentile was 1.71. In contrast, in the private sector these ratios were 0.23 and 1.78, respectively. This implies that UK public sector wages were less dispersed both below and above the mean than were private sector wages.

Within both the US and the UK at both points in time, it is clear that public sector workers face more compressed wage distributions than do private

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sector workers. For almost every occupation in every year in both countries, both the 10th percentile and the 90th percentile of wages in the public sector are closer to mean public sector wages than are 10th percentile and 90th percentile of wages in the private sector.

Over time, the data in table 9 indicate that the wage distribution in the public and private sectors of both countries widens over the 1980s, as both real wages and wages relative to the mean fall at the bottom and rise at the top of the distribution. The widening in the public sector occurs more slowly however, in the US, so that there is a growing divergence in distribution between the public and private sectors. In contrast, in the UK the public sector appears to experience more widening than the private sector, and the distributions move closer together.

The results in table 9 indicate that the public sector was not immune to the distributional changes over the 1980s. Particularly in the UK there is little evidence that the public sector has not reacted to the market forces that led to a widening wage distribution in that country. In the US, the fact that the distribution of public sector wages has not widened as rapidly as the distribution of private sector wages could be an indication that the public sector is somewhat more protected from market forces and can be seen as evidence of at least somewhat different timing in the adjustment of the public sector to market changes.

Change and Cyclicality in Employment
and Wage Adjustments

The evidence presented above indicates that there were substantial changes in the relative wage position of public sector workers in the US and UK, over the 1980s. Given the emphasis throughout that decade on the need for greater responsiveness and flexibility in the public sector in both countries, these wage changes can be read as a sign that efforts to increase public sector responsiveness were successful. But observations on two points in time provide limited information on the issue of market responsiveness. This section uses aggregate time series data on employment and wages in the US and the UK to investigate the relative flexibility of public versus private sector labor markets in the two countries. There is only a limited amount of research on this topic in the US,[22] and no British research on it to date.

In this section, I return to the NIPA data on employment by sector and subsector within the US and the UK. This provides information on employment and wages since 1948 in the US, and on employment in the UK since 1961. Unfortunately, as noted above, the UK NIPA accounts do not report wages by sector. The New Earnings Survey data on public/private earnings reported in table 4 is only available since 1978, too short a time period for time series analysis. As a result, for the UK, I use alternative wage series from the New Earnings Surveys that are available since 1970.[23]

Compared to the US wage data, these data provide much more inaccurate and approximate information on UK wages by sector and subsector.

Table 10 reports statistics on the general variability in sectoral employment and wages for these two countries. A simple story of "public sector rigidity" would imply that both public sector employment and wages have less variance over time. Column 1 of table 10 reports the standard deviation in first differences of log employment over time. Column 3 reports the standard deviation in the difference in log wages.[24]

The results for employment and wages in the UK and the US are somewhat unexpected. In both countries, the evidence indicates that public sector employment and wages are as variable or more variable than private sector employment and wages. Within the UK, employment in public enterprise is particularly variable, largely due to declines in public enterprise employment over the 1980s with privatization. Within the US, federal military employment is highly variable, while overall federal civilian employment shows much less variability. The wage data in the UK shows somewhat higher variability in the public sector, although the more questionable nature of this data makes firm conclusions about UK wages difficult. There is little evidence of substantial variance in wages in either the public or private sectors in the US.

The results in columns 1 and 3 of table 10 indicate that there is at least as much change occurring in employment and wages within the public sector

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as within the private sector, although the amount of variability differs by subsector. But it is not entirely clear how to interpret these results. There are at least two more causal questions that a simple standard deviation coefficient cannot address. First, it would be interesting to know how public versus private sector employment and wages respond to cyclical change. Second, it would be interesting to know how public and private sector employment responds to demand changes. For instance, a finding that education employment is non-responsive to the cycle may be irrelevant if educational demand moves non-cyclically.

Columns 2 and 4 of table 10 provide some very simple correlations between aggregate economic cyclicality and changes in sectoral employment and wages. These columns report the regression coefficient on changes in real per capita disposable income, regressed against changes in log employment (column 2) or changes in the log of real wages (column 4). The results in these columns provide a very simple measure of the contemporaneous correlations between aggregate demand movements and changes in sectoral labor markets.[25] In the US, changes in private sector employment are strongly positively correlated with contemporaneous movements in real per capita disposable income. Changes in public sector employment are also positively correlated with change in disposable income, but the effects are much smaller in magnitude. In the UK, the correlation of changes in

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employment to changes in per capital disposable income is weak and insignificant in both the private and the public sectors of the economy.

Wages in the US are consistently procyclical in all sectors, but are somewhat more cyclically correlated in the private sector than in the public sector. Federal wages appear to be more responsive to changes in per capita disposable income, while state and local wages (particularly in education) are relatively unaffected by these changes. Wages in the UK are available for a much shorter time period and are less well measured by sector, as discussed above. Private sector wages show stronger cyclical correlation than public sector wages. For the UK as for the US, there is little evidence that local wages move with changes in per capita disposable income. Wages in the National Health Service appear rather strongly countercyclical.

The results in table 10 indicate that contemporaneous employment and wage changes in the private sector are generally more correlated with cyclical movements in the economy than are such changes in the public sector, although employment in the UK is not very cyclical in either sector. Changes in per capita disposable income, however, do not provide a good measure of demand for many government functions. For instance, health or education employment should move with the demand for those services, which may or may not be cyclical. In fact, certain federal functions in both countries are explicitly designed to grow countercyclically. In addition, table 10 presents

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only contemporaneous correlations. Employment and wage responses to demand changes may occur over time, rather than instantaneously.

In order to more fully understand the relationship between changes in aggregate demand and changes in employment, an obvious approach is to turn to vector autoregressions. With annual data on only a small number of years, the usefulness of time series analysis may be limited, but it can provide some indication of how employment is related to demand changes over time.

I have run a variety of vector autoregression models. The specification reported in this paper for US data is a four-equation system with two lags. The four equations estimated are (in sequence):

(1) $UR_t = f(UR_{t-1}, UR_{t-2}, DispY_{t-1}, DispY_{t-2},$

$PubW/PrivW_{t-1,j}, PubW/PrivW_{t-2,j}, Employ_{t-1,j}, Employ_{t-2,j}).$

(2) $DispY_t = f(UR_t, UR_{t-1}, UR_{t-2}, DispY_{t-1}, DispY_{t-2}$

$PubW/PrivW_{t-1,j}, PubW/PrivW_{t-2,j}, Employ_{t-1,j}, Employ_{t-2,j}).$

(3) $PubW/PrivW_{t,j} = f(UR_t, UR_{t-1}, UR_{t-2}, DispY_t, DispY_{t-1}, DispY_{t-2},$

$PubW/PrivW_{t-1,j}, PubW/PrivW_{t-2,j}, Employ_{t-1,j}, Employ_{t-2,j}).$

(4) $Employ_{t,j} = f(UR_t, UR_{t-1}, UR_{t-2}, DispY_t, DispY_{t-1}, DispY_{t-2},$

$PubW/PrivW_{t,j}, PubW/PrivW_{t-1,j}, PubW/PrivW_{t-2,j}, Employ_{t-1,j}, Employ_{t-2,j}).$

where UR is the national unemployment rate, DispY is real disposable per capita income, $PubW/PrivW_j$ is the log difference between public sector wages in the jth branch of the public sector and private sector wages, and $Employ_j$

is the per capita employment in the jth branch of the public sector.[26] I will interpret changes in real disposable per capita income as an approximate measure of changes in aggregate private sector demand.

To measure the effects of changes in government demand in branch j on government employment in branch j, I estimated a second system of equations, replacing real disposable per capita income with total government expenditures on goods and services on the jth branch of the public sector. For instance, this meant that one system of equations was run using unemployment rates, real state and local expenditures on goods and services in education, log differences between public sector wages in education and aggregate private sector wages, and state and local employment in education. While I could potentially include both government expenditures and disposable income per capita in the same system of equations, they are highly intercorrelated (their contemporaneous correlation coefficient is .987). Because I think that increases in government demand (government expenditures on goods and services) are conceptually somewhat different from increases in overall aggregate macroeconomic demand (per capita disposable income), I chose to estimate two separate systems of equations.

Within the UK, I used an identical specification, with two differences. First, I used the vacancy rate rather than the unemployment rate in the UK. Empirically, this made little difference, and the vacancy rate is probably a better measure of economic cyclicality. Second, I omitted the third equation

and omitted all data on public/private wage ratios from the UK estimates. I did this because the UK wage data was only available from the early 1970s, which seriously limited the usefulness of time series estimation. In addition, as noted above, this data is not a very accurate measure of sectoral wage levels.

The results from these vector autoregressions can only be viewed as indicative. With annual data, the number of observations is limited and the model extremely simple. In addition, disposable per capita income and government expenditures on goods and services are uncomfortably endogenous measures of private and public sector demand. At best, these models provide only an approximate indication of the employment elasticity response to changes in private or public demand, although they probably provide superior estimates to the older cross-section literature that investigates this question.[27]

The estimation results from running these systems of equations for all sectors and subsectors for which I have employment data produces a host of coefficients. In order to summarize the results of these estimates, I estimated a series of impulse-response models. Essentially, these use the coefficients in the estimated system to calculate the effect of a one standard deviation exogenous shock to one of the variables on the succeeding variables in the model. I am interesting in looking first at the effect of an exogenous increase in per capita disposable income (interpreted as an exogenous increase in macroeconomic growth) on employment in the jth branch of the public sector,

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as estimated by the first system of equations. The second system of equations gives me impulse-response estimates of the effect of an exogenous increase in government expenditures in the jth branch of the public sector on employment in the jth branch of the public sector.

The results from these impulse response models are shown in table 11. What I show is the contemporaneous effect of the shock on employment and the cumulative effect one year and three years after the shock occurs. I am primarily interested in the cumulative long-term effects, but these three effects together indicate the path of the response. As we shall see, in a number of cases, initial negative responses turn into substantial positive responses over time and vice versa. Columns 1 to 3 show the employment response in each category to shocks in government spending on goods and services in that category. Columns 4 to 6 show the employment response to shocks in real per capita disposable income. The coefficients in table 11 can be interpreted as the percentage change in the relevant employment variable resulting from a 1 standard deviation change in the relevant exogenous variable. For instance, the first row of table 11 indicates that a 1 standard deviation increase in per capita disposable income produces a contemporaneous 0.13 percent increase in private sector employment, a 0.39 percent increase in private sector employment one year later, and a cumulative 1.04 percent increase three years out.

Look first at columns 1 through 3. The private sector coefficients indicate whether or not an increase in government spending on goods and services has any expansionary or contractionary effect on private sector employment. Within the UK increases in government spending on goods and services seem to come at the expense of the private sector. Three years out, private employment has declined by slightly less than one percent (0.83). Strikingly, while the initial effect of an increase in government spending on public employment is positive, its longer run effect is essentially zero. This implies that in the UK, government spending does not have any long run employment-increasing effects in either the public or the private sectors.

The employment response in the US to government spending on goods and services is only slightly different. As in the UK, government spending reduces private sector employment, although by a smaller amount (-0.37) over three years. The initial effect on public sector employment is very strong (a 1.61 percent rise), but the long term effect is relatively large and negative, with a large standard error. Thus, increases in overall government spending on goods and services appear to have few employment-enhancing effects in the long run in either country.

Different subsectors within the public sector respond quite differently to expansions in expenditures on goods and services within their own subsector. Within the UK a 1 standard deviation increase in expenditure on goods and services within the National Health Service, produces close to a 3 percent

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increase in NHS employment over three years. Central civilian expenditures, however, have small effects on civilian central employment. Increases in local expenditure produce about a 0.65 percent increases in local government employment, although the elasticity of education employment to education expenditures is substantially lower. Public enterprise expenditures have large employment effects.

Within the US, federal civilian spending appears to produce substantial increases in federal civilian employment. A 1 standard deviation increase in state and local government spending results in a 1.06 percent increase in state and local employment after three years; education spending also produces long run employment growth. Public enterprise spending has a very low employment elasticity in the US.

Changes in aggregate public demand (as measured by per capita disposable income) produces different effects. In the US and the UK, a one standard deviation increase in disposable income translates into between a 0.71 and a 1.04 percent increase in private sector employment three years out. In the UK we again see a trade off between public and private sector employment. Disposable income increases actually have a long-term negative effect on overall public sector employment. There is little evidence of employment "trickle-down" from the macro-economy to the public sector. There are differences in the extent to which subsectors are affected by disposable income growth, but in general, the public sector is far less affected

(or even negatively affected) than the private sector in the UK by overall demand expansions.

The US results are strikingly different. Growth in disposable income actually produces larger long-term increases in public sector than in private sector employment in the US, primarily due to large employment elasticities at the federal level. In general, the US economy appears to have a very different relationship between its public and private sectors, as measured by these estimates. While expansions in public sector demand have few employment effects, outside of a few subsectors of government, expansions in private demand spill over into both sectors and expand employment in the long run. The UK appears to be much more balkanized between the sectors. Expansion in private disposable income has a net negative effect on public sector employment, while growth in public sector expenditures cause employment contractions over the long term in both sectors. These results are striking given many of the similarities in the characteristics of the public sector in the US and the UK that we have observed earlier in this paper. In general, even though the public sectors in the two countries appear to attract a similar mix of workers and to repay them in somewhat similar ways, the larger macroeconomic relationships between these two sectors seem quite different, perhaps reflecting differences in unionization, in government behavior, in the openness of the economy to international competition, and in macroeconomic structure.

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VIII
Conclusions

This paper has investigated the relative differences in the public and private sectors in the US and the UK, with particular attention to the question of how expansions in these two sectors affect the labor market. There are some striking similarities between the two countries: Both countries hire public sector workers who are more skilled, older, and more likely to be in professional or service occupations. Both countries show evidence of paying higher wages to certain groups of public sector workers, particularly women. Both countries have seen these wage differentials erode over the 1980s, particularly among senior public managers, and both have seen a widening of both public and private sector wage distributions.

The differences between the countries are also striking. The aggregate relationship between public and private sector spending and public and private sector employment in the two countries is quite different, with the United States showing much greater feed-through between the sectors, and generally greater employment responsiveness to demand changes. The exact reasons underlying this difference are hard to judge with the data available here. In addition, the US shows smaller public/private wage differentials in general, and has seen a greater divergence in the distribution of wages in the public versus the private sector over the last decade.

In addition, the results indicate that different groups within the public sector exhibit very different wage and employment behavior. It is hard to infer the expected effect of changes in public sector demand without specifying the exact nature of any particular change. Decreased government spending on education will have a very different effect than decreased government spending on public enterprises. There is enormous variance in the employment and wage outcomes in different subsectors of the public sector and in their changes over time.

My general conclusion is that on the basis of the data in this paper, which admittedly provides only a partial picture of the public sector, there is little evidence within the US of substantial inflexibilities emerging from the public sector. There is evidence over the 1980s that the wage setting process has responded to attempts to align public and private wages more closely. Public sector wages and employment demonstrate substantial variability over time. The response of public and private sector employment to changes in public and private sector expenditures is generally similar. The most striking evidence of less flexibility in the public and private sectors is that the most skilled and the least skilled workers in the public sector have not seen their wages adjust as rapidly as in the private sector, while real wage changes for both of these groups have occurred over the 1980s. This is to the disadvantage of more skilled workers, whose wages seem to be unduly low at this point relative to their private sector counterparts. But it is to the

advantage of less skilled workers, whose public sector wages appear not to have fallen as rapidly as their private sector counterparts.

Within the United Kingdom, there is also substantial evidence of labor market flexibility in the public sector. Public/private wage differentials are larger than within the United States, but they have also declined more rapidly over the 1980s. Wage distributions in the public sector have moved closer to private sector distributions. The primary evidence of inflexibility in UK public sector labor markets is that public sector employment does not appear to respond substantially to changes in overall demand. The very different relationship between demand changes and employment elasticities in the UK compared to the US clearly deserves more research.

Overall, this paper provides little evidence that major contractions in the size of the public sector will produce substantially more flexible aggregate labor market outcomes. Contractions in the public sector, however, will clearly disadvantage certain workers and advantage others. In addition, the specific effects of any change in public sector size will depend heavily upon which particular subsectors within the public sector are shrinking and will vary by size of establishment and level of government.

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APPENDIX I

Data Sources

A. National Income and Product Accounts (NIPA)

United States. Annual employment and annual wage data for full-time equivalent workers by public and private sector and by various subsectors of the public sector are available from 1948-1990. Source: *Survey of Current Business*, US Department of Commerce, Bureau of Economic Analysis.

United Kingdom. Employment data by public and private sector and by various subsectors of the public sector are available from 1961-1990. Source: *Economic Trends.* Central Statistical Office. (Full-time equivalent employment available only in more recent years.)

B. New Earnings Survey (NES)

United Kingdom. Average weekly earnings, excluding those whose pay was affected by absence, for full-time male and female workers by occupational category, industry category, and for various national bargaining units, are available from 1970-1991. Source: *New Earnings Survey*, Department of Employment, Government Statistical Service. (Annual publication.)

. From 1978-1991, average weekly earnings are available for private sector, public sector, central government, local government, and public enterprise workers. In order to obtain wages over a longer time period for the calculations reported in section VII, I use the NES data from 1970-1991, approximating the different sectors with the following wage series. (In all cases, I create a total wage series with a weighted average of wages among male and female workers in each category, using the share of observations among men and women in the category for weights.)

Private sector: Wage series for all workers.

Public sector: Wages for non-manual workers in the public administration industry.

Central government: Wages for Civil Service, Executive Grade workers covered by national wage agreements.

National Health Service (central subsector): Wages for female nurses and midwives, National Health Service, covered by national wage agreements.

Local government: Wages for Local Authorities, Administrative, Professional and Technical Grades, covered by national wage agreements.

Education (local subsector):   Wages for workers in the elementary and secondary occupation.

Police (local subsector):   Wages for male workers in the police occupation.

C.   Current Population Survey (CPS)

Collected monthly in the United States by the US Bureau of the Census. Each March a special supplement asks about income and employment experiences of workers over the previous year.   Available on tape from the Bureau of the Census.

D.   General Household Survey (GHS)

Collected annually in the United Kingdom by the Social Survey Division of the Office of Population, Censuses and Surveys (OPCS).   Contains information on earnings, income, and demographic characteristics over the last pay period.   Available on tape from the ESRC data archive at Essex University.

APPENDIX II

Occupational Categories for the US and UK

Occupational Classification Codes from the CPS for the United States
and Key Occupational Statistics (KOS) from the GHS for the United Kingdom
are used in this paper. There are two types of comparability problems with
this data. First, within the US, occupational codes change between the 1980
and 1990 CPS surveys, and can only be matched approximately in some cases.
Second, the US and the UK occupational categories are not identical.
Although the 1987 GHS (UK) data provides a very detailed KOS breakdown
in 1987 that can be generally although not precisely matched with the US
occupational classification codes, this detailed breakdown is not available in
the UK data in 1983. Thus, this report uses relatively aggregate occupational
comparisons between the US and the UK, that are only approximately
comparable.

The four occupational categories used in Tables 6 and 7 can be defined
as follows:

A.   United Kingdom
      Senior Managers and Professionals. KOS category 1. Includes senior
      managers in professional and related occupations (excluding managers
      in health, education, and welfare-related professions) and senior
      supporting management; also senior national and local government
      managers.
      Health, Education and Welfare Professionals. KOS category 2.
      Professional and related occupations in education, welfare, and health.
      Clerical Workers. KOS category 6. Clerical and related occupations.
      Manual Workers. Semi-skilled manual workers, tallied in Compact
      Socio-Economic Group category 13.

B.   United States
      Senior Managers and Professionals. 1990: Senior Executive,
      Administrative, and Managerial occupations (code numbers 3-19). 1980:
      A matched group of 1980 occupational categories, designed to mimic the
      1990 category.
      Health, Education and Welfare Professionals. 1990: Health occupations,
      teachers, social scientists and urban planners, and social, recreation and
      religious workers (code numbers 84-177). 1980: A matched group of
      1980 occupational categories, designed to mimic the 1990 category.

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Clerical Workers. 1990 and 1980: Secretaries, Stenographers, and Typists.
Manual Workers. 1990: Cleaning and Building Service Occupations, except household (code numbers 448-455). 1980: Cleaning Service Workers.

Note that these last two occupational categories for the United States are more narrowly defined than their UK equivalents.

Notes

1. For more extensive data on public sector comparisons across a variety of countries, see Rose (1985), OECD (1982), or Heller and Tait (1983).

2. The unionization rate in the private sector in the United Kingdom is higher than in the US. Coleman (1991) cites a unionization rate of about 38 percent in the mid-1980s in the UK. Freeman and Ichniowski (1988) cite a figure of 14 percent in 1986 in the US.

3. Companies that moved out of public ownership include British Telecom, Rolls Royce, British Airways, and British Petroleum. For a thorough discussion of British privatization efforts and their effect, see Kay, Mayer, and Thompson (1986) or Vickers and Yarrow (1978).

4. While few jurisdictions actually implemented explicit comparable worth plans, many updated their comparability wage-setting techniques in order to prevent or quiet criticism by local unions.

5. Of course, among local public sector employers, there may be substantial cross-jurisdictional competition for workers.

6. See Appendix I for more information on data sources. Employment figures for the US are reported as full-time equivalents over the entire period. Within the UK, full-time equivalent numbers are only available for the last decade, so I use actual employment numbers. Because of an expansion in part-time work in the UK, the full-time equivalent numbers show less employment growth over the 1980s than is reported here.

7. The US NIPA accounts include state/local and federal public enterprise employees in their counts of total state/local and federal employment. In the UK, public enterprise is considered a separate category from local and central employment. For comparability, whenever sub-sectoral data is presented in this paper, public enterprise employees treated as a separate group of public employees in the US.

8. The United Kingdom has only two levels of government, central and local. The United States, with a federalist system of government, has three levels, federal, state, and local. The data used in this section do not allow me to distinguish between state and local workers in the US. In addition, the US NIPA data do not provide as detailed a subsectoral breakdown of public employment as do the UK NIPA data.

9. The population under age 15 grew 10 percent in the 1960s in the UK, and grew 5 percent in the 1960s in the US.

10. The NES data is not exactly comparable to the NIPA data. It does not include part-time workers or very low-wage workers. This will lead to something of an overstatement of wage levels.

11. For comparability, weekly earnings in the UK are put into 1990 UK pounds using the UK GDP deflator (at market prices) and then translated into US dollars using the 1990 purchasing power parity calculation by the OECD that sets £.597 equal to $1. US earnings are reported in 1990 US dollars using the US GDP deflator.

12. For a review of this research, see Ehrenberg and Schwarz, 1986.

13. In the US data, there are 69,974 workers in 1990 March CPS sample and 74,059 workers in the 1980 March CPS. In the UK data, there are 7519 workers in the 1983 GHS sample and 8838 workers in the 1987 GHS sample.

14. In the US, these are workers who report themselves as black and/or Hispanic. In the UK, these are respondents who are assessed by the interviewer to be "coloured."

15. Of course, this assumes that any expansion in public sector demand results in expanded demand for the same mix of services currently provided by the public sector.

16. An exception is Katz and Krueger (1991), who find support for the theory that greater government bureaucracy and the non-profit nature of the government affect public/private wages, but unionization differences and changes in discretionary job categories do not.

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17. Analysis of public/private pay differentials from other industrialized countries provides no evidence of consistent public/private patterns. Auld, et.al., (1980) finds little difference in public/private wage changes in Canada between 1967 and 1975. Keller (1981) finds skilled public sector employees have higher relative wages in the Netherlands. Zetterberg (1990) finds a similar pattern in Swedish data and also indicates that the overall public/private wage differential shrank in Sweden over the 1970s. Pederson, et. al., (1990) use Danish data from 1976-1985 to show that as public sector programs have expanded in that country, public sector wages have been reduced.

18. For a US-based discussion of this issue, see Gramlich (1982). For a UK-based discussion, see Levitt and Joyce (1987).

19. In the US, the wage data are the result of dividing annual earnings by annual hours of work. In the UK, the wage data are usual gross weekly earnings. Thus, the control for part-time work is presumably more important in the UK data than in the US data.

20. The results in this section are quite similar to those previously reported in Freeman (1987), Krueger (1988), and Katz and Krueger (1991).

21. Katz and Krueger (1991) look at this question for the US and Green, Machin and Manning (1992) look at it for the UK. Neither of these two papers look at the wage effect of establishment size by public and private sector.

22. Freeman (1988) indicates that state/local employment is countercyclical, while federal employment has little cyclical responsiveness. Katz and Krueger (1991) find that state and local wages appear to move with private sector wages, while federal pay is less responsive to the cycle.

23. For private sector workers, I use average weekly wages among all workers. I use weekly wages among workers in the industry designated as "public administration" as a proxy for overall public sector wages. Among all central government workers, I use average weekly wages among executive grade workers covered by national wage agreements; for local government workers, I use wages among administrative, professional and technical grade local government workers covered by national agreements. For National Health Service workers, I use wages among nurses and midwives covered by

national agreements. For education workers, I use an occupational wage series for elementary and secondary teachers; for the police I use an occupational wage series on police. See Appendix I for more detailed descriptions.

24. I have also duplicated this analysis using standard deviations in the level value of log employment and log wages, as well as standard deviations in the residuals of a regression of log employment against a time trend. The results are similar to those reported here for log first differences.

25. These results are quite sensitive to specification. Using level values rather than changes, the results change markedly with different specification of the time trend. The first-difference estimates are somewhat more stable across specifications, but -- as is typical with first differences -- show less significant results.

26. I experimented with using GDP rather than disposable income and it made no difference. Reordering unemployment and disposable income, or reordering the wage ratio and employment in the system of equations also did not make a substantial difference.

27. An earlier public finance literature attempts to measure these elasticities by regressing aggregate employment against contemporaneous measures of expenditure and other variables (for example, Ashenfelter, 1977.)

Table 1

TRENDS IN GOVERNMENT EXPENDITURE AND
EMPLOYMENT AMONG INDUSTRIALIZED
NATIONS

Part I: Government Outlays as a Share of GDP			
	1960	1980	1990
United States	27.0	33.7	36.1[a]
United Kingdom	32.2	44.8	42.1
Germany	32.4	48.5	46.0
France	34.6	46.1	49.9
Sweden	31.0	61.6	61.4
Total EEC	31.8	45.2	48.7
Japan	17.5	32.6	32.3

Part II: Government Employment as a Share of Total Employment			
	1960	1980	1990
United States	14.7	15.4	15.0
United Kingdom	14.8	21.1	19.2
Germany	8.0	14.6	15.1
France	na	20.0	22.6
Sweden	12.8	30.3	31.7
Total EEC	11.1	16.9	17.6
Japan	na	6.7	6.0

SOURCE: OECD, *Economic Outlook, Historical Statistics, 1960-90*. Paris, 1992. Table 6.5 (Part I), Table 2.13 (Part II).

[a]1989

Table 2

EMPLOYMENT TRENDS IN THE US AND THE UK

Part I: United Kingdom				
	1961	1970	1980	1990
Total employment (thousands)	24,458	24,752	25,328	26,914
Private employment share	76.0	73.7	70.8	77.6
Public employment share	24.0	26.3	29.2	22.4
Total public employment (thousands)	5,860	6,515	7,387	6,040
Central employment share	30.5	29.6	32.4	38.0
Local employment share	31.9	39.3	40.0	49.1
Public enterprise share	37.5	31.1	27.6	12.9

Part II: United States[a]				
	1960	1970	1980	1990
Total employment (thousands)	56,312	70,671	86,346	104,918
Private employment share	81.9	80.0	81.9	83.1
Public employment share	18.1	20.0	18.1	16.9
Total public employment (thousands)	10,209	14,117	15,620	17,734
Federal employment share	43.0	37.0	27.3	25.4
State/Local employment share	46.8	53.2	62.6	64.5
Public enterprise share	10.1	9.7	10.1	10.1

SOURCE: National Income and Product Accounts, US and UK

[a]For the US, employment is reported as full-time equivalents.

Table 3

PUBLIC SECTOR EMPLOYMENT COMPONENTS
IN THE US AND THE UK

Part I: United Kingdom				
Central Government Employment Shares	1961	1970	1980	1990
% Military	26.5	19.3	13.5	13.2
% National Health Service	32.1	38.4	49.1	53.4
% Civilian (except NHS)	41.4	42.4	37.4	33.4
Local Government Employment Shares				
% Education	42.0	48.5	50.8	48.2
% Social services	9.1	10.4	11.7	14.0
% Police	5.8	5.7	6.1	6.7
% Other	43.2	35.5	31.4	31.1
Part II: United States				
	1960	1970	1980	1990
Federal Government Employment Shares				
% Military	61.3	62.6	51.8	50.6
% Civilian	38.7	37.4	48.2	49.4
State/Local Government Employment Shares				
% Education	52.1	56.2	55.6	57.5
% Other	47.9	43.8	44.4	42.5

SOURCE: National Income and Product Accounts, US and UK

Table 4

EARNINGS TRENDS IN THE US AND THE UK

Part I: United Kingdom
Real Average Gross Weekly Earnings
Full-time workers age 21 and over, 1990 US dollars

	1960	1980		1990	
	Wages	Wages	Public/ Private Ratio	Wages	Public/ Private Ratio
Private wages	na	333		445	
Public wages	na	350	1.05	429	0.96
Central employment	na	331	0.99	404	0.91
Local employment	na	345	1.04	442	0.99
Public enterprise	na	380	1.14	446	1.00

Part II: United States
Real Average Annual Earnings
Full-time equivalent workers, 1990 US dollars

	1960	1980		1990	
	Wages	Wages	Public/ Private Ratio	Wages	Public/ Private Ratio
Private employment	21,082	24,755		25,889	
Public employment	20,156	25,057	1.01	27,585	1.07
Federal employment	20,516	27,109	1.10	28,711	1.11
State/Local employment	19,576	23,650	0.96	26,711	1.03
Public enterprise	21,310	28,223	1.14	30,343	1.17

SOURCES: UK—New Earnings Survey; US—National Income and Product Accounts

Table 5

CHARACTERISTICS OF PUBLIC AND PRIVATE
SECTOR WORKERS

	United Kingdom (1987)		United States (1989)	
	Public	Private	Public	Private
All Workers				
Years of education	12.2	11.4	14.2	12.8
Age	39.2	35.7	39.1	35.6
Percentage nonwhite	3.7	3.4	17.9	13.7
Percentage part-time	26.4	22.1	15.9	16.8
Percentage female	53.0	44.8	53.7	46.0
Occupational Shares				
Health, education & welfare professionals	27.1	3.2	27.0	4.8
Science & engineering professionals	4.7	5.3	3.0	3.0
Managers, administrators & other professionals	8.4	15.5	13.2	12.6
Clerical	18.8	18.6	23.3	15.9
Sales	0.3	10.4	1.0	13.5
Services	24.3	11.4	16.8	12.3
Farming, fishing, construction & mining	4.7	3.5	2.7	6.7
Production, craft & assembly	7.2	23.0	3.9	16.8
Transportation & materials moving	3.4	6.2	3.1	4.5
Labor & miscellaneous[a]	1.2	1.9	5.9	10.0

[a]Due to definitional differences in occupational categories between the two countries, many of the workers counted here for the US are subsumed in other categories in the UK data.

Table 6

PUBLIC/PRIVATE DIFFERENTIALS IN LOG WAGES
OVER TIME

	United Kingdm (1983)		United States (1979)			
	Simple	Public	Simple	Public Sector D.V.		
	Log	Sector D.V.	Log	Regression Coefficients		
	Wage	Regression	Wage	Aggr	Separated into:	
Worker Sample	Diff	Coefficient	Diff	Public	Federal	St/Local
All	.235**	.140**	.090**	.001	.189**	-.048**
	(.018)	(.011)	(.006)	(.006)	(.012)	(.006)
Selected Occupations						
Sr Managers &	.112*	.020	.117**	.029	.197**	-.029
Professionals	(.056)	(.049)	(.022)	(.025)	(.046)	(.029)
HEW Professionals	.355**	.242**	-.022	-.009	.077*	-.015
	(.089)	(.049)	(.028)	(.015)	(.042)	(.015)
Clerical Workers	.341**	.147**	-.034*	-.047**	.108**	-.090**
	(.031)	(.025)	(.016)	(.017)	(.031)	(.018)
Manual Workers	.168**	.083**	.113**	.040	.090	.035
	(.024)	(.021)	(.033)	(.033)	(.091)	(.034)
	United Kingdom (1987)		United States (1989)			
All	.154**	.105**	.181**	.031**	.180**	-.010*
	(.019)	(.012)	(.007)	(.007)	(.013)	(.007)
Selected Occupations						
Sr Managers &	-.073*	-.090*	-.004	-.099**	.032	-.147**
Professionals	(.057)	(.048)	(.021)	(.022)	(.040)	(.025)
HEW Professionals	.318**	.159**	-.018	-.017	.153**	-.024*
	(.068)	(.039)	(.027)	(.017)	(.057)	(.017)
Clerical Workers	.258**	.123**	.021	-.011	.111**	-.040*
	(.035)	(.028)	(.022)	(.023)	(.047)	(.025)
Manual Workers	.085**	.094**	.265**	.152**	.235*	.145**
	(.036)	(.031)	(.033)	(.037)	(.113)	(.038)
	Difference: 1987-1983		Difference: 1989-1979			
All	-.081**	-.035*	.091**	.030**	-.009	.038**
	(.026)	(.017)	(.009)	(.009)	(.018)	(.010)
Selected Occupations						
Sr Managers &	-.185**	-.110*	-.121**	-.128**	-.165**	-.118**
Professionals	(.079)	(.069)	(.031)	(.034)	(.063)	(.036)
HEW Professionals	-.037	-.083*	.004	-.026	.076	-.009
	(.112)	(.063)	(.039)	(.022)	(.071)	(.022)
Clerical Workers	-.083*	-.024	.055*	.036*	.003	.050*
	(.046)	(.037)	(.027)	(.028)	(.056)	(.031)
Manual Workers	-.083*	.011	.152**	.112*	.145	.110*
	(.043)	(.037)	(.046)	(.050)	(.145)	(.051)

Standard errors in parentheses.   ** Significant at 1 percent level.
                                    * Significant at 10 percent level.

In addition to public sector dummy variable, UK regressions include controls for education,
experience, sex, region, marital status, colored, country of birth and part-time job. US
regressions include education, age, sex, region, marital status, race, and part-time job.

Table 7

PUBLIC/PRIVATE DIFFERENTIALS IN LOG WAGES
BY GENDER OVER TIME

Public Sector Dummy Variable Regression Coefficients:

Worker Sample	United Kingdom (1983)			United States (1979)		
	All	Male	Female	All	Male	Female
All	.140**	.080**	.214**	.001	-.073**	.076**
	(.011)	(.014)	(.019)	(.006)	(.008)	(.009)
Selected Occupations						
Sr Managers &	.020	.027	-.042	.029	-.050*	.193**
Professionals	(.049)	(.051)	(.137)	(.026)	(.028)	(.055)
HEW Professionals	.242**	.041	.316**	-.009	-.061**	.030*
	(.049)	(.077)	(.062)	(.015)	(.023)	(.019)
Clerical Workers	.147**	.083*	.153**	-.047**	-.084	-.047**
	(.025)	(.058)	(.025)	(.017)	(.140)	(.017)
Manual Workers	.083**	.076**	.229*	.040	.017	.089*
	(.021)	(.021)	(.139)	(.033)	(.045)	(.046)
	United Kingdom (1987)			United States (1989)		
All	.105**	.029*	.164**	.031**	-.024**	.088*
	(.012)	(.015)	(.020)	(.007)	(.009)	(.009)
Selected Occupations						
Sr Managers &	-.090*	-.131**	-.104	-.099**	-.186**	.024
Professionals	(.048)	(.052)	(.113)	(.022)	(.029)	(.035)
HEW Professionals	.159**	.056	.219**	-.017	-.041*	.012
	(.039)	(.052)	(.054)	(.017)	(.030)	(.020)
Clerical Workers	.123**	.037	.133**	-.011	.224	-.008
	(.028)	(.055)	(.030)	(.023)	(.216)	(.023)
Manual Workers	.094**	.054*	.484**	.152**	.081*	.285**
	(.031)	(.031)	(.156)	(.037)	(.048)	(.059)
	Difference: 1987-1983			Difference: 1989-1979		
All	-.035*	-.051**	-.050*	.030**	.049**	.012
	(.017)	(.020)	(.027)	(.009)	(.012)	(.013)
Selected Occupations						
Sr Managers &	-.110*	-.158*	-.062	-.128**	-.136**	-.169**
Professionals	(.069)	(.073)	(.177)	(.034)	(.040)	(.065)
HEW Professionals	-.083*	.015	-.097	-.026	.020	-.018
	(.063)	(.093)	(.082)	(.022)	(.038)	(.028)
Clerical Workers	-.024	-.046	-.020	.036*	.308	.039*
	(.037)	(.080)	(.040)	(.028)	(.258)	(.029)
Manual Workers	.011	-.022	.255	.112*	.064	.196**
	(.037)	(.037)	(.209)	(.050)	(.066)	(.074)

Standard errors in parentheses. ** Significant at 1 percent level.

Table 8

INTERACTIVE EFFECT OF ESTABLISHMENT SIZE AND PUBLIC
SECTOR PLACEMENT ON WAGES
All workers in the United Kingdom

	1983			1987		
	All Wkrs	Male	Female	All Wkrs	Male	Female
Regression 1: Public Sector and Establishment Size Interacted						
Coefficient on:						
Public Sector *	.007	-.001	.037	.049*	-.030	.106**
Size < 25	(.023)	(.032)	(.032)	(.023)	(.033)	(.032)
Public Sector *	.127**	.047*	.211**	.082**	.013	.135**
25 ≤ Size < 100	(.020)	(.025)	(.030)	(.021)	(.027)	(.031)
Public Sector *	.174**	.073**	.306**	.129**	.036*	.223**
100 ≤ Size < 1000	(.016)	(.019)	(.027)	(.018)	(.021)	(.030)
Public Sector *	.205**	.146**	.299**	.156**	.081**	.200**
Size ≥ 1000	(.021)	(.023)	(.039)	(.025)	(.029)	(.041)
Regression 2: Sample of Establishment Size < 25 only						
Coefficient on						
Public Sector	.155**	.107**	.208**	.206**	.104**	.259**
	(.029)	(.039)	(.041)	(.029)	(.041)	(.041)
Regression 3: Sample of 25 ≤ Establishment Size < 100 only						
Coefficient on						
Public Sector	.076**	.042*	.111**	.019	-.026	.049*
	(.022)	(.029)	(.033)	(.023)	(.029)	(.036)
Regression 4: Sample of 100 ≤ Establishment Size < 1000 only						
Coefficient on						
Public Sector	.049**	.003	.122**	.016	-.009	.032
	(.016)	(.019)	(.026)	(.017)	(.021)	(.029)
Regression 5: Sample of Establishment Size ≥ 1000 only						
Coefficient on						
Public Sector	.016	.027	-.019	-.064**	-.069**	-.122**
	(.021)	(.024)	(.039)	(.024)	(.029)	(.046)
Estimated aggregate	.068**	.030*	.120**	.043**	-.007	.071**
public sector wage	(.010)	(.013)	(.017)	(.011)	(.014)	(.019)
effect using results from						
regressions 2 through 5						

Standard errors in parentheses.   ** Significant at 1 percent level.
                                   * Significant at 10 percent level.

See table 6 for a list of control variables included in regression.   Each cell represents a
separate regression.   Columns 1 and 4 estimated with all workers.   Columns 2 and 5 estimated
with male workers only.   Columns 3 and 6 estimated with female workers only.

Table 9

WAGE DISTRIBUTION IN THE PUBLIC VS. PRIVATE
SECTORS

	Gross Weekly Wages ($90) United Kingdom (1983)				Hourly Wage Rates ($90) United States (1979)			
	10th Percentile		90th Percentile		10th Percentile		90th Percentile	
	Wage Level	Ratio to Mean	Wage Level	Ratio to Mean	Wage Level	Ratio to Mean	Wage Level	Ratio to Mean
All Workers								
Public	110	0.30	632	1.71	4.36	0.42	17.70	1.69
Private	73	0.23	563	1.78	3.79	0.38	17.70	1.77
Public/Private	1.50	1.30	1.12	0.96	1.15	1.10	1.00	0.96
Sr Managers & Professionals								
Public	355	0.57	889	1.44	6.67	0.45	23.61	1.59
Private	237	0.40	984	1.65	5.45	0.38	25.44	1.77
Public/Private	1.49	1.42	0.90	0.87	1.22	1.19	0.93	0.90
HEW Professionals								
Public	159	0.38	680	1.62	5.63	0.48	17.94	1.53
Private	59	0.17	744	2.11	4.60	0.39	19.85	1.66
Public/Private	2.71	2.24	0.91	0.77	1.22	1.25	0.90	0.92
Clerical Workers								
Public	154	0.50	453	1.47	4.04	0.56	10.55	1.45
Private	88	0.36	406	1.67	4.18	0.54	11.07	1.43
Public/Private	1.75	1.39	1.11	0.88	0.97	1.03	0.95	1.02
Manual Workers								
Public	269	0.67	548	1.36	3.60	0.48	11.07	1.47
Private	191	0.54	521	1.46	2.79	0.37	11.30	1.51
Public/Private	1.41	1.24	1.05	0.94	1.29	1.28	0.98	0.97
	United Kingdom (1987)				**United States (1989)**			
All Workers								
Public	82	0.25	583	1.77	4.09	0.35	19.71	1.68
Private	61	0.20	571	1.85	3.16	0.30	19.23	1.82
Public/Private	1.33	1.25	1.02	0.96	1.29	1.16	1.02	0.92
Sr Managers & Professionals								
Public	267	0.52	755	1.47	5.77	0.38	24.04	1.60
Private	255	0.43	1004	1.68	5.38	0.34	30.77	1.72
Public/Private	1.05	1.21	0.75	0.88	1.07	1.14	0.78	0.93
HEW Professionals								
Public	149	0.38	614	1.57	5.45	0.39	21.63	1.54
Private	65	0.20	659	1.98	3.95	0.29	24.04	1.78
Public/Priate	2.26	1.90	0.93	0.79	1.38	1.32	0.90	0.86
Clerical Workers								
Public	108	0.42	406	1.56	3.85	0.47	11.78	1.43
Private	61	0.27	392	1.75	3.69	0.44	13.19	1.57
Public/Private	1.77	1.56	1.04	0.89	1.04	1.06	0.89	0.91
Manual Workers								
Public	122	0.37	481	1.46	3.61	0.48	12.02	1.59
Private	124	0.39	490	1.53	2.38	0.38	11.06	1.79
Public/Private	0.98	0.95	0.98	0.95	0.66	1.24	1.09	0.89

Table 10

VARIABILITY IN PUBLIC AND PRIVATE
SECTORS FOR LOG EMPLOYMENT AND LOG WAGES

	Employment		Real Wages	
	Standard Deviation in Log First Diff	Regression Coefficient on Change in Log Per Capita Disp Income[a]	Standard Deviation in Log First Diff	Regression Coefficient on Change in Log Per Capita Disp. Income[a]
United Kingdom				
Private Sector	.023	.059 (.077)	.023	.377* (.174)
Public Sector	.022	-.003 (.073)	.040	.058 (.346)
Central--All	.019	.023 (.063)	.078	.437 (.668)
Central--NHS	.029	-.018 (.094)	.079	-.788 (.656)
Central--Civilian (except NHS)	.025	.047 (.081)	na	na
Local--All	.025	.019 (.084)	.040	-.140 (.341)
Local--Education	.030	.018 (.100)	.072	.133 (.622)
Public Enterprise	.065	-.085 (.216)	na	na
United States				
Private Sector	.026	1.127**(.164)	.013	.232* (.118)
Public Sector	.038	.396 (.348)	.018	.136 (.166)
Federal--All	.070	.597 (.642)	.028	.208 (.260)
Federal--Civilian	.040	.443 (.365)	.026	.139 (.245)
St/Local--All	.017	.062 (.156)	.017	.022 (.161)
St/Local--Education	.019	.161 (.178)	.021	-.084 (.192)
Public Enterprise	.021	-.039 (.196)	.020	.187 (.187)

U.K. employment: 1961-1990, NIPA data.
U.K. wages: 1970-1990, New Earnings Survey data. See Appendix 1 for definitions.
U.S. employment: 1948-1990, NIPA data.
U.S. wages: 1948-1990, NIPA data.

[a] Regression is Δlog(Employment) $= \alpha + \beta*\Delta$log(Real Disp. Income/Population)
[b] Regression is Δlog(Real Wage) $= \alpha + \beta*\Delta$log(Real Disp. Income/Population)
Standard errors in parentheses; ** Significant at 1 percent level.
* Significant at 10 percent level.

Table 11

IMPULSE-RESPONSE EFFECTS IN LOG(EMPLOYMENT) 1 YEAR
AFTER A 1 STANDARD DEVIATION SHOCK IN REAL PUBLIC
EXPENDITURE OR IN REAL DISPOSABLE INCOME PER CAPITA

Employment Category	Percent change in log(employment) 1 year after a 1 std dev shock in					
	Log(Appropriate Government Expenditure Category)			Log(Real Per Capita Disposable Income)		
	Contemp-oraneous	1 yr out	3 yrs out	Contemp-oraneous	1 yr out	3 yrs out
A. United Kingdom						
Private Sector	-0.42*	-0.63	-0.83	0.13	0.39	1.04*
	(0.30)	(0.60)	(1.25)	(0.26)	(0.42)	(0.70)
Public Sector	0.18	0.26	-0.26	0.05	-0.14	-0.94*
	(0.27)	(0.43)	(0.73)	(0.31)	(0.33)	(0.49)
Central--All	0.55**	1.06**	1.16*	0.52**	0.50	0.85
	(0.21)	(0.38)	(0.79)	(0.21)	(0.40)	(0.75)
Central--NHS	0.76**	2.14**	2.90**	0.47*	0.64	0.84
	(0.29)	(0.60)	(1.13)	(0.34)	(0.63)	(1.19)
Central--Civilian (except NHS)	0.17	0.18	-0.25	0.31	-0.21	-0.72
	(0.37)	(0.62)	(1.05)	(0.36)	(0.58)	(0.82)
Local--All	1.08**	0.99*	0.65	0.21	0.17	-0.33
	(0.34)	(0.50)	(0.54)	(0.32)	(0.50)	(0.48)
Local--Education	0.77**	0.85*	0.05	0.05	-0.09	0.75
	(0.32)	(0.48)	(0.64)	(0.29)	(0.45)	(0.63)
Public Enterprise	2.49**	2.93**	2.55*	0.13	0.002	-0.92
	(0.74)	(1.01)	(1.82)	(0.94)	(1.15)	(1.57)
B. United States						
Private Sector	-0.51**	-0.58*	-0.37	0.39**	1.34**	0.71**
	(0.12)	(0.36)	(0.44)	(0.13)	(0.35)	(0.28)
Public Sector	1.61**	0.49	-0.68	-0.40	1.32**	1.53*
	(0.26)	(0.54)	(0.73)	(0.34)	(0.54)	(0.67)
Federal--All	3.02**	1.14*	-0.32	-1.45**	1.58*	1.74*
	(0.53)	(0.85)	(1.02)	(0.59)	(0.89)	(0.93)
Federal--Civilian	0.64*	-0.12	1.46**	-0.62*	1.31**	1.28**
	(0.34)	(0.45)	(0.38)	(0.34)	(0.51)	(0.45)
St/Local--All	0.22*	0.48*	1.06*	0.10	0.12	0.42
	(0.13)	(0.24)	(0.48)	(0.14)	(0.25)	(0.41)
St/Local--Education	0.28*	0.45*	0.74*	-0.06	0.05	0.25
	(0.18)	(0.25)	(0.54)	(0.16)	(0.29)	(0.47)
Public Enterprise	0.57*	0.66*	0.23	-0.06	0.40	0.71*
	(0.25)	(0.33)	(0.48)	(0.26)	(0.33)	(0.41)

See text for description of VAR models underlying these impulse-response coefficients.
Standard errors in parentheses. ** Significant at 1 percent.
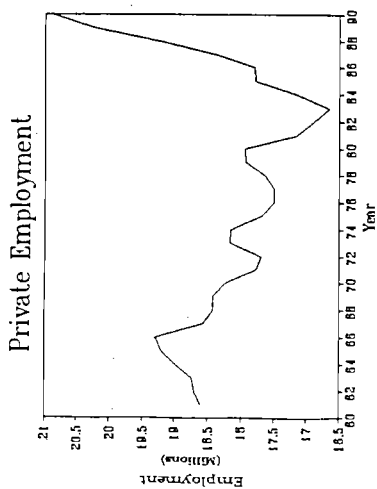   * Significant at 10 percent.
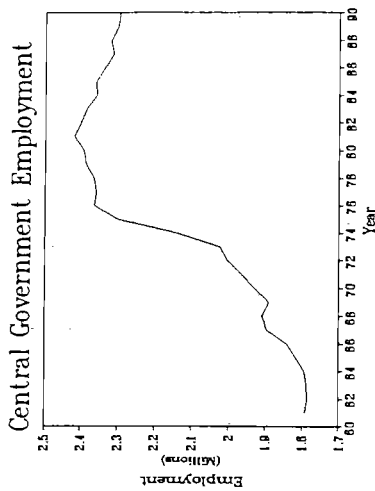
UNITED KINGDOM

Figure 1a

Private Employment

Figure 1b

Central Government Employment

Figure 1c

Local Government Employment

Figure 1d

Public Enterprise Employment

UNITED STATES
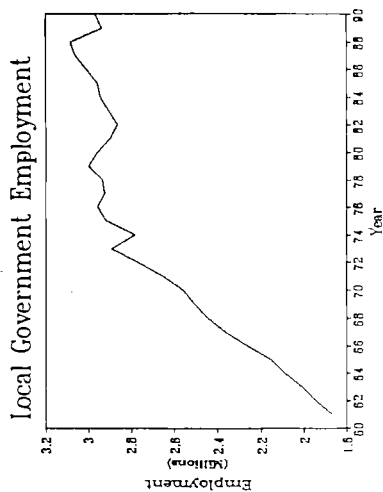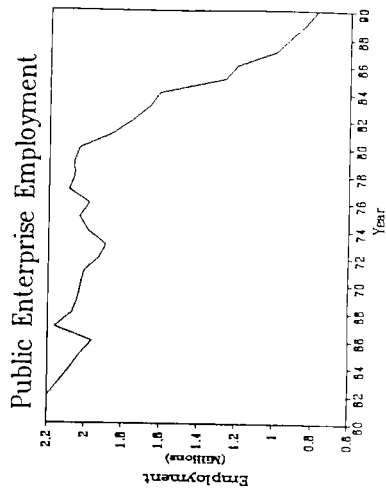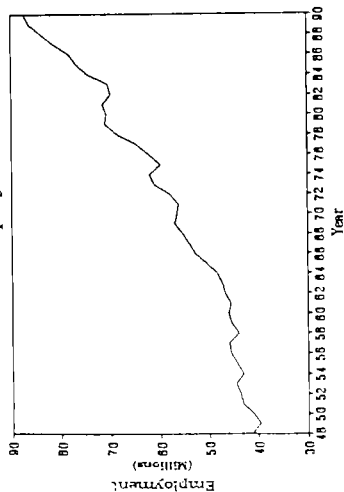

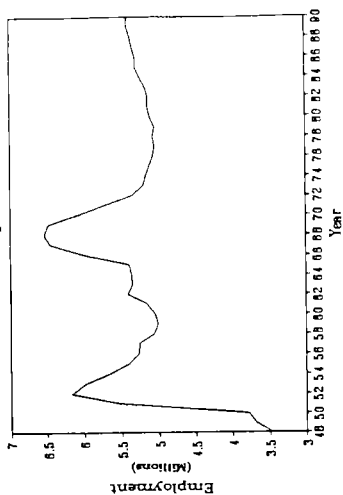Figure 2a

Private Employment

Figure 2b

Federal Employment
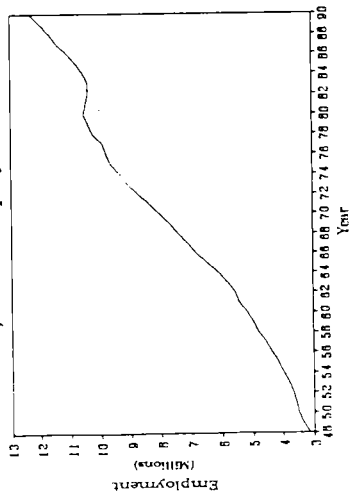
Figure 2c

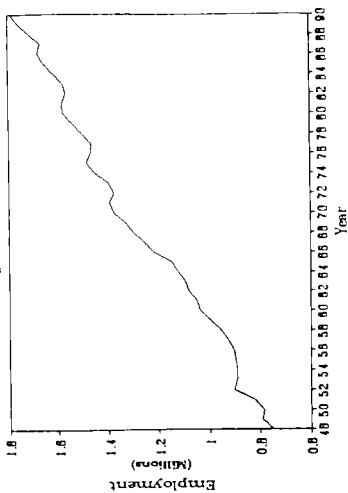State/Local Employment

Figure 2d

Public Enterprise Employment
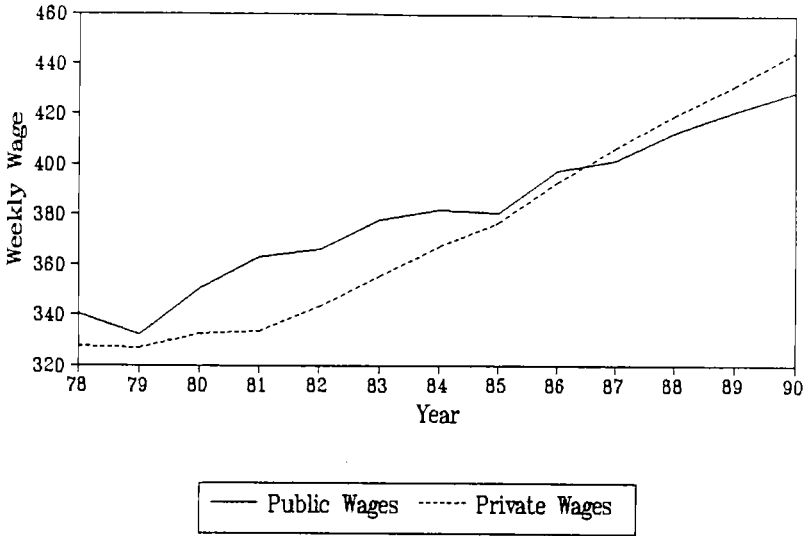
U.K. Public and Private Wages
(1990 U.S. Dollars)

Public Wages ------- Private Wages

U.K. Public Sector Wages
(1990 U.S. Dollars)

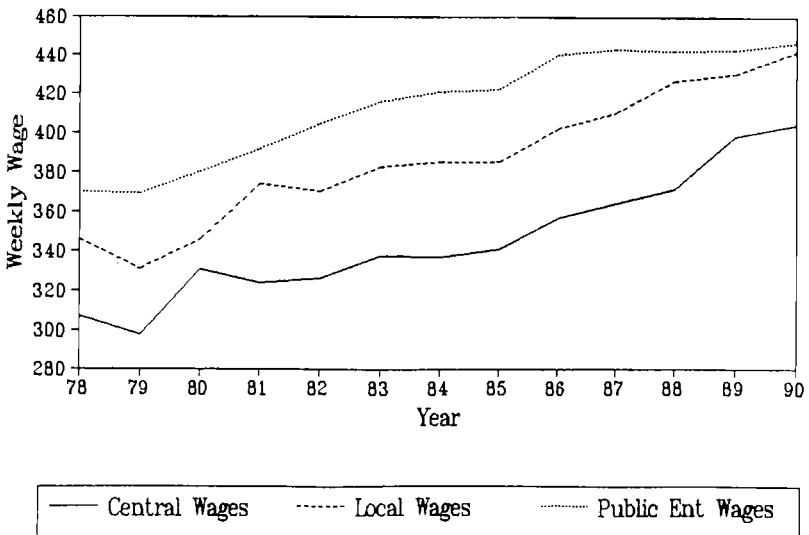Central Wages ------- Local Wages .... Public Ent Wages
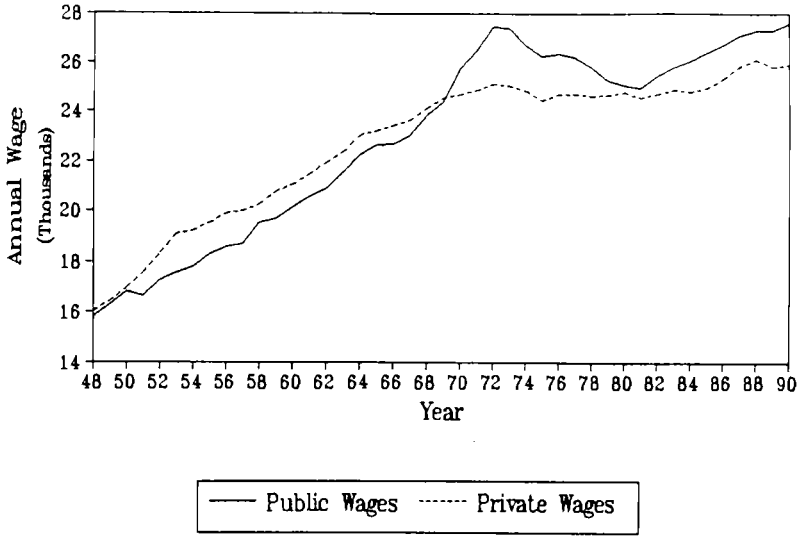
U.S. Public and Private Wages
(1990 U.S. Dollars)

U.S. Public Sector Wages
(1990 U.S. Dollars)