The Effects of Public Welfare Spending and Federal Welfare Reform on Private Social Services Employment in American States

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March 2, 2005

Prepared for presentation to the Applied Statistics Workshop at Harvard University, March 9, 2005. A previous version of this paper was presented at the University of Texas at Dallas and the Political Economy Research Workshop at Harvard University. I thank Jim Alt, Harold Clarke, Jeff Frieden and Beth Simmons for helpful comments.

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Abstract

I study the effects of public welfare spending and federal welfare reform on private social services employment in American states during 1990-2000. I focus specifically on employment in individual and family services and residential care. After allowing for the possibility that private sector organizations may affect public welfare spending, I find that public welfare spending by state and local governments has a positive effect on private sector employment, with an elasticity of around 0.4. The effect is smaller in the Northeast and Midwest and larger in the South and West. Analysis of short run dynamics indicates that relatively little of this impact occurs immediately, and the full adjustment process is lengthy. I also find a shift in employment from residential care to individual and family services associated with federal welfare reform. Welfare reform thus affected the composition of private social services, even though public welfare spending remained relatively constant.

Policy debates spanning the past four decades have underscored the fact that the private and public sectors share responsibility for the provision of social services in the United States. Private organizations have been substantially involved in the delivery of government-financed welfare services since President Johnson's War on Poverty (De Vita 1999; Salamon 1995; Smith 2002; Young 1999). Nonetheless, there is no quantitative research that seeks to measure the effect of changes in public welfare spending on private social services across subnational jurisdictions. There is considerable research that seeks to understand the variation in state welfare policies or public welfare spending (e.g. Barrilleaux, Holbrook and Langer 2002; Brown 1995; Volden 2002). In addition, Salamon (1995) documents the reliance of private social services organizations on government grants and contracts, while Corbin (1999) studies the variation in nonprofit social services organizations across metropolitan areas. However, none of these studies allow us to quantify the effect of changes in public welfare spending and programs on private social services, or to determine whether different kinds of social services are affected differently.

I analyze employment in private organizations providing individual and family services and residential care services in American states during 1990-2000. I examine the effects of state and local government spending on public welfare programs excluding Medicaid and transfer payments to individuals. I estimate both cross-sectional models allowing for the possibility that public spending might be affected by the size of the private social services sector, and error correction models to examine short-run dynamics.

I find that more public welfare spending is associated with higher private sector employment in both subsectors, and the marginal effect of public spending remained

roughly constant throughout the 1990's – overall, a one percent change in public welfare spending corresponds to an eventual change in employment of about 0.4 percent. The effect is smaller in the Northeast and Midwest where the private social services sector is relatively large, and larger in the South and West where governments have tended to rely more on the public sector to deliver services. This finding has important policy implications because it is sometimes argued that public welfare spending and private social services are substitutes, such that a decrease in the former will be offset by an increase in the latter (Salamon 1995; Young 1999). My results indicate that this is not the case given the current manner in which private sector organizations operate. The results of my error correction models indicate that only a small part of the ultimate impact of a change in spending occurs immediately, however, and the rate of adjustment thereafter is slow. In addition, there are no clear effects on the relationship between public spending and private social services due to federal welfare reform in 1996-97.

I also find that federal welfare reform had a large, immediate effect on the composition of private social services. Employment in individual and family services and emergency relief increased between 1996 and 1997, and employment in residential care services decreased sharply at the same time. I conjecture that federal welfare reform stimulated the former, and that competition for workers in the social services sector led to the latter.

The next section summarizes previous research on public-private sector relations. I then address measurement issues for my key variables and discuss my control variables. This is followed by my empirical analysis, beginning with cross-sectional models, and then dynamic analysis using error correction models. The final section summarizes by

findings and some implications for the effects of changes in public spending and public policy.

Previous Research

It is widely recognized that private social services organizations, most of which are nonprofits, rely on government grants and contracts for a substantial portion of their funding. Weitzman, *et al* (2002) report that government grants accounted for almost 23 percent of revenues to nonprofit "human services" organizations in 1998.[1] An additional 49.7 % came from program service revenue, which includes both government contracts and fees paid by clients. Moreover, although the federal government is the largest source of funding for public welfare programs, much of these funds are transferred to state and local governments, who then implement the programs in partnership with private organizations (De Vita 1999; Salamon 1995; Smith 2002). Of course, state and local governments may also use their own revenues to fund programs implemented through private organizations.

Nonetheless, no multivariate empirical studies have been found that estimate the effect of a change in public welfare spending on the private social services sector. Corbin (1999) studies the number of nonprofit social services organizations in 285 major metropolitan areas in the United States in 1992. He finds that areas with greater social cohesion, as measured by the density of churches, and heterogeneous demand for social services, as measured by religious and racial diversity, have more nonprofit social services organizations. Corbin notes that the concepts of social cohesion and

[1] Although the terminology is different, the activities included under human services appear to match closely those listed under social services in my private sector data.

heterogeneous demand may be in conflict, but argues that the number of nonprofit organizations should be greatest if there are many identifiable groups with distinct preferences, each of which is internally cohesive. The number of organizations is also greater in areas with higher per-capita income and higher poverty rates. Corbin's analysis omits public welfare spending due to a lack of data on government spending that could be matched with data on social services in metropolitan areas (1999, p. 304).

It has also been argued that private social services organizations seek to influence funding for the government programs that award them grants and contracts (Boris and Krehely 2002; De Vita 1999; Reid 1999; U.S. Congress 1995). It is not clear how much of this advocacy occurs or whether it is successful. On the one hand, private social services organizations are not traditional interest groups, and those that have the most favorable tax status face legal restrictions on their ability to engage in political advocacy (Hopkins 2001). On the other hand, there are many exceptions and loopholes to these rules that allow for nonpartisan advocacy on policy issues, and Smith (2002) reports that nonprofit social services organizations have become politically mobilized as a result of their relationship with government. I allow for the possibility that public welfare spending is a function of the size of the private social services sector by using instrumental variables in my empirical analysis.

Measuring Private Social Services Employment and Public Welfare Spending

"Social services" and "public welfare" are terms that actually cover a wide range of activities and programs. We therefore need to consider which specific services and programs to measure, and how they should be grouped. Unfortunately, there is no uniform system of accounts for both public and private sectors to make this task easy

(Grønberg 2001). I use two different data sets created by the U.S. Census Bureau for my measures of private social services employment and public welfare spending. I limit my measures to those subcategories that have the greatest overlap between private sector activities and public programs. An additional issue concerns the unit of measurement for private social services.

Private Social Services Employment

Smith (2002, 152) describes social services in practical terms as "the social care provided to deprived, neglected, or handicapped children and youth, the needy elderly, the mentally ill and developmentally disabled, and disadvantaged adults." My data on private social services come from the Census Bureau's *County Business Patterns* (U.S. Census Bureau 2004a). This is an annual series based on payroll data that provides economic data by classification code aggregated by state. Data are available on the number of "establishments" – defined as physical locations with at least one paid employee at any time during the year – aggregate number of employees in the week that includes March 12, and aggregate payroll for the first quarter and for the year. Measurement is complicated by the fact that the Census Bureau switched from using the Standard Industrial Classification (SIC) system to the North American Industrial Classification System (NAICS) in 1998. Table 1 shows the subcategories under both the SIC and NAIC systems.

[Table 1 here]

I use separate variables for Individual and Family Services ("IFS") and Residential Care as defined by the Standard Industrial Classification codes. IFS includes a variety of "individual and family social, counseling, welfare, or referral services,

including refugee, disaster, and temporary relief services." Residential care includes the provision of "social and personal care for children, the elderly, and special categories of persons with some limits on ability for self-care," but where medical care is not a major element (U.S. Census Bureau 2004a). Nonprofit organizations accounted for more than 90 percent of all individual and family services employees in 1997, but just 58 percent of residential care employees (Smith 2002).

I omit Job Training and Vocational Rehabilitation Services because the corresponding public sector job training programs fall under the category of "Other and Unallocable," which also includes such things as the National Guard (U.S. Census Bureau 2004b). I omit child daycare because comparable public spending for the Headstart program falls under education.[2] Finally I omit "Other social services, not elsewhere classified," which consists largely of business and professional associations and membership organizations.

For 1998-2000, I use the corresponding categories from the NAICS. These classifications generally are more detailed than SIC codes. Thus, the SIC category of Individual and Family Services gets split into Individual and Family Services and Community Food, Housing and Emergency Relief and there are three subcategories of residential care. I omit certain sub-sub categories of residential care because the corresponding SIC code falls under health services rather than social services (U.S.

[2] Personal communication, U.S. Census Bureau. September 2, 2004.

Census Bureau 2004a).[3] I again omit Vocational Rehabilitation and Child Daycare, as well as Nursing Care Facilities. While there are a small number of public nursing homes, the majority of private nursing homes are for-profit enterprises that serve an entirely different clientele (Gray and Schlesinger 2002).

A second issue concerns the units for measuring private sector social services. Corbin's (1999) study of nonprofit social services uses the number of organizations, but this is not necessarily a good measure of the aggregate level of private sector services.[4] I use the number of employees relative to population to measure the aggregate size of all private sector social services organizations in a given classification.[5]

Public Welfare Spending

The Census Bureau's government finances accounts divide public welfare spending into six subcategories, as shown in Table 1. I limit my measure of public welfare spending to Other Public Welfare (code E79). This is the second largest subcategory, following Medicaid. It is a catch-all category that includes administration of all other programs, as well as regulation and support of private welfare institutions and

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[3] Specifically, I omit residential mental retardation facilities (code 62321) and continuing care retirement communities (623311) while retaining residential mental health and substance abuse facilities (62322) and homes for the elderly (623312).

[4] Other studies of the variation in organized civic and political activity across states or municipalities also tend to use the number of organizations, if only for lack of better alternatives (e.g., Gamm and Putnam 1999; Gray and Lowery 1996; Lowry 2005).

[5] Employment in subcategories is sometimes reported as a range in order to protect the privacy of individual employers. In these cases, I use the midpoint of the range.

activities, children's services including foster care, activities supported by Federal Social Security Block grants (Title XX), welfare-related community action programs, and services to the physically disabled (U.S. Census Bureau 2004b). Grants or contracts for Independent and Family Services or Residential Care facilities should therefore come under this classification. My unit of measurement for public welfare spending is real (2000) dollars per capita, adjusted using regional CPI deflators.

Federal and State and Local categorical assistance programs (codes E67 and E68, respectively) include transfer payments that go directly to individuals on the basis of need under Assistance to Families with Dependent Children (AFDC) or Temporary Assistance for Needy Families (TANF), supplemental social security, and comparable state and local programs. I omit these programs because they involve payments made directly to individuals. Medicaid (code E73) is omitted because the relevant private sector organizations include many health care providers such as hospitals.

Vendor payments for non-medical purposes and welfare institutions (codes E75- and E77) are both very small subcategories that have zero spending in several states. Arguably, they might affect the level of private social services employment. However, payments to vendors include many items not provided by the social services agencies I study, such as winter energy assistance and weatherization of homes. Similarly, the examples of public welfare institutions given in the Census Bureau's *Classification Manual* include public nursing homes and veteran's homes. In addition, amounts recorded for these categories are limited to direct expenditures on goods or services or the cost of construction and maintenance of institutions – employment data related to either subcategory falls under Other Public Welfare (U.S. Census Bureau 2004b). If I include

spending on payments to vendors and welfare institutions in my measure of public welfare spending, my statistical results actually get slightly stronger.

The variables I use do not cover everything that might be considered part of social services or public welfare. I would like to be able to match public and private job training activities, and Smith (2002) reports that Medicaid is increasingly used for activities that formerly were considered non-medical public welfare. Moreover, at least some child daycare providers might be included. However, I believe that my variables do a good job of matching the scope of the private and public sector activities that are included. Adding more subcategories would weaken this match, thereby increasing the danger of obtaining spurious results.

Table 2 shows summary statistics for my three key variables for the years 1990-2000 in all fifty states, while Figures 1-3 present scatter plots showing observations by year. It is clear that there is substantial variation in all three variables, as the maximum values are more than seven times the corresponding minima for each variable. There appears to be an upward shift in IFS employees per capita following federal welfare reform during 1996-97, and possibly a corresponding downward shift in residential care employees. My measure of state and local government public welfare spending does not show any clear trend over time, although the variation across states is greater at both ends of the decade than in the middle.

[Table 2, Figures 1-3 here]

Control Variables

In addition to public welfare spending, my models include a number of control variables chosen to capture both demand- and supply-side factors that influence the size

of the private social services sector. Real income per capita is an obvious demand variable, although its effects are not clear. More income implies more resources to pay for services, but less income implies a greater need for some of the services offered. I include the overall unemployment rate as an additional measure of demand for social services. Corbin (1999) uses the poverty rate, but the negative correlation between poverty rates and income is much greater than that between unemployment rates and income. Given that many social services are directed toward children or seniors, I also include the percentage of the population below the age of 18 or above 64.

Two additional variables are racial and religious diversity as proxies for heterogeneous demands. Weisbrod (1988) argues that governments tend to provide services demanded by the median voter, so private alternatives will be provided if enough residents desire services that are different in quality or quantity from those demanded by the median voter. This implies that the private provision of goods and services that might also be supplied by the government will be greater where there is more heterogeneous demand.[6] I measure religious diversity as the reciprocal of the Herfindahl index calculated from the percentages of mainline Protestants, Catholics, evangelical Protestants and Mormons, Jews, and all other. Data and classification of Protestant denominations as "mainline" or "evangelical" come from surveys conducted in 1990 and 2000 by the American Religion Data Archive (2004). I measure racial diversity with a

[6] Weisbrod's discussion does not consider the possibility that the government may fund services provided by nonprofits. His argument implies, however, that where demands are more heterogeneous, government is more likely to use nonprofit organizations that can taylor their services to specific constituencies, rather than a one-size-fits-all approach.

comparable index based on percentages of whites, blacks, Asians, non-white Hispanics, and all other. These variables may also capture supply-side factors, as increased diversity may imply less social cohesion (Alesina, Baqir and Easterly 1999). Corbin (1999) found that both types of diversity are positively associated with the number of social services organizations in municipal areas, although the effect of racial diversity is only marginally significant.

I also include the percentage of the population living in metropolitan areas to capture possible economies of scale, and an index of citizen liberalism calculated by (Berry, *et al* 1999) to capture overall preferences that might affect the size of the private social services sector. Given that many social services organizations are nonprofits, aggregate employment may depend in part on the distribution of tastes in the population, although the direction of the effect is not clear. Political liberals may be more likely to have a taste for careers in these fields, while conservatives may prefer to rely on the private sector to a greater degree, even when it comes to implementing programs funded by the government.

I considered other variables that might measure supply-side effects. James (1987) claims that "Universally across countries, religious groups are the major founders of nonprofit service institutions," and Corbin (1999) uses the number of congregations per capita as a measure of social cohesion. I experimented with both the number of congregations and number of adherents per capita, but they had no effects. I also considered the percent of adults with college degrees, but it had no effect.

Empirical Results

I estimated cross-sectional models of long-run associations between variables, and then error control models of short-run dynamics. All variables measuring dollars or employees per capita are converted to natural logs. All of my variables are measured annually for 1990-2000 except for religious diversity, which is only measured in 1990 and 2000. I use linear interpolation for those models that use data for intervening years. Finally, I include various combinations of fixed effects variables for census regions or years, depending on the model and years included.

Long-Run Relationships

I estimated cross-sectional regressions for 1990 and 2000 using both ordinary least squares (OLS) and instrumental variables (IV) regression. Tables 3 and 4 report the results for IFS employees and residential care employees, respectively. The first and third columns of numbers show the regression coefficients with standard errors in parentheses; the second and fourth columns show the standardized Beta coefficients for my continuous variables.

[Tables 3 and 4 here]

Instrumental variables used for Other Public Welfare spending include the natural logs of real non-medicaid intergovernmental transfers from the federal Department of Health and Human Services per capita, own-source state and local government revenues per capita, state legislature administrative costs per legislator, and the sum of transfers, welfare institutions, and non-medicaid vendor payments per capita. Administrative cost per legislator is a measure of legislative professionalism; Barrilleaux, Holbrook and Langer (2002) find that states with more professional legislatures tend to have more

generous welfare policies. I include the sum of transfers, institutions and vendor payments because Other Public Welfare spending includes the costs of administering these programs (U.S. Census Bureau 2004a).

The coefficients on Other Public Welfare spending are all positive and significant at the 95 percent level except for the OLS coefficient in IFS equation, which is significant at the 90 percent level. Coefficients and standard errors are bigger in the IV regressions than the OLS regression for both types of social services. The IV regression coefficients imply that a one percent change in Other Public Welfare spending leads to changes of .36 percent in IFS employees and .43 percent in residential care employees.

With respect to my control variables, state economic conditions have relatively little independent effect on private social services employment, whereas states with more liberal populations have more private social services employment even after controlling for public welfare spending. I also find that states with greater religious diversity have more private sector employment. One possible surprise is that the age composition of the population does not affect employment in either subsector. Another is that racial diversity has a negative coefficient that is significant at the 90 percent level or better in every equation. Thus, my results are only partly consistent with theories suggesting that heterogeneous demand should lead to a larger nonprofit sector.

The standardized Beta coefficients give use some feel for the relative importance of different variables in "explaining" the variance of the dependent variable in my data set. They measure the change in the dependent variable in standard deviations associated with a one standard deviation change in each independent variable. The standardized Beta's for public welfare spending are greater in the IV regressions than the OLS

regressions. Based on these results, public welfare spending appears to be among the most important determinants of IFS employees in the IV regression (along with per capita income, percent metropolitan population, liberalism, and religious diversity), and residential care employees in both regressions (along with racial diversity, liberalism and religious diversity).

There are two reasons to be concerned about whether the estimated effect of public welfare spending was stable during the period 1990 to 2000. One is federal welfare reform, which occurred in 1996 and might have caused a real change in the effect of public spending. The other, which might have created an artificial effect, is the change in classification systems for private social services following 1997.

Figures 4A and 4B show the coefficients on public welfare spending from a series of annual cross-sectional regressions, plus or minus 1.645 standard errors. Confidence intervals are large because each regression is based on only 50 cases, but all of the point estimates are positive for both IFS and residential care, and some are significant at the 95 percent level in a one-sided test. More important, there are no obvious trends in the point estimates, and no jumps or shifts following 1996 or 1997.

[Figure 4 here]

Short-Run Dynamics

Cross-sectional models give us information on the long-run relationships between variables, but they cannot tell us about short-run dynamics. Moreover, each regression only uses a portion of the available cases. I therefore estimated error correction models of the form:

$$\Delta Y_{t,t+1} = \alpha * \Delta X_{t,t+1} + \rho * (Y_t - \beta * X_t) + \varepsilon_{t,t+1} \qquad [1]$$

where Y is the dependent variable, X is a vector of independent and control variables, ε is the stochastic term, Δ is the first difference operator, and α, ρ, and β are (vectors) of parameters to be estimated. The model assumes that there is an equilibrium relationship between X and Y such that $Y = \beta * X$. When there is an exogenous change in X, this relationship is thrown out of balance (an "error" occurs). The immediate effect of a change in X is measured by α, while ρ measures the rate at which Y adjusts in subsequent periods to restore the equilibrium.

Statistically, error correction models are useful for analyzing relationships between variables that are integrated of order one, such that a regression of levels on levels would likely produce spurious results (Enders 2004). A standard approach is to estimate a model in levels, then test for whether X and Y are cointegrated, then (assuming they are) use the residuals to estimate [1] (Charemza and Deadman 1997; Engle and Granger 1987). De Boef and Granato (1999) argue that testing the null hypothesis $\rho < 0$ in a single-equation estimation of [1] is a preferable method of testing for cointegration. They also note that error correction models may be estimated with stationary data and may be justified on theoretical as well as statistical grounds.

I estimated error correction models similar to [1] using data for all 50 states for three different time periods: 1990-1999, 1990-1995 and 1997-1999. These three different periods allow me to consider whether the results are similar before and after federal welfare reform. Fixed effects for regions are omitted because they do not vary over time, but I included fixed year effects. I also estimated models for the full time period split according to census region: Northeast and Midwest vs. West and South. Both IFS and

residential care employment per capita are higher in northeastern and midwestern states,[7] and Smith (1999, 183) argues that northeastern and midwestern states have longer traditions of local philanthropic support for nonprofit organizations that allows nonprofits to combine public and private sources of support. In contrast, southern and western states have relied more heavily on public sector service delivery, and have only recently turned to selective contacting with private organizations.

Hypothesis tests for integration and cointegration are complicated by the fact that I actually have 50 separate time series, each of which has just 11 periods. Smith (2000) cautions against the mechanical application of hypothesis tests to panel data, and Enders (2004) notes that the asymptotic theory underlying different tests depends on whether we assume the sample size approaches infinity by increasing the number of cross-sectional units or the number of time periods. Complicating things still further is the fact that unit root tests tend to have low statistical power, even when there are many time series observations (Enders 2004).

In my case, it seems unlikely that employees per capita is literally integrated of order one, since this implies that the variance over time is infinite (Enders 2004). Nonetheless, the risk of spurious results remains if X and Y are "near-integrated" (DeBoef and Granato 1999). If I make the assumption that all parameters are homogeneous across states, then all three of my key variables appear to be near

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[7] For the years 1990-2000, mean IFS employment per 1,000 residents is 3.09 in the Northeast and Midwest compared to 2.16 in the West and South. For residential care employment, the comparable figures are 2.35 and 1.54. Both differences in means are significant at the 99 percent level.

integrated: a regression of the variable on its lagged value yields a coefficient that is significantly less than 1 but greater than 0.9. If I conduct 50 separate tests and combine their results using the formula provided by Enders (2004, 225), I cannot reject the null hypothesis of a unit root for any of my variables.

Given the results of my cross-sectional analysis, it seems extremely unlikely that the difference between the actual and predicted values of employment would have a unit root, i.e., would not be cointegrated. I nonetheless estimated single-equation models as recommended by De Boef and Granato (1999). Estimates of ρ are negative and significant for both dependent variables and every subset of the data except IFS employees during 1997-1999. However, implied values of β for Other Public Welfare Spending are insignificant and sometimes have the wrong sign.[8] I therefore used a two-step procedure. I first estimated the equation $Y = \beta * X + \varepsilon$ using IV regression, then calculated the residuals and used them to estimate [1] with least squares regression.

The case for treating the change in (the natural log of) public spending as exogenous with respect to the change in (the natural log of) employment rests largely on the details of timing and sequence, as tests for weak exogeneity (Enders 2004, 367-368)

[8] Implied values of β are calculated by dividing the estimated coefficient for Other Public Welfare spending by ρ. Alternatively, β can be estimated directly using nonlinear least squares, but the results are the same. Single-equation estimated values of α and ρ are very close to those shown in Tables 5 and 6.

produced mixed results.[9] My data on public welfare spending are for fiscal years ending in a particular calendar year, but no state uses January 1 as the beginning of its fiscal year; most states use July 1 (National Association of State Budget Offers 2002).[10] This means that the change in spending from year t to year t+1 reflects budgets that were actually adopted during years t-1 and t, respectively. *County Business Patterns* employment data are measured each year for the week that includes March 12 (U.S. Census Bureau 2004b), so the change in employment from year t to year t+1 reflects the difference in measurements taken in March of those years. Thus, the decisions that determine the change in public spending precede measurement of the change in employment by several months.

Table 5 shows the results for my key parameters of interest for IFS employees. I do not report standard errors for the coefficient on the levels of public spending, β_1, because they may be spurious (Charemza and Deadman 1997, 133), but the point estimates for models using all 50 states are similar to the values shown in Tables 3 and 4, and are relatively stable throughout the decade. The immediate effect of a change in Other Public Welfare spending, α_1, is estimated to be positive and is statistically significant for all subsets of the data except for the Northeast and Midwest, while the adjustment parameters, ρ, are all negative and are all significant except during 1997-

[9] In general, the null hypothesis of weak exogeniety is rejected for IFS employees but not for residential care employees. In each case, there is one subset of the data that does not conform to this pattern (1997-99 for IFS employees and 1990-95 for residential care).

[10] The exceptions are Alabama (October 1), Michigan (October 1), Texas (September 1), and New York (April 1).

1999. The fact that they are low in absolute value implies lengthy adjustment processes. Using data for the full time period and all 50 states, only about 4.5 percent of the difference between current and equilibrium employment in individual and family services is closed each year. When I split the sample by region, I find that both the immediate impact of a change in public spending and the equilibrium effect on private employment are greater in the South and West than in the Northeast and Midwest. Now the long-run elasticity ranges from .22 in the Northeast and Midwest to .76 in the South and West.

[Table 5 here]

Table 6 shows the same parameters for residential care employees. Again, the long run effect of public spending is similar to my cross-sectional results when I use data for all 50 states, but is lower in the Northeast and Midwest and higher in the South and West. The adjustment parameters remain small, implying a long adjustment process everywhere. Now, however, the immediate impact, α_1, is not statistically significant in any model and the point estimate is negative for the Northeast and Midwest. This evidence implies two different processes underlying the relationship between public spending and employment in IFS or residential care. A change in spending produces an immediate change in IFS employment, followed by further changes in subsequent years until equilibrium is restored. There is no immediate effect on residential care employment, but the level of residential care employment does respond eventually to a change in public spending.

Another interesting result is contained in the fixed year dummy variables. Figures 5A and 5B show the coefficients for fixed year effects and their 95 percent confidence intervals for the full data set. The patterns are quite striking: Fixed effects are near zero

for both subsectors except for 1996-97, when IFS employees have a large, positive effect and residential care employees had a large, negative effect. Recall that this is the time during which federal welfare reform was adopted. The implication is that this change in policy stimulated a shift in employment away from residential care and into individual and family services and emergency relief. I find the same pattern for both subsets of the data set when I split it by census region.

[Figure 5 here]

To check this further, I calculated the bivariate correlation between the changes in the number of employees (not employees per capita) for each year. These correlations are shown in Figure 6. In most years, the correlation is positive indicating that employment in both subsectors moved in the same direction. In 1996-97, however, it is -.78. In that year, residential care employment was shrinking in the same states where IFS employment was growing.

[Figure 6 here]

Discussion

Neither public welfare spending nor private social services are monolithic concepts. In order to analyze their relationship, we need to break them down into subcategories and focus on those subcategories that have the maximum overlap in terms of the types of activities included. In addition, we need to consider the most appropriate units of measurement for private social services. While the number of organizations may be appropriate for certain research questions, I argue that employment is a better measure of the aggregate size of each subsector.

My results indicate (1) that Other Public Welfare spending by state and local governments as a positive, long-run effect on private IFS and residential care employment, (2) that this effect is statistically significant in most models estimated with at least 100 cases, and (3) that the point estimate of this effect remained relatively constant throughout the 1990s, despite the changes brought about by federal welfare reform during 1996-1997. Overall, if I allow for the possibility that private sector organizations may affect the level of public spending, a one percent change in public spending is associated with a change of about 0.4 percent in private sector employment, although analysis of subsets of the data imply that the effect is smaller in the Northeast and Midwest and larger in the South and West. Thus, public welfare spending and private social services employment operate as complements, not substitutes.

My analysis of short-run dynamics, however, tempers this conclusion somewhat. The immediate effect of a ten percent cut in public spending is estimated to be only about one percent for IFS employment, and the full adjustment process is estimated to take many years. I find no immediate impact of a change in public sector spending on residential care. Thus, if these cuts are expected to be permanent, it is possible that private social services organizations would alter their operations and search out new revenue sources well before the full adjustment takes place.

Another result that emerges from the dynamic analysis is the effect of federal welfare reform on the composition of private social services. I find an increase in IFS employment during 1996-97 that cannot be explained by a shift in public spending or changes in my control variables and that coincides with a decrease is residential care employment. This does not mean that welfare reform was intended to discourage the

provision of residential care services. Rather, I conjecture that welfare reform stimulated an expansion of individual and family services and emergency care, and new employees had to come from somewhere. It is logical that they would come from a subsector that requires similar skills and offers similar levels of pay. This raises the question of whether residential care services are now undersupplied in some sense as an indirect result of welfare reform.

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Table 1 Subclassifications of Public Welfare Spending and Social Services Employment

Code	Subcategory	Treatment
Private Social Services Employees: SICC (1990-1997)[a]		
8320	Individual and Family Social Services	Include
8330	Job Training and Vocational Rehabilitation	Omit
8350	Child Daycare Services	Omit
8360	Residential Care	Include
8390	Other Social Services, n.e.c.	Omit
Private Social Services Employees: NAICS (1998-2000)[a]		
6231	Nursing Care Facilities	Omit
6232	Residential Mental Health and Substance Abuse	Partially include
6233	Community Care for the Elderly	" "
6234	Other Residential Care	Include
6241	Individual and Family Services	Include
6242	Community Food, Housing and Emergency Relief	"
6243	Vocational Rehabilitation	Omit
6244	Child Daycare	"
State and Local Public Welfare Spending[b]		
E67	Federal Categorical Assistance Programs	Omit
E68	Other Cash Assistance Programs	"
E74	Vendor Payments for Medical Care (Medicaid)	"
E75	Other Vendor Payments	"
E77	Welfare Institutions	"
E79	Other Public Welfare[c]	Include

a. U.S. Census Bureau 2004a.

b. U.S. Census Bureau 2004b.

c. Includes administration of other public welfare programs; regulation and support of private welfare institutions and activities; children's services, such as foster care, adoption, day care, nonresidential shelters, and the like; activities supported by Federal Social Services Block Grant (Title XX) funds; welfare-related community action programs; social services to the physically disabled; temporary shelters and other services for the homeless.

Table 2 Summary Statistics for Public Welfare Spending and Private Social Services

Variable	Mean	S.d.	Min.	Max
Other Public Welfare spending	153.6	60.7	57.8	401.3
Individual and Family Services (IFS) employees	2.6	1.3	0.6	8.0
Residential Care employees	1.9	0.8	0.5	4.3

Other Public Welfare spending is measured in real (2000) dollars per capita. IFS and residential care are measured in employees per 1,000 residents. Data are for 1990-2000 for all 50 states.

Table 3 Ln(IFS Employees per 1,000 residents), 1990 and 2000

	OLS		IV Regression	
	Coef (s.e.)	Beta	Coef (s.e.)	Beta
Ln(Other Public Welfare spending)	.152 (.086)	.115	.361 (.206)	.274
Ln(Income per capita)	.867 (.409)	.265	.680 (.430)	.208
Unemployment Rate	.069 (.039)	.153	.057 (.036)	.126
Pct. Metropolitan	-.007 (.003)	-.258	-.006 (.003)	-.224
Pct. Young or Old	.004 (.015)	.016	.010 (.015)	.036
Citizen Liberalism	.013 (.003)	.320	.011 (.004)	.277
Religious Diversity	.310 (.097)	.259	.283 (.104)	.237
Racial Diversity	-.237 (.111)	-.175	-.212 (.122)	-.157
2000	.870 (.087)	---	.805 (.084)	---
Constant and Regional effects	Yes		Yes	
Cases	100		100	
R^2	.823		.812	

Standard errors are computed with observations clustered by state.

Table 4 Ln(Residential Care Employees per 1,000 residents), 1990 and 2000

	OLS		IV Regression	
	Coef (s.e.)	Beta	Coef (s.e.)	Beta
Ln(Other Public Welfare spending)	.242 (.101)	.237	.432 (.177)	.422
Ln(Income per capita)	.323 (.400)	.127	.153 (.385)	.060
Unemployment Rate	-.007 (.050)	-.020	-.018 (.049)	-.052
Pct. Metropolitan	-.001 (.003)	-.058	-.000 (.002)	-.020
Pct. Young or Old	-.006 (.024)	.026	-.000 (.027)	-.002
Citizen Liberalism	.008 (.003)	.243	.006 (.004)	.192
Religious Diversity	.174 (.099)	.186	.150 (.102)	.161
Racial Diversity	-.403 (.148)	-.384	-.381 (.145)	-.363
2000	.173 (.108)	---	.115 (.121)	---
Constant and Regional effects	Yes		Yes	
Cases	100		100	
R^2	.548		.534	

Standard errors are computed with observations clustered by state.

Table 5 Key Parameters, Error Correction Models of Individual and Family Services

Y = private sector employment,
X = other public welfare spending
Z = control variables,
D = year-specific intercepts

$$\Delta Y_{t,t+1} = \alpha_1 * \Delta X_{t,t+1} + \alpha_2 * \Delta Z_{t,t+1} + \rho * (Y_t - \beta_1 * X_t - \beta_2 * Z_t) + \Delta D_{t,t+1} + \varepsilon_{t,t+1}$$

	Cases	α_1	ρ	β_1
1990-1999 all states	500	.105 (.028)	-.045 (.013)	.458
1990-1995	300	.094 (.030)	-.044 (.017)	.402
1997-1999	150	.109 (.051)	-.024 (.022)	.484
Northeast & Midwest	210	.065 (.056)	-.094 (.024)	.215
West & South	290	.110 (.041)	-.039 (.019)	.759

Numbers in parentheses are standard errors calculated with observations clustered by state.

Table 5 Key Parameters, Error Correction Models of Residential Care Services

Y = private sector employment,
X = other public welfare spending
Z = control variables,
D = year-specific intercepts

$$\Delta Y_{t,t+1} = \alpha_1 * \Delta X_{t,t+1} + \alpha_2 * \Delta Z_{t,t+1} + \rho * (Y_t - \beta_1 * X_t - \beta_2 * Z_t) + \Delta D_{t,t+1} + \varepsilon_{t,t+1}$$

	Cases	α_1	ρ	β_1
1990-1999 all states	500	.020 (.050)	-.072 (.019)	.395
1990-1995	300	.016 (.042)	-.048 (.020)	.412
1997-1999	150	.061 (.085)	-.085 (.043)	.516
Northeast & Midwest	210	-.107 (.072)	-.095 (.025)	.329
West & South	290	.060 (.069)	-.073 (.026)	.612

Numbers in parentheses are standard errors calculated with observations clustered by state.

Figure 1 **Individual and Family Services Employees per 1,000 Residents**

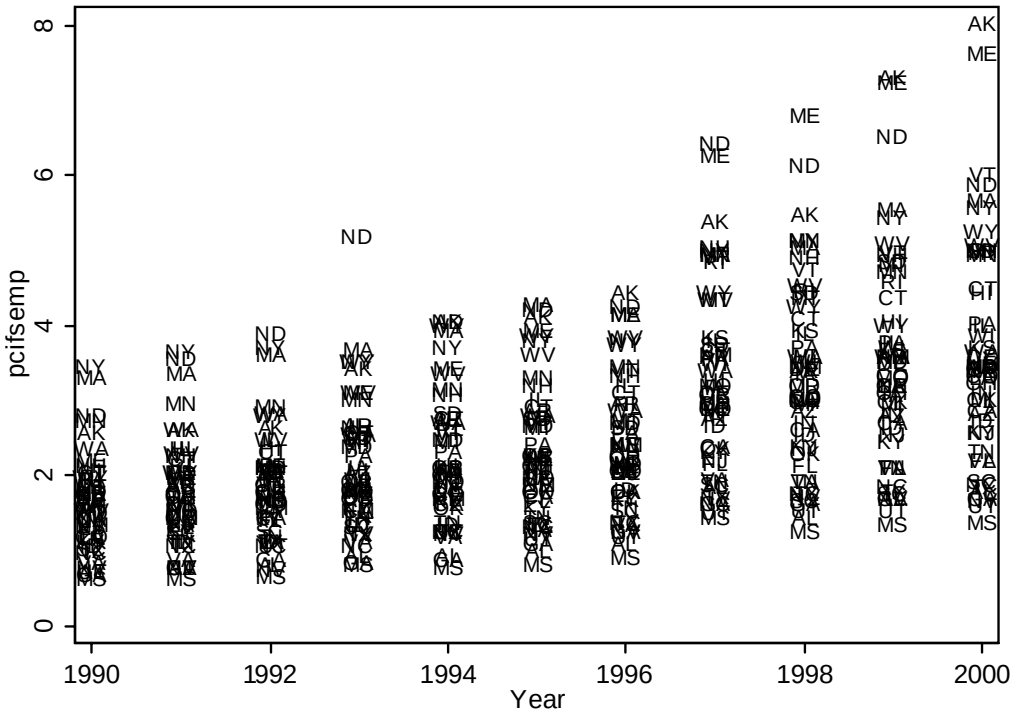


Figure 2 **Residential Care Employees per 1,000 Residents**

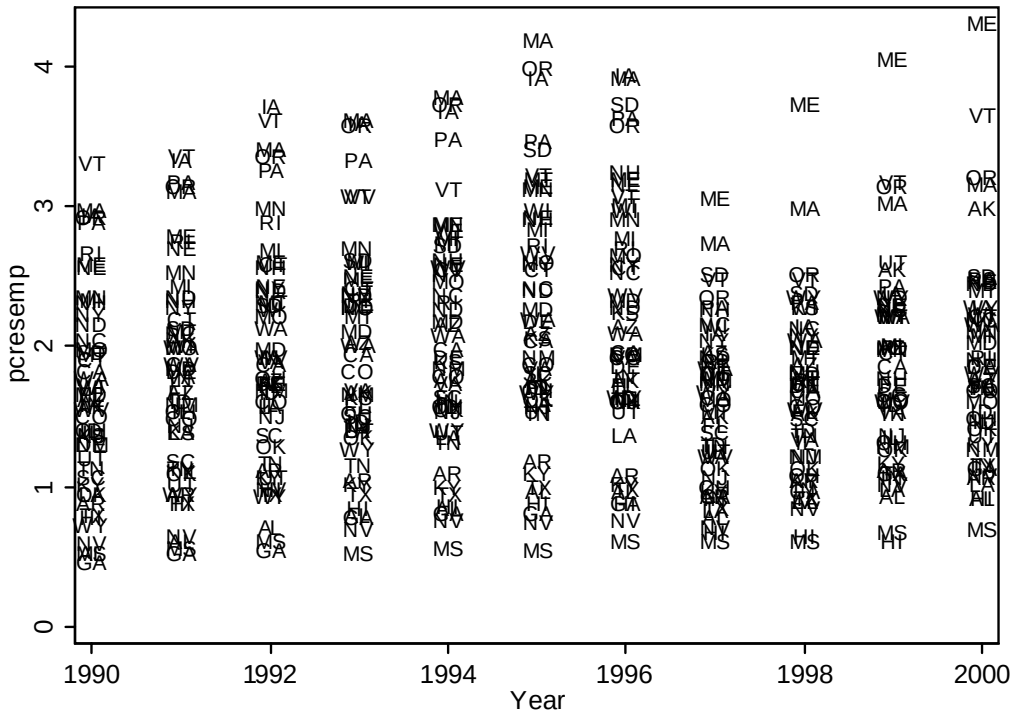


Figure 3 Real Other Public Welfare Spending per Capita

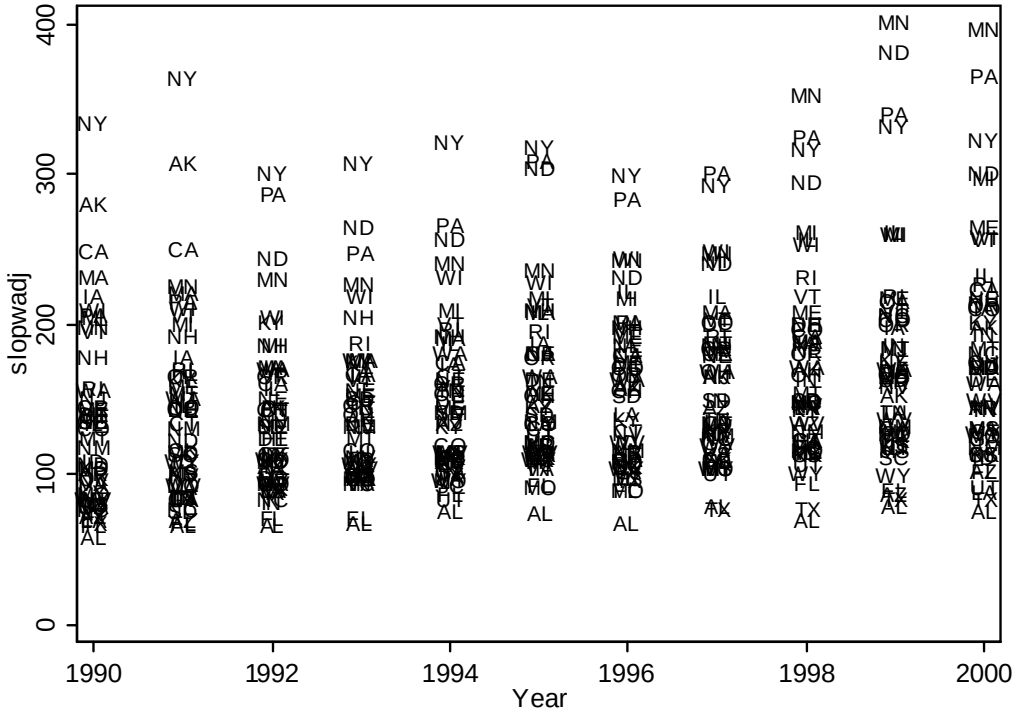
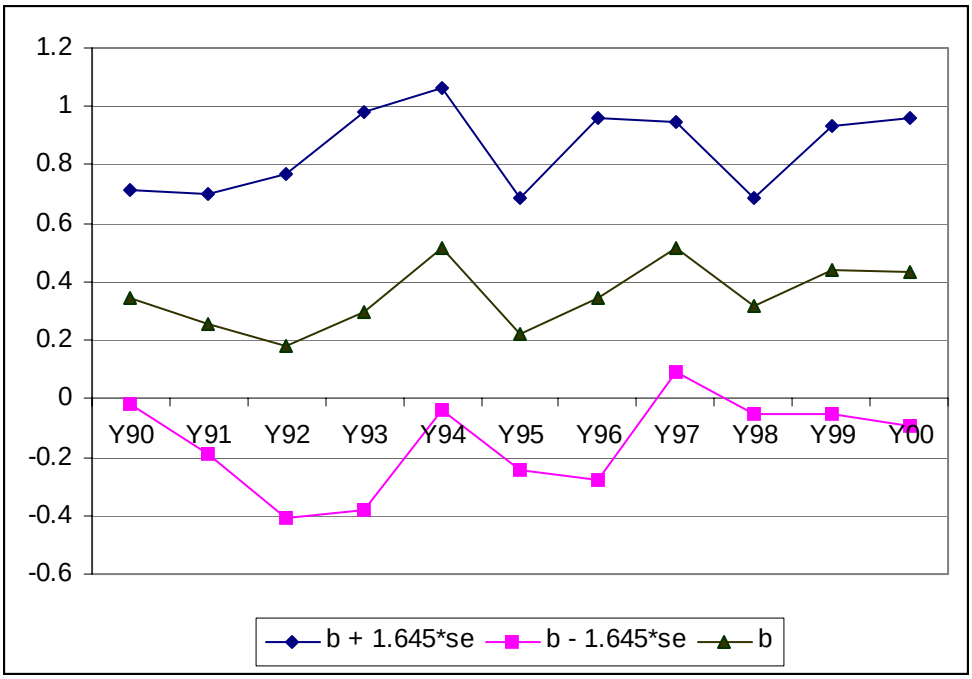


Figure 4 **Coefficients on Ln(Other Public Welfare Spending) and 90 % Confidence Intervals, Annual IV Regressions**

A. Individual and Family Services Employees



B. Residential Care Employees

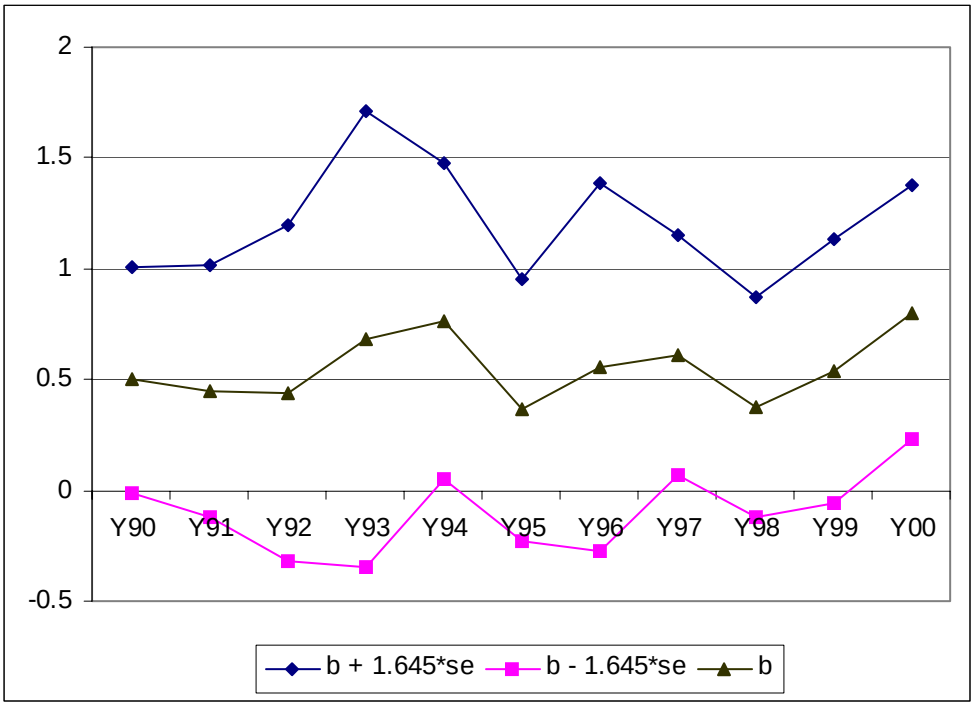
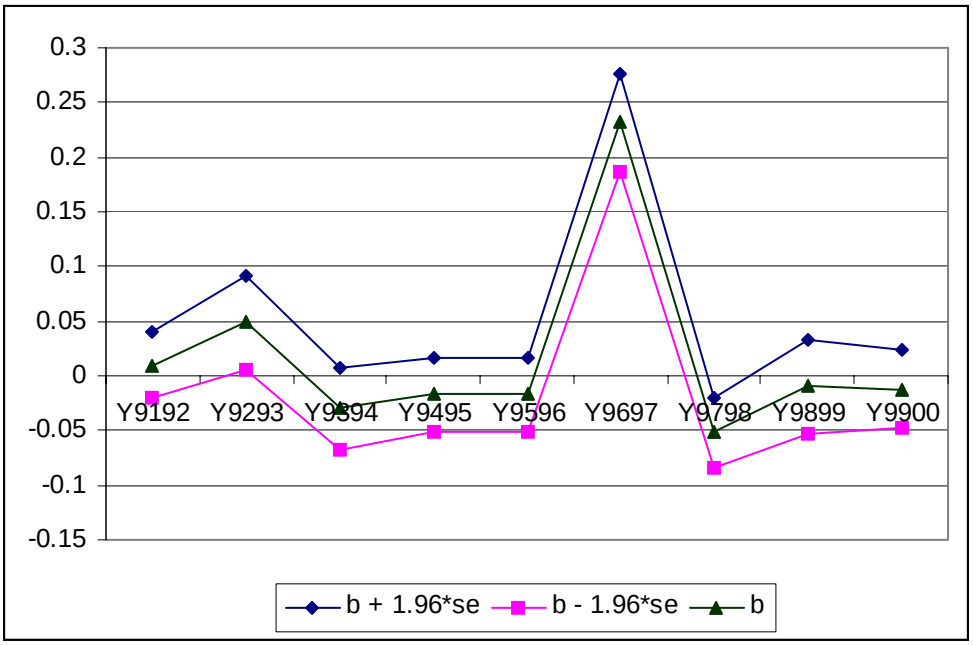


Figure 5 **Fixed Year Effects and 95 % Confidence Intervals, Error Correction Models 1990-1999**

A. Individual and Family Services Employees



B. Residential Care Employees

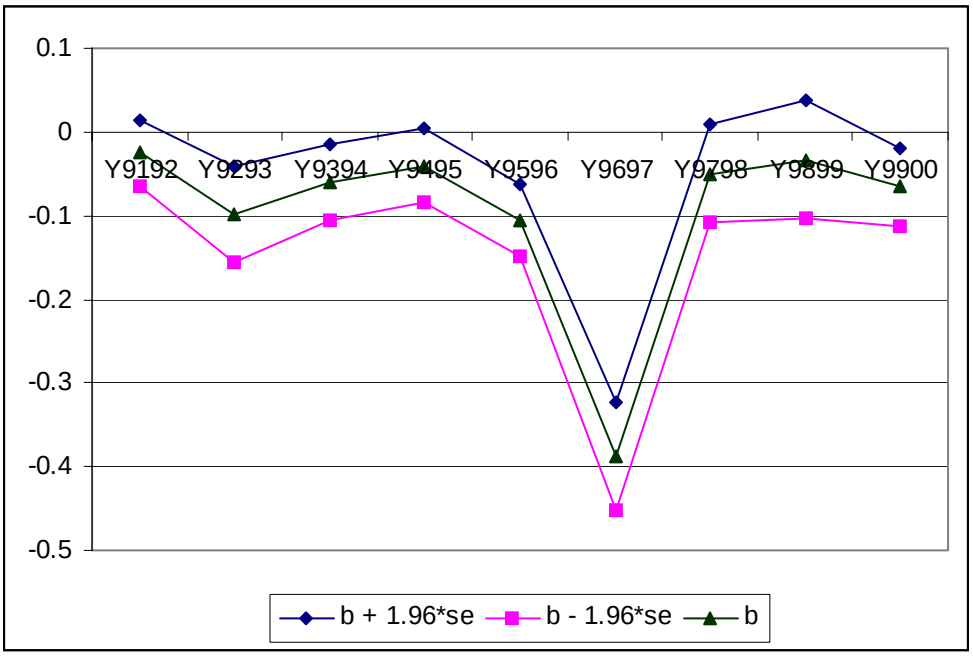


Figure 6 **Correlations Between Change in IFS Employees and Change in Residential Care Employees**