Increasing Child Support Collection Success in Oklahoma

Prepared for

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by

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I. Introduction

There are a variety of remedies and methods employed by states when enforcing child support payments. Within broad federal guidelines, states are to establish and maintain child support enforcement procedures as described in Title IV-D of the Social Security Act. Current federal performance measures arise from H.R. 3130, which mandated that by October of 1999, all states will be subject to five broad performance measures when calculating federal incentive payments. In addition to attempting to maximize federal incentive payments to augment the states' IV-D budgets, states also pursue individual goals for collecting and distributing child support payments.

The purpose of this paper is to construct and apply a statistical framework for evaluating child support collection performance in Oklahoma. The performance in Oklahoma is addressed first from a state level perspective through a comparison with the other states. The initial step is to identify a group of peer states to serve as a valid benchmark for Oklahoma performance. The peer group is chosen by identifying those states that present an operating environment with similar economic, socio-demographic, and IV-D program characteristics. Statistical analysis is then used to identify the variables that best explain the ratio of collections to expenditures, as well as to explain the relative collection performance of the states.

Collection performance is next evaluated at the office level in order to provide insight into the relative efficiency of the various offices. The statistical analysis also provides evidence concerning the effectiveness of the different collection approaches used statewide. Multiple measures of collection performance are tested, including adjusted federal composite scores for each office.

Finally, a review of existing studies concerning the role of child support is prepared in Appendix A. The review examines the policy relevance of child support and findings in the literature concerning child support enforcement.

II. State-Level Child Support Collection Performance

Within the established guidelines, the states pursue collection of child support in dissimilar social and economic environments, through a variety of ways and means, and with differing degrees of success. The goal of this analysis is to examine the operating environment and collection success of the states in order to better evaluate the collection performance of Oklahoma's enforcement process.

In the first section, we explore the operating environment faced by other states in their child support collection efforts. This includes a compilation of socio-demographic and economic profiles of the states for use in determining which states are appropriate benchmark candidates for Oklahoma. The second section presents a statistical evaluation of the child support collection

performance in Oklahoma relative to the other states, as well as an examination of the performance of those states that are receiving high grades on the federal performance measures.

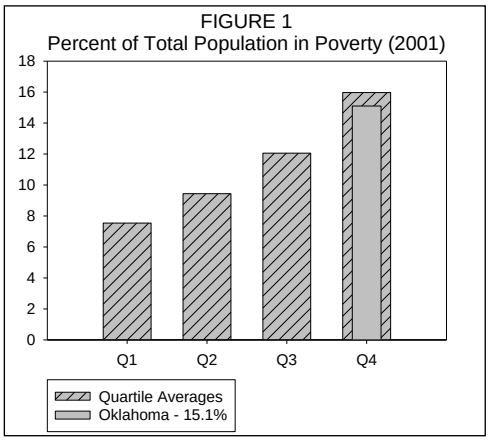
1. Identifying Oklahoma's Peer States

In this section, we identify those states that represent a useful peer group, or benchmark, for evaluating the collection success of Oklahoma. The benchmark group should comprise those states that present similar economic, socio-demographic, and IV-D program characteristics. An evaluation of the states using these three categories of characteristics follows.

A. State Economic Profiles

1. Poverty Rate

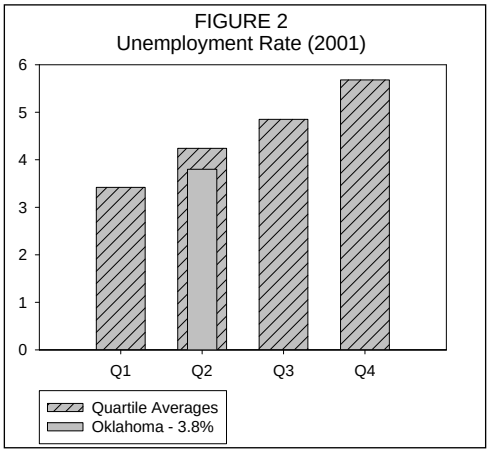
Since the non-custodial parents' ability and willingness to pay child support obligations is determined largely by financial well-being, it is reasonable to expect to see states with a high degree of poverty receive lower performance ratings for current and arrears collections. The state poverty rates used are from the March 2001 Annual Demographic Survey conducted by the Bureau of the Census. As a descriptive tool, we separate the states into quartiles based on the poverty level and graph the resulting average poverty rates for each quartiles. Oklahoma's poverty rate is then placed within this graph showing Oklahoma's standing relative to the other 49 states.



As shown in Figure 1, Oklahoma's relatively high 2001 poverty rate of 15.1% ranks in the fourth quartile on the measure of poverty among the states in 2001. The data suggest that southern states tend to have high levels of poverty as a percentage of total state population, most notably Alabama (15.9%), Louisiana (16.2%), Mississippi (19.3%), and South Carolina (15.1%). Nearby states with high poverty rates include Arkansas (17.8%), New Mexico (18.0%), and Texas (14.9%). Other states with high poverty levels include West Virginia (16.4%) and Arizona (14.6%). On this measure we consider southern states and other states with similar poverty levels as peers to Oklahoma.

2. Unemployment Rate

Another measure of the ability to pay toward child support is the state unemployment rate. IV-D programs in states with a high unemployment rate are expected to face greater challenges in collecting child support payments. Figure 2 shows state quartiles of unemployment rates for 2001. Oklahoma's unemployment rate of 3.8% in 2001 ranks the state 13th and at the top of the second quartile.

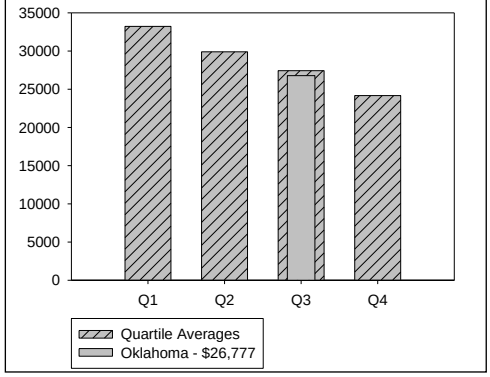


The state's rate is also below the national average of 4.8% in 2001, a reflection of the overall historically low levels of unemployment experienced nationwide. However, in 1998, Oklahoma had above average unemployment placing it in the third quartile among all states. The distribution of unemployment rates shows that many states in the Midwest and New England share similarly low unemployment levels. Notable candidate peer states are Kansas (4.3%), Nebraska (3.1%), both Dakotas (North 2.8% and South 3.3%), Colorado (3.7%), and Wyoming (3.9%).

3. Cost of Living Adjusted Income

Figures 1 and 2 considered jointly suggest that Oklahoma's high poverty rates are not due to poor economic conditions but rather to Oklahoma's low income level relative to other states. Peer states to Oklahoma based on income level are determined using cost of living adjusted per capita personal income. The Interstate Cost of Living Index produced by the American Federation of Teachers is used to adjust 2000 per capita personal income (PCPI) for the states.

FIGURE 3:
Cost of Living Adjusted Per Capita Personal Income



As shown in Figure 3, Oklahoma's cost of living adjusted PCPI of $26,777 is below the national average of $29,770, ranking the state 35th in the nation and placing it in the 3rd quartile. Oklahoma's adjusted income is lower than the neighboring states of Kansas ($29,899) and Texas ($31,012), but higher than Arkansas ($24,813), Louisiana ($24,815), and New Mexico ($22,700). States similar to Oklahoma on other measures and with similar cost of living adjusted PCPI include Alabama ($26,116), North Dakota ($27,064), South Carolina ($26,100), South Dakota ($28,160), and Wyoming ($27,851). Oklahoma also ranks ahead of high income, high cost of living states such as California ($26,525), Alaska ($24,320), and Hawaii ($21,571).

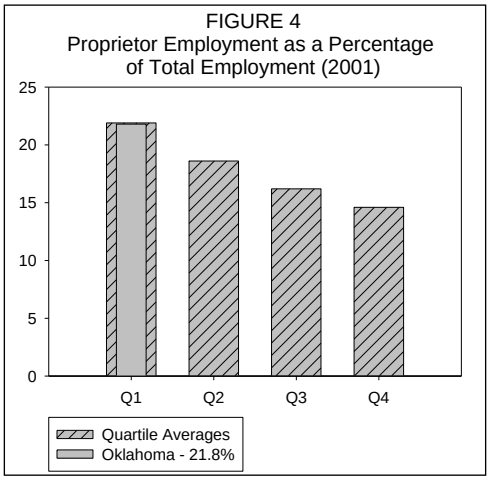
4. Proprietor's Income

The final economic characteristic is the percentage of proprietor's income as a percent of total income across states. The rationale for this measure is that mandatory income withholding is a less effective tool for enforcing child support orders when the non-custodial parent is a proprietor rather than a wage and salary employee. Since income withholding is the most effective tool in enforcing child support obligations,[1] states that have a high proportion of cases against proprietor non-custodial parents lose, to some degree, the use of their most powerful enforcement tool.

Figure 4 shows the quartile breakdown of proprietor employment as a percent of total state employment. Oklahoma has a very high proportion of proprietor employment, ranking 6th among the states at 21.8% and well above the 16.9% average nationally. Because Oklahoma has a high proportion of proprietor employment, we should expect Oklahoma to face greater

[1] U.S. Department of Health and Human Services, Techniques for Effective Management of Program Operations (TEMPO), http://www.acf.dhhs.gov/programs/cse/pol/im-01-06a.htm.

challenges when collecting child support payments. This high proportion of proprietor employment in Oklahoma is largely the result of a high concentration of the state's economy in farming and petroleum, industries with historically high numbers of proprietors. Nonetheless, both industries are experiencing declines in proprietors as farming establishments are turning away from family farming and as the Oklahoma oil industry continues to lose competitive advantage.



Peer states in this category include many energy and farming states of the Midwest. Notable inclusions are Colorado (20.4%), Wyoming (22.4%), both Dakotas (North 22.7% and South 23.4%), Arkansas (19.0%), Kansas (19.1%), and Texas (18.9%). Other sparsely populated states with a high proportion of proprietor employment include Maine (20.6%), Vermont (21.6%), Idaho (22.6%), and Montana (26.0%).

Peer States Based on Economic Measures

There exists only a loose commonality across states in the above economic measures. The unemployment rate produces groupings less consistent with those found using the other measures. With that in mind, peer states based on the economic characteristics include the nearby states of Arkansas, Kansas, and Missouri, the energy states of Montana and Wyoming, as well as Colorado, Georgia, Idaho, and Tennessee.

B. State Socio-Demographic Characteristics

Sociological and demographic characteristics differ greatly across states. In this section, we examine four major socio-demographic variables in forming a candidate peer group for Oklahoma. Although socio-demographic characteristics affecting state child support enforcement are difficult to manipulate through policy action, several states have implemented programs to reduce negative characteristics such as teen births and births to unwed mothers. These programs often fall under the umbrella of social services but are not guided by state IV-D offices. Therefore, State IV-D offices are subject to the adverse consequences these demographic variables have on collection performance. Similar to state economic conditions, we will seek variables that influence the state's success on the five performance measures used for calculating federal incentive payments. The variables examined include teen birth rate, percentage of unwed mothers, divorce rate, and income earned by female householders.

1. Teen Births

Teen birth rates declined for all states between 1991 and 2000.[2] Nevertheless, the birth rate to teenage mothers remains an important measure of the challenges facing state IV-D programs for two reasons. One reason is that most teenage births are to unwed women.[3]

[2] Ventura, Stephanie J., T.J. Mathews, Brady E. Hamilton. Teenage Births in the United States: State Trends, 1991-2000: an Update. *National Vital Statistics Reports.* May 30, 2002. Volume 50, Number 9.
[3] Ventura, Stephanie J., Sally C. Curtin, T.J. Mathews. Variation in Teenage Birth Rates, 1991-1998: National and State Trends. *National Vital Statistics Reports.* April 24, 2000. Volume 48, Number 6.

Paternity establishments are not an issue for births to married mothers but births to unwed mothers require the additional step of establishing paternity. Furthermore, as reported by the Lewin Group,[4] unmarried birth rates are associated with a low child support enforcement performance. The second reason is that teen parents are more likely to drop out of high school thereby reducing their ability to become self-supporting. This group of households will prove to be more difficult to service than households that start at a more mature age. Therefore, the teen birth rate is an important potential determinant in the success of state child support enforcement.

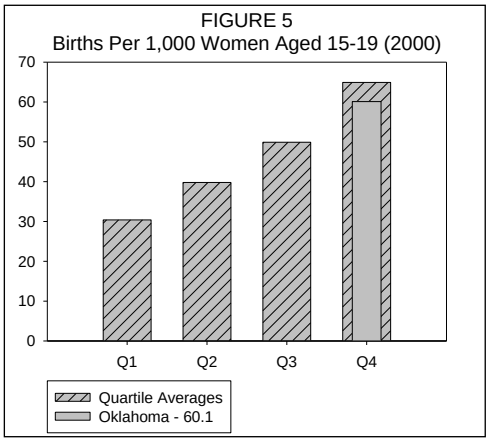
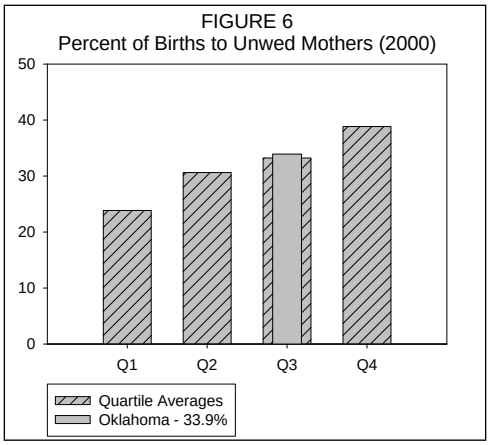


Figure 5 shows the quartile groupings of states and compares that with the rate of teen births in Oklahoma per 1,000 female teenagers. Oklahoma's 2000 birth rate of 60.1 per 1,000 females aged 15-19 is well above the national average of 48.5 and ranks Oklahoma in the highest quartile relative to the other states. The striking characteristic of teen births is the concentration of high rates in Southern states. All states south of the Mason-Dixon line, less North Carolina and Florida, are in the fourth quartile of teen birth rates. Oklahoma's neighboring states of Arizona (69.1), Arkansas (68.5), Louisiana (62.1), New Mexico (66.2), and Texas (69.2) all have similarly high rates of births to teen mothers. Rates taper off as you move north, with all of New England in the lowest quartile. Therefore, many neighboring states and most of the Southern states are good candidates as peer states for Oklahoma on this measure.

2. Unwed Mothers

The original marital status of the parents has a direct bearing on the nature of arrears to be collected. Sorensen and Oliver[5] report that custodial mothers of children born out of wedlock are less likely to receive child support than are custodial mothers of children born within marriage. States with high rates of births out of wedlock are likely to see a greater percentage of households receiving support through state TANF and IV-D programs. Also contributing is that children born out of wedlock are less likely to have paternity established.



As shown in Figure 6, births to unwed mothers differ greatly across states, ranging from

[4] Fishman, Michael E., John Tapogna, Kristin Dybdal, and Stephanie Laud. *Preliminary Assessment of the Associations between State Child Support Enforcement Performance and Financing Structure.* Working Paper August 1, 2000.

[5] Sorensen, Elaine and Helen Oliver. "Child Support Reforms in PRWORA: Initial Impacts." Assessing the New Federalism; Discussion Paper. February 2002.

17% in Utah to 46% in Mississippi. Oklahoma has a higher than average rate of out-of-wedlock births at 34% and is in the third quartile among the states. Unlike teen birth rates, the percent of births out of wedlock does not follow the same general pattern across regions. Peer states to Oklahoma include the neighboring states of New Mexico (44.6%), Missouri (33.0%), Arkansas (36.1%), and Louisiana (44.8%). Other candidate peer states include the Deep South states of Alabama (34.5%), Georgia (35.9%), Tennessee (32.8%), and South Carolina (40.4%), and all of the Rust Belt states.

3. Divorce Rate

Both the States and the federal government are increasingly recognizing the need to reduce divorce rates. Oklahoma's Marriage Initiative is one example of a state program aimed at reducing the divorce rate. Whether through these programs or through a change in marital values, divorce rates have decreased consistently over the past two decades. The divorce rate, however, remains an important potential determinant of state child support enforcement success. Custodial parents of children born in wedlock are less likely to require paternity establishment, are less likely to require state assisted child support enforcement, and may be less burdensome in collecting child support orders from.[6] Also, divorce cases usually do not begin with large arrears because child support obligations typically start on the date of settlement. The extent of arrears is determined by the time between the child's birth and the divorce decree. In non-marital cases, the state can accumulate child support obligations starting at the child's birth. Non-marital cases can begin with large arrearages to both the government and the custodial parent.[7]

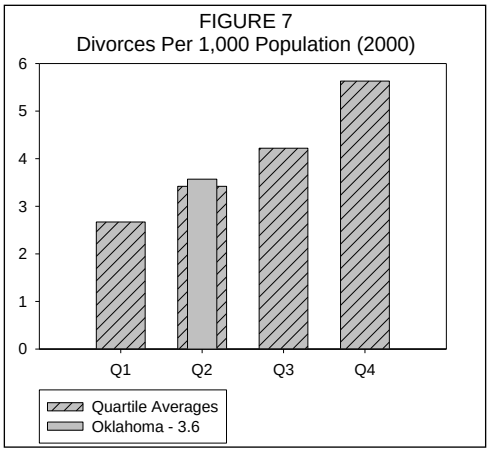


Figure 7 shows the quartile measure of divorces per 1,000 of population in 2000 for the 50 states. As is well known, Oklahoma has historically experienced a high rate of divorce relative to other states. In fact, in 1998 Oklahoma had 6.7 divorces per 1,000 of population, the third highest rate among the states, surpassed only by Arkansas (7.1) and Nevada (9.0). In 2000, however, Oklahoma's divorce rate experienced a dramatic reversal, dropping to 3.6 per 1,000 of population and ranking Oklahoma 15th among the states. This currently places Oklahoma in the second quartile in Figure 7. Until further data confirm that the drop in 2000 is a permanent change, we will continue to view Oklahoma as a high divorce state when choosing peer states.

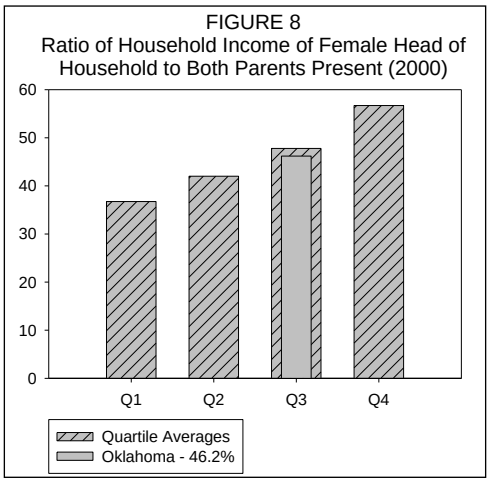
The data suggest that divorce rates follow regional patterns with Southern and Western states having higher divorce rates than Northern and Eastern states. Candidate peer states based on this measure include the nearby states of Arkansas (6.7), Missouri (4.7), and New Mexico (5.0). Other states with similar divorce rates include Alabama (5.3), Arizona (4.2), Idaho (5.3), Tennessee (5.9), and Wyoming (5.7). Midwest and Southern states that have low divorce rates

[6] Beller, Andrea H. and John W. Graham. 1993 *Small Change:The Economics of Child Support.* New Haven: Yale University Press.
[7] Lerman, Robert I. and Elaine Sorensen. Child Support: Interaction Between Private and Public Transfers. NBER Working Paper No. w8199, April 2001.

but are similar to Oklahoma on other socio-demographic measures include Nebraska (3.7), North Dakota (3.2), South Carolina (3.6), and South Dakota (3.5).

4. Income of Female-Headed Households

The final socio-demographic variable attempts to measure the degree of financial independence enjoyed by female-headed households. It measures total household income from female-headed households divided by total household income of households with both parents present, multiplied by 100, and is derived from the March 2000 Current Population Survey compiled by the Census Bureau.



As shown in Figure 8, Oklahoma has a relatively high ratio (46.2%) of household income for female headed-households to households with both parents present. Oklahoma falls into the third quartile, indicating an advantage in the Oklahoma IV-D program's favor since Oklahoma female-headed households should have less reliance on IV-D program income for support.

The distribution of the states based on this relative income measure does not follow a strict geographical pattern. The data, however, indicate that Middle states tend to see a larger grouping of high measures with most low measures occurring in the East. Peer states to Oklahoma include Arkansas (42.0%), Kansas (46.6%), Kentucky (42.0%), Missouri (49.6%), New Mexico (46.7%), Texas (51.2%) and West Virginia (49.9%).

Peer States Based on Socio-Demographic Characteristics

Based on the above socio-demographic factors, Southern and nearby states tend to dominate the peer groupings. Suggested peer states to Oklahoma based on these measures include Arkansas, Louisiana, Missouri, New Mexico, South Carolina, Tennessee, and Texas.

C. State TANF and IV-D Program Characteristics

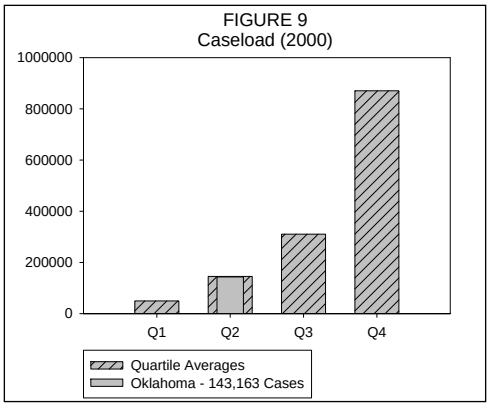
The final profiles address the administrative differences in the IV-D programs across the states. Specifically, we examine differences in staffing, program structure, and workload. The states can exercise much more control over these factors (e.g. adding staff) than the economic and socio-demographic factors viewed up to this point. That is not to suggest that states have full control of these variables or no control of prior variables, but rather the states have a relatively greater influence on the variables observed in this section.

1. Total Caseload

The first variable, the total caseload within each state, is designed to capture economies of scale in operations. Economies of scale occur when increasing the size of operation results in reductions in the per-case cost of the program. If economies of scale exist, the performance

measure of overall cost effectiveness will be higher for states with larger operations than for states with smaller operations.

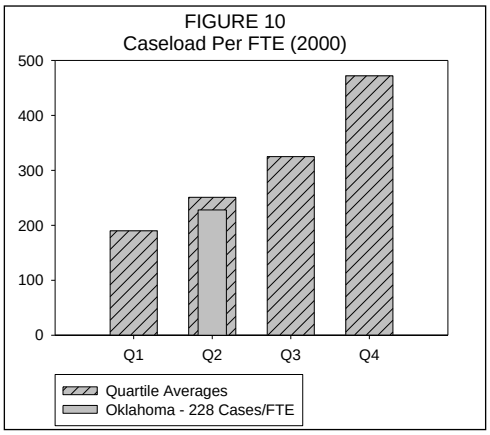
We observe the total number of cases for 2000 as an approximation of the states' size of operations. Figure 9 shows the quartile averages for Oklahoma as compared to the other states. Oklahoma has a relatively small program compared to other states, and, based on economies of scale, should expect to share similar total cost effectiveness measures as the other states in the second quartile.



It is also the case that the distribution of total caseloads across states is closely related to total population. In fact there is a near one-to-one correlation between caseloads and population, making peer states to Oklahoma based on caseload the same as the peer group based on total population. These include Arizona, Arkansas, Colorado, Iowa, Kansas, Minnesota, New Mexico, Oregon, and West Virginia.

2. Caseloads Per FTE

The ability to service the caseload within a state is limited by the size of the existing staff. The measure is calculated by dividing the total caseload in each state by the total number of full time equivalent (FTE) employees in each state. Those states with fewer cases per FTE employee should be better equipped to collect child support payments, all other things equal.

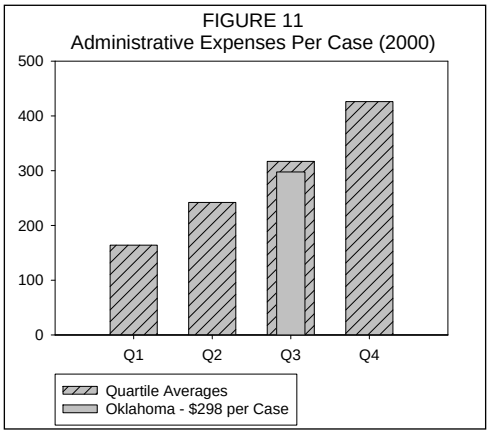


As shown in Figure 10, Oklahoma had 228 cases per FTE in 2000, placing it below the national average of 299 and at the bottom of the 2nd quartile among the states. States with both a similar size total caseload and a similar size caseload per FTE include Arkansas (236), Arizona (236.3), Colorado (202), and West Virginia (249). Nearby states with a significantly higher caseload per FTE include Louisiana (335), New Mexico (341), and Texas (416).

3. Administrative Expenses Per Case

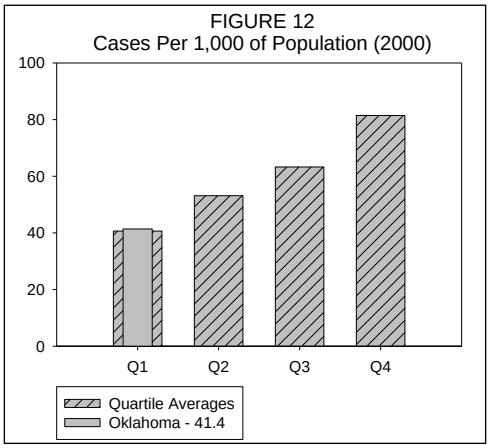
The next variable attempts to measure IV-D efficiency as measured by total administrative expenses per case. Those states that can support cases at a lower average cost per case should fare well in the overall measure of cost effectiveness. We also note that, if economies of scale exist, those states with high caseloads should have a low measure of administrative expenditures per case, holding all else constant.

While similar to the measure of caseload per FTE employee, which measures the human resources devoted to support collection, administrative expenses per case captures differences in the dollar cost of administering the program. Figure 11 shows the quartile averages for the states along with Oklahoma's measure of administrative expenditures per case for 2000. Most states have administrative expenses ranging between $200 and $400 per case, while Oklahoma has a slightly above average rate of $298 per case. The peer groupings differ from those based on total caseloads, however. Oklahoma shares a similar level of administrative expenditures per case with Arizona ($246), Arkansas ($269), Iowa ($330), Kansas ($338), Missouri ($287), New Mexico ($314), and West Virginia ($243).



4. Cases Per 1,000 of Population

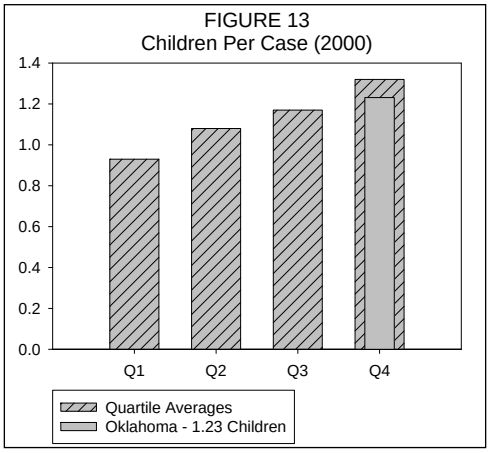
The fourth IV-D variable is the number of cases relative to state population. This variable captures the overall incidence rate of child support collection across the states, as well as the tendency of state residents to use the services available to them. Specifically, the variable is calculated as the number of cases per 100,000 of population, where nationally all IV-D offices manage 61.6 cases per 100,000 of population.



As shown in Figure 12, Oklahoma has a relatively low incidence of collection cases, totaling only 41.4 cases per 100,000 of population in 2000. Potential peer states include Arizona (47.7), Colorado (33.7), South Carolina (47.3), South Dakota (40.4), and Texas (50.5). Many nearby states have a much higher case incidence rate including Arkansas (56.1), Kansas (56.3), Louisiana (65.2), and New Mexico (58.6).

5. Children Per Case

The final IV-D related measure is the average number of children per case. Child support liability is expected to be higher for cases with multiple children than for cases with a single child. Those states having a high average number of children per case are expected to see a greater burden on non-custodial parents in paying child support payments. This should lead to greater difficulty in collecting child support payments from non-custodial parents.



The number of children per IV-D case in

Oklahoma (1.23) is above the national average of 1.12 and places the state in Quartile 4 as indicated in Figure 13. This measure leads us to conclude that Oklahoma will be required to collect child support for more children per case thereby increasing the cost of maintaining cases.

Peer states to Oklahoma based on this measure include Kentucky (1.30), Mississippi (1.23), Missouri (1.41), Nevada (1.37), New Mexico (1.41), South Carolina (1.32), Texas (1.23), and Utah (1.23).

D. Selecting a Peer Group

Based on the economic, demographic, and IV-D program characteristics examined, the nearby states of Arkansas, Louisiana, and New Mexico, along with South Carolina comprise the primary benchmark group (Peer A) for evaluating Oklahoma's child support collection performance. These states are similar in both population and program size, and present comparable demographic profiles. The proximity of Arkansas, Louisiana, and New Mexico to Oklahoma makes them particularly well suited as peer states. Only New Mexico does not have a large Southern influence. Louisiana and New Mexico are also important energy producing states.

While these four states are similar to Oklahoma on most measures, other states sharing many of the same characteristics, though to a lesser degree, include Arizona, Colorado, Kentucky, Missouri, Tennessee, and West Virginia. These states comprise a secondary group of benchmark states, referred to as Peer B.

The economic, demographic, and IV-D program characteristics for each of the peer states are shown in Table 1.

Table 1. Peer States - Economic, Demographic, and Program Characteristics

	Oklahoma	Arkansas	Louisiana	New Mexico	South Carolina	Arizona	Colorado	Kentucky	Missouri	Tennessee	West Virginia
Economic Characteristics											
Total Poverty Rate	**15.1%**	17.8%	16.2%	18.0%	15.1%	14.6%	8.7%	12.6%	9.7%	14.1%	16.4%
Unemployment Rate	**3.8%**	5.1%	6.0%	4.8%	5.4%	4.7%	3.7%	5.5%	4.7%	4.5%	4.9%
Cost of Living Adjusted PCPI	**$26,777**	$24,813	$24,815	$22,700	$26,100	$26,442	$30,544	$26,642	$29,518	$28,816	$24,103
Proprietor's Share of Employment	**21.8%**	19.0%	15.6%	18.9%	14.2%	16.7%	20.4%	17.7%	17.9%	19.1%	17.2%
Socio-Demographic Characteristics											
Teen Births Per 1,000 Women 15-19	**60.1**	68.5	62.1	66.2	60.6	69.1	49.2	55.3	48.8	61.5	46.4
Births to Unwed Mother	**33.9%**	36.1%	44.8%	44.6%	40.4%	38.4%	25.5%	30.9%	33.0%	32.8%	31.1%
Divorces Per 1,000 Population	**3.6**	6.7	N/A	5.0	3.6	4.2	N/A	5.3	4.7	5.9	5.2
Ratio of Female Householder Income	**46.2%**	42.0%	37.6%	46.7%	35.8%	57.6%	39.7%	42.0%	49.6%	39.5%	49.9%
IV-D Program Characteristics											
Total Caseload	**143,163**	150,455	291,630	107,015	190,411	246,249	145,666	303,888	371,810	435,774	128,168
Cases Per FTE	**227.6**	236.2	334.8	340.8	545.6	236.3	202.0	284.0	284.5	573.4	248.9
Administrative Costs Per Case	**$298**	$269	$159	$314	$206	$246	$434	$196	$287	$128	$243
Cases Per 1,000 Population	**41.4**	56.1	65.2	58.6	47.3	47.7	33.7	75.0	66.3	76.3	70.9
Children Per Case	**1.23**	1.16	1.20	1.41	1.32	1.15	1.09	1.30	1.41	0.95	1.08

2. Explaining Differences in State Child Support Collection Performance

This section of the study presents a statistical evaluation of the child support collection performance in Oklahoma relative to the other states. Cross-sectional regression analysis is used to explore the potential reasons for the observed differences across states in collections per dollar of expense.

A. Collections/Expenditure Regression Analysis

The cross-sectional regression approach establishes whether state collection ratios (dependent variable) that deviate from the mean ratio across states, co-vary with deviations of potential explanatory variables (that reflect characteristics of the states) from their respective means. Multiple regression, which is regression with more than one explanatory variable, determines whether each variable has an independent effect on the collection ratio after accounting for the potential effects of other variables. Although such cross-sectional regressions do not definitively establish causality, they can provide the most probable explanation for observed variation in a dependent variable. For example, the estimated relationships between the dependent and independent variables can be sensitive to the choice of variables included in the regression. Thus, care must be taken to ensure that the most-appropriate combinations of variables are considered.

Given the large number of potential explanatory variables, a systematic approach is required to sift through the large number of possible combinations of variables. The approach chosen here is a combination of mechanistic and subjective procedures. First, stepwise regression is applied to the set of variables (see list) for which data are available for all but one state (Virginia being the exception). Stepwise regression attempts to extract the combination of variables that best explains the variation in the dependent variable.

Second, since the procedure is mechanistic and can sometimes produce erroneous results, experiments are conducted with the final model. The final model serves as the starting point for determining which variables that the procedure omitted from the final model are added and deleted. The alternative combinations of variables are then evaluated for whether they better explain the variation in the collection ratios.

In the third step, variables are added to the model obtained in step 2, for which data are missing for several states (see list). The observations containing missing values are then omitted in the regression analysis, reducing the size of the sample. Thus, information on the states omitted is lost, while information for the remaining states is gained in terms of the additional variables examined.

Step 1 Results

The stepwise regression results for fiscal year 2000 collections are reported in Table 1. Stepwise regression selected three explanatory variables for the regression explaining the natural logarithm of the ratio of child support collections to expenditures: the natural logarithm of the ratio of full-time equivalent staff to collection expenditures (LOG(FTE/EXPEND)), the rate of teen births (TEEN_BIRTH), and the share of total employment in the manufacturing sector

(MANUFACTURING). The regression is statistically significant, suggesting that the relationships are not due to chance. In addition, all three variables were individually statistically significant below the 0.01 level.

Table 1. State-Level Stepwise Regression Results: Step 1

	Regression Coefficient	Standardized Coefficient
Constant	7.50[a]	
LOG(FTE/EXPEND)	0.54[a]	0.40
TEEN_BIRTH	-0.01[a]	-0.42
MANUFACTURING	3.72[a]	0.49
R-squared=0.47; Adjusted R-squared=0.44; Regression p-value=0.00		

[a]indicates statistically significant below the 0.01 level (two-tailed test)

The results suggest that states with more FTE staff per dollar of expenditure collect more child support for dollar of expenditure, suggesting that dollars are best spent on staff. Since this variable and the dependent variable are both in natural logarithms, the coefficient is an elasticity; that is, a 1 percent increase in the ratio of FTE staff to dollar of expenditures increases collections per dollar of expenditure 0.54 percent. Not surprisingly, a higher rate of teen births appears to make it more difficult to collect child support. Possibly reflecting higher wage rates, more stable employment, and larger firm size, the greater the share of employment in the manufacturing sector increases child support collections per dollar of expenditure. As further evidence of the robustness of the regression results, the simple correlation of each explanatory variable with the dependent variable is of the same sign as that of the corresponding regression coefficient: LOG(FTE/EXPEND) (r=0.29); TEEN_BIRTH (r=-0.33); and MANUFACTURING (r=0.45).

To see which variable is most important in explaining the variation in collections, the coefficients in Column 2 of Table 1 are standardized. A coefficient is standardized by multiplying it by the ratio of the standard deviation of the corresponding explanatory variable to that of the dependent variable. Standardized coefficients indicate the standard deviation change in the dependent variable for a one standard deviation change in the independent variable. For example, from Column 3 of Table 1, a one standard deviation increase in LOG(FTE/EXPEND) increases LOG(COLL/EXPEND) by 0.40 standard deviations. The standardized coefficients reveal that the greatest source of variation in collections per dollar of expenditure is the share of employment in manufacturing, although all three variables are close in their importance.

Steps 2-3 Results

In the second step of the regression analysis, additional variables that were omitted by stepwise regression, but for which data were available for all but one state, were added to the model in Table 1 to see if the model could be improved. The variables were added individually, and in various combinations; yet, no additional statistically significant (or close) relationships were found. The variables examined included: the percent of the state population residing in metropolitan areas, population, population density, the percent of the adult population 25 years and older that possessed a high school degree, the percent of children born out of wedlock, per capita income, the state unemployment rate, the share of employment who are proprietors, the percent of presidential democratic vote in 1992, and if child support orders could be petitioned to

be retroactive. In addition, the farm, mining and construction shares of employment were among the additional variables tried.

Therefore, in the third step of the regression analysis, additional variables related to child support collections were added to the three-variable model. Only one variable was found to have a statistically significant relationship with the dependent variable: if child support collection efforts were processed through the office of the state attorney general. Numerous other variables related to the use of judicial, administrative or combination approaches in the establishment of the child support order, liens, property seizure, license revocation, income tax withholding, and state fund withholding were tried, but none were close to statistical significance. Variables related to whether the state or county operated the child support system, whether delinquent child support payments were reported to consumer credit agencies (all but Wisconsin and Michigan do so), and whether the state relied upon state revenue departments for child support collections (Alaska, Arkansas, Florida and Massachusetts), were also all insignificant. Since data for these additional variables were missing for some of the states, this sample often only included about 40 states, which implies that information was lost.

The results of including the additional variable that was found to be significant are shown in Table 2 (the sample includes all fifty states). The first column contains the raw regression coefficients, while the second column contains the standardized coefficients. The results show that the signs and significance of the original three variables are not changed with the addition of the variable. The result for ATTYGEN should be interpreted with caution as only two states, Texas and Hawaii, use this approach. The positive coefficient may be capturing some other features that lead both states to be successful in obtaining child support collections. Also, since only one variable out of the plethora of policy variables tried were significant, these results also should be interpreted with caution (possibly because of the omission of states from the sample). Nevertheless, as indicated by the standardized coefficients, the share of employment in manufacturing remains the most important variable, with the least important variable being ATTYGEN.

Table 2. State-Level Stepwise Regression Results: Steps 2 and 3

	Regression Coefficient	Standardized Coefficient
Constant	7.65[a]	
LOG(FTE/EXPEND)	0.56[a]	0.41
TEEN_BIRTH	-0.01[a]	-0.48
MANUFACTURING	4.37[a]	0.58
ATTYGEN	0.51[a]	0.32
R-squared=0.55; Adjusted R-squared=0.45; Regression p-value=0.00		

[a]indicates statistically significant below the 0.01 level (two-tailed test)

B. Analysis of Oklahoma

The regression results also can be used to gain further understanding of Oklahoma's child support collection performance. Oklahoma's ratio of fiscal year 2000 child support collection payments per dollar of expenditure equals 2.52 (only collections not distributed to other states are included), which lies below the mean across all states of 3.90, placing Oklahoma 47th in collection success. The top five performing states are Indiana, Wisconsin, South Dakota,

Pennsylvania and Michigan. The bottom five performing states are Delaware, Oklahoma, Illinois, Nevada, and New Mexico.

However, the difference in collection success may be attributable to differences in characteristics identified in the regression as important. Hence, using the regression results reported in Table 2, the predicted collection ratio for Oklahoma is 3.30. This suggests that either child support payments are more difficult to obtain in Oklahoma, or the child support collection system is less efficient. In fact, Oklahoma also ranked 47th in terms of collecting what would be predicted from the results in Table 1. The results also suggest that two members of peer group A are among the top performing states, while the other two members of peer group A are among the bottom performing states. The top five performing states are Texas, South Carolina (Peer A), South Dakota, Hawaii, and Louisiana (Peer A). The bottom five performing states are Utah, Oklahoma, Arkansas (Peer A), Illinois, and New Mexico (Peer A).

However, it also could be that not all relevant factors have been incorporated. For example, based on the results in Table 2, which includes ATTYGEN, the last column of Table 3 shows that Texas and Hawaii fall to 18th and 35th, respectively. Nevertheless, the correlations of the ranking of actual collection/expenditure ratios to the other two sets of rankings are 0.74 and 0.64, respectively. This suggests that other unaccounted factors remain that underlie the relative success of collection of child support payments. The top five performing states are South Carolina (Peer A), South Dakota, Louisiana (Peer A), New York and Indiana. The bottom five performing states are Utah, Vermont, Arkansas (Peer A), New Mexico (Peer A), and Illinois.

Based on the results in Table 1, the largest predicted source of lower collections in Oklahoma is its higher than average teen birth rate. That is, Oklahoma's birth rate is approximately one standard deviation above the mean across states, which implies a 0.42 standard deviation lower ratio of collections to expenditures. The share of Oklahoma employment in the manufacturing sector is 0.41 standard deviations below the 50-state mean, which implies a 0.20 standard deviation lower collection/expenditure ratio. With a 0.63 standard deviation greater full-time equivalent staff relative to total administrative expenses ratio, Oklahoma would be expected to have a 0.25 standard deviation greater rate of collections. For the three variables combined, Oklahoma is predicted to have a 0.37 standard deviation lower rate of collections. This compares to the 1.26 standard deviation actual lower rate of collections. When the results of Table 2 are considered, with Oklahoma not using the attorney general office for collection of child support, it lies 0.20 standard deviations below the mean of 0.04 (i.e., two of the fifty states use this approach), which implies 0.06 standard deviation lower predicted collections. The other effects are relatively unaffected; thus, much of Oklahoma's relative performance remains unexplained by the characteristics found to be significant determinants of the child support collection success.

C. Sensitivity Analysis

It is always possible that data for one year contain measurement error, or because of random fluctuations, data may not be representative of other years. If such problems occur, cross-sectional regressions may produce spurious results, i.e., the results are untrue, being sensitive to the choice of year. Thus, data for collections/expenditures for 1989-1998 also are

Table 3. FY2000 State Collection/Expenditure Rankings

State	Collect/Expen	Actual Rank	Table 1 Rank	Table 2 Rank
ALABAMA	3.37	32	33	30
ALASKA	3.31	35	15	8
ARIZONA	3.25	37	22	17
ARKANSAS	2.97	43	48	48
CALIFORNIA	3.05	41	41	39
COLORADO	2.79	44	30	26
CONNECTICUT	3.45	31	38	38
DELAWARE	2.62	46	43	43
FLORIDA	3.00	42	32	25
GEORGIA	3.28	36	24	23
HAWAII	4.05	21	4	35
IDAHO	3.81	26	10	9
ILLINOIS	2.28	48	49	50
INDIANA	7.25	1	6	5
IOWA	4.00	22	28	31
KANSAS	2.72	45	44	45
KENTUCKY	3.80	27	42	42
LOUISIANA	4.60	11	5	3
MAINE	4.49	13	31	32
MARYLAND	3.35	33	11	7
MASSACHUSETTS	3.33	34	29	29
MICHIGAN	5.46	5	12	15
MINNESOTA	3.97	23	39	41
MISSISSIPPI	4.61	10	17	14
MISSOURI	3.18	39	37	37
MONTANA	3.05	40	35	33
NEBRASKA	3.72	29	19	20
NEVADA	1.93	49	23	16
NEW HAMPSHIRE	4.46	14	34	36
NEW JERSEY	4.33	17	25	24
NEW MEXICO	1.18	50	50	49
NEW YORK	4.59	12	8	4
NORTH CAROLINA	3.55	30	40	40
NORTH DAKOTA	4.29	18	21	21
OHIO	4.67	8	18	19
OKLAHOMA	2.52	47	47	44
OREGON	5.01	6	16	13
PENNSYLVANIA	5.85	4	7	6
RHODE ISLAND	4.11	20	26	28
SOUTH CAROLINA	4.79	7	2	1
SOUTH DAKOTA	6.13	3	3	2
TENNESSEE	4.45	15	14	11
TEXAS	4.65	9	1	18
UTAH	3.19	38	46	46
VERMONT	3.76	28	45	47
VIRGINIA	4.38	16	13	10
WASHINGTON	4.24	19	20	22
WEST VIRGINIA	3.86	25	27	27
WISCONSIN	6.31	2	9	12
WYOMING	3.93	24	36	34

examined. First, descriptive statistics are calculated for the ratio of collections to expenditures. For each year, the mean ratio across states, and the standard deviation of ratios across states, are calculated. The Oklahoma ratio across years is presented for comparison purposes. Then, using panel regression techniques, the mean ratio for each state is calculated after accounting for common national effects across states, and then used to replace the 2000 fiscal year ratios in the Table 1 and 2 regressions.

As shown in Table 4, the mean ratio for Oklahoma declined in 1990, not reaching the 1989 level until 1993, and except in 1995, the mean ratio remained higher from 1993 onward. The standard deviation, however, declines in 1990, remains relatively constant until 1996, where it begins a downward trend. Hence, states are becoming more similar in their collections per dollar of expenditure.

Table 4. FY2000 Collections/Expenditures: Descriptive Statistics

		All States	
Year	**Oklahoma**	**Mean**	**Standard Deviation**
1989	2.48	3.68	1.80
1990	2.28	3.57	1.47
1991	2.29	3.54	1.48
1992	2.41	3.56	1.45
1993	2.69	3.77	1.50
1994	3.13	3.80	1.50
1995	2.70	3.41	1.44
1996	3.06	3.82	1.33
1997	3.03	3.84	1.26
1998	3.10	3.95	1.14

The pattern of success across time correlates with U.S. economic growth. Collections appear to be lower during years of slower, or negative (i.e., 1991) economic growth. Therefore, using fixed effects panel estimation, the state collection ratios for 1989-1998 are regressed on real U.S. GDP growth. The regression result indicates that state collections are significantly related to U.S. economic growth (t-statistic=4.68).

The estimated fixed effects produced by the above regresssion, which are the mean effects across time for the states with the influence of U.S. economic growth removed, are then used in the regression in Table 1, replacing the fiscal year 2000 ratios. (Replacing U.S. GDP growth with time fixed effects produces nearly identical fixed effects) These regression results, which are shown in Table 5, confirm the results in Table 1 for teen birth rates (TEEN_BIRTH) and manufacturing employment shares (MFT). However, full-time equivalent staff per dollar of expenditure (LOG(FTE/EXPEND)) and ATTYGEN become insignificant. The insignificance of LOG(FTE/EXPEND) may be due to its being measured for 2000. If there is much variation from year-to-year, it may be unrelated to the mean 1989-1998 collections/expenditures effect. Two additional variables become significant, having negative effects on the ratio of collections to expenditures: (1) the share of total employment comprised of proprietors (PROPRIETOR); and (2) if the child support system is funded solely by the state (OPER_STATE) without financial assistance at the county or local level (this includes 25 states). The results suggest that

proprietors may be more difficult to obtain payments from than wage and salary workers. Both PROPRIETOR and OPER_STATE had negative signs when included in the Table 1 regression, but were statistically insignificant.

Table 5. Fixed Effect Regression Results

	Regression Coefficient
Constant	3.23
LOG(FTE/EXPEND)	0.11
TEEN_BIRTH	-0.01[a]
MANUFACTURING	3.04[a]
ATTYGEN	0.30[a]
PROPRIETOR	-2.35[c]
OPER_STATE	-0.19[b]
R^2= 0.47, Adj. R^2=0.40, Regression p-value=0.00	

[a]indicates statistically significant below the 0.01 level (two-tailed test)
[b]indicates statistically significant below the 0.05 level (two-tailed test)
[c]indicates statistically significant below the 0.10 level (one-tailed test)

Effects of Increasing State Expenditures for Child Support

The above analysis provides a better understanding of the relative cost-effectiveness of state child support programs. Yet, since the focus was the ratio of collections to expenditures, no attempt could be made to determine the relationship between collections and caseloads. Thus, an additional regression is performed to examine the ratio of child support collections to caseloads. The natural logarithm of the ratio of collections to caseloads is regressed on the natural logarithms of the ratios of full-time equivalent staff to caseloads and expenditures to caseloads. In addition, all variables tried in the regression in Table 2 were examined.

Table 6. Collection/Caseload Regression Results

	Regression Coefficient
Constant	7.63
LOG(FTE/CASELOAD)	0.40[a]
LOG(EXPEND/CASELOAD)	0.33[b]
TEEN_BIRTH	-0.01[a]
MANUFACTURING	3.52[a]
ATTYGEN	0.30[b]
R^2= 0.78, Adj. R^2=0.76, Regression p-value=0.00	

[a]indicates statistically significant below the 0.01 level (two-tailed test)
[b]indicates statistically significant below the 0.05 level (two-tailed test)

Table 6 displays the coefficients of the five variables found to be significant determinants of collections/caseloads ratios. Both the number of full-time equivalent staff and total expenditures increase collections. A one-percent increase in staff and nonstaff expenditures increases collections 0.73 percent (i.e., 0.40+0.33). Each coefficient reflects the independent effect of the corresponding variable. For example, the full-time equivalent coefficient is interpreted as the effect of a one-percent increase in it, after accounting for the total expenditure effect. If the full-time equivalent variable is dropped, the coefficient on the expenditure variable becomes 0.60. Evaluated at the means, this implies that a $1 increase in expenditures yields

$2.27 in additional child support collections. In addition, the same variables found to be significant in the Table 2 regression are again significant: TEEN_BIRTH, MFT, and ATTYGEN.

Table 7 shows fiscal year 2000 actual collections per caseload as well as collections per caseload as predicted by the regression in Table 6. In addition, the ranking of the state for each are provided to corresponding columns to the right. The last column displays the difference between the predicted ranking and the actual ranking.

From Table 7, we see that with $748.67 collected per caseload in fiscal year 2000, Oklahoma ranked 41. The top five states were Minnesota, Pennsylvania, New Jersey, Ohio, and New Hampshire. The bottom five states were Tennessee (Peer B), Mississippi, Georgia, New Mexico (Peer A), and Illinois. However, using the regression in Table 6, Oklahoma would have been predicted to rank 35th, implying that it collected less than what would be expected given its characteristics.

The five states predicted to collect the most child support payments based upon their characteristics and their expenditures are Minnesota, Vermont, New Hampshire, New Jersey and Utah. The states expected to collect the least are New Mexico (Peer A), Louisiana (Peer A), Tennessee (Peer B), Georgia, and Mississippi. Thus, for three of the bottom ranked states (Tennessee, Mississippi, and New Mexico – all peer states), their low ranking is attributable to their expenditures and their characteristics.

The final column shows how the ranking of actual collections compares to predicted collections. A positive (negative) value indicates that the predicted ranking was lower (higher) than the actual ranking, indicating that the state outperformed (under-performed). The top outperforming states are South Carolina (Peer A), Tennessee (Peer B), Maryland, Wisconsin, Alaska and Idaho. The most under-performing states are Connecticut, Delaware, Kansas, Arkansas (Peer A), Hawaii, and Kentucky (Peer B). Oklahoma appears as an under-performing state. As discussed earlier, this may be due to factors omitted from the analysis, the Oklahoma populace being more difficult to obtain payments from, or from the Oklahoma system being less effective.

Table 7. FY 2000 State Collections/Caseload

State	Actual	Rank	Predicted	Rank	Rel_Perf
ALABAMA	629.47	45	677.52	41	-4
ALASKA	1512.55	9	1170.47	17	8
ARIZONA	799.04	36	674.94	42	6
ARKANSAS	800.86	35	969.63	27	-8
CALIFORNIA	1015.09	25	1107.79	21	-4
COLORADO	1209.07	17	1125.12	19	2
CONNECTICUT	1026.09	24	1245.31	14	-10
DELAWARE	870.20	33	1009.55	23	-10
FLORIDA	826.23	34	824.03	37	3
GEORGIA	519.97	48	535.35	49	1
HAWAII	726.00	44	853.91	36	-8
IDAHO	1036.31	22	910.75	30	8
ILLINOIS	337.88	50	640.93	45	-5
INDIANA	770.57	38	697.86	40	2
IOWA	1321.79	16	1384.83	12	-4
KANSAS	917.52	29	1122.75	20	-9
KENTUCKY	745.12	42	879.19	34	-8
LOUISIANA	733.47	43	559.11	47	4
MAINE	1453.32	12	1546.58	6	-6
MARYLAND	1063.20	21	906.63	31	10
MASSACHUSETTS	1347.11	14	1452.77	10	-4
MICHIGAN	1329.90	15	1197.06	15	0
MINNESOTA	2087.36	1	2180.78	1	0
MISSISSIPPI	543.17	47	500.18	50	3
MISSOURI	911.73	31	1003.45	24	-7
MONTANA	1078.86	20	1171.32	16	-4
NEBRASKA	1473.80	10	1314.92	13	3
NEVADA	757.79	40	664.32	43	3
NEW HAMPSHIRE	1782.44	5	1920.36	3	-2
NEW JERSEY	1867.78	3	1714.33	4	1
NEW MEXICO	369.51	49	591.45	46	-3
NEW YORK	1115.97	19	971.22	26	7
NORTH CAROLINA	784.65	37	885.11	33	-4
NORTH DAKOTA	1141.48	18	1149.89	18	0
OHIO	1840.05	4	1490.42	7	3
OKLAHOMA	748.67	41	870.09	35	-6
OREGON	1032.28	23	940.80	29	6
PENNSYLVANIA	1869.37	2	1454.65	9	7
RHODE ISLAND	769.42	39	893.81	32	-7
SOUTH CAROLINA	988.57	26	662.24	44	18
SOUTH DAKOTA	1425.46	13	998.95	25	12
TENNESSEE	569.55	46	538.89	48	2
TEXAS	911.88	30	775.30	39	9
UTAH	1466.57	11	1630.92	5	-6
VERMONT	1559.50	8	1950.41	2	-6
VIRGINIA	887.49	32	822.04	38	6
WASHINGTON	1706.46	6	1480.50	8	2
WEST VIRGINIA	939.00	28	958.73	28	0
WISCONSIN	1613.74	7	1394.49	11	4
WYOMING	944.08	27	1029.49	22	-5

Note: The predicted values are formed using the regression in Table 6.

III. Explaining Differences in Oklahoma Child Support Office Performance

To increase understanding into the determinants of child support collection performance in Oklahoma, several regressions are performed. That is, the regressions will provide information on the likelihood that differences in performance across offices in Oklahoma are due to differences in characteristics in their constituencies, differences in their approaches, or differences in how efficient they are.

1. Cost Effectiveness

Since the federal government uses several measures of performance in their assessment of state child support programs, alternative regressions are run that correspond to the alternative measures. The data used for the characteristics are reported at the county level; thus, for areas serving more than one county, the county data for the areas are averaged. Due to the absence of sub-county data, for offices in the Oklahoma City and Tulsa metropolitan areas, average characteristics for the entire metro area are used. For example, for the three offices in Oklahoma City, they are all assumed to serve the same type of area, which limits the efficacy of the analysis.

A. Cost Effectiveness: Collections per Dollar of Expenditures

Perhaps the best summary measure of performance is the ratio of child support collections to expenditures related to collections. In fiscal year 2001, these ratios varied widely across offices, ranging from a low of $1.02 in the Ada office to $5.17 in the Lawton office. However, the variation may have more to do with the economic and demographic characteristics of their areas, than to office efficiency. For example, the Ada office has a statewide constituency, so it is excluded from the analysis, leaving 35 offices to be examined. To further explore the reason for variation in ratios across the other offices, a regression is run with the collections/expenditures ratio as the dependent variable and various characteristics of their areas as independent variables.

The regression results are shown in Table 1. Only variables that were significant, or close to being significant, and had the expected sign, are included in the final regression reported. From Table 1, we see that collection ratios are significantly lower in DHS and DA offices compared to child support collection efforts being contracted out. However, the difference between DHS and DA offices is not statistically significant (p-value=0.56). This indicates that the difference in coefficients is within the range of uncertainty of the estimates, suggesting that the quantitative difference is not meaningful. In addition, since only two offices contract out child support collections (Lawton, McAlester), it may be that some other unmeasured characteristics of those two offices underlie the results (e.g., there is a military base in Lawton, and an army ammunition plant and state penitentiary in McAlester).

Population of the area that the office serves appears to influence the cost-effectiveness ratio. Dummy variables are included in the regression to indicate what population class the office serves; each dummy variable takes on a value of one if the population of the area is in the specified range, and zero otherwise. The coefficient on each population variable is interpreted as the difference in the collections/expenditures ratio for that population range, compared to the

omitted range. The primary omitted range in the Table 1 regression is population between 28 and 59 thousand. So, for example, the coefficient corresponding to POP6068 indicates that offices, which serve areas with population between 60 and 68 thousand, have collection ratios that average 0.41 higher than offices serving areas between 28 and 59 thousand. The Tulsa and Oklahoma City offices average collection ratios 0.58 lower than those of the omitted category. The population variables are jointly significant below the 0.05 level, indicating their importance.

Table 1. FY2001 Collections/Expenditures Regression Results

	Regression Coefficient
Constant	9.12[a]
DHS	-1.21[a]
DA	-1.37[a]
POP6068	0.41
POP7491	0.64[c]
POP98124	-0.16
TULSA+OKC	-0.58
R^2= 0.38, Adj. R^2=0.24, Regression p-value=0.03	

[a]indicates statistically significant below the 0.01 level (two-tailed test)
[c]indicates statistically significant below the 0.10 level (two-tailed test)

Numerous other variables were tried, but were found to be insignificant: the percent of families in poverty, racial percentages of population, the teen birth rate, the shares of employment in manufacturing and services, the unemployment rate, and population density. The ratio of full-time equivalent staff to total expenditures also was very insignificant. Recent employment growth, defined over alternative periods, was found to have the incorrect sign. The insignificance of the teen birth rate, the manufacturing employment share, and the ratio of full-time equivalent staff (FTE) to total expenditures, contrasts with the results found at the state level. The insignificance of the ratio of FTE to expenditures suggests that it does not much matter whether additional expenditures are spent on staff or non-staff items or activities.

The regression equation can then be used to predict the cost effectiveness ratio that would be expected, given their characteristics. A comparison of the predicted and actual cost effectiveness ratios for fiscal year 2001 are shown in Table 2. The office whose actual cost effectiveness most exceeded the predicted ratio (column 3) was Chickasha, followed by Lawton, Ponca City, Sayre-Clinton and Guthrie. The five offices whose cost effectiveness most fell below the predicted ratio were El Reno, Enid, McAlester, Fairview, Woodward. The low ranking of McAlester may be due to its comparison to Lawton, in which both contract out their child support collection efforts. The El Reno, Enid, and Woodward offices have all been opened since 1999. However, when a variable is added to the regression indicating whether the office is recently opened, the variable has the expected negative sign but is not near statistical significance. For example, the offices in Bartlesville, Duncan and Pauls Valley also have recently opened, but have higher than predicted collections/expenditures ratios.

Table 2. FY2001 Actual and Predicted Cost Effectiveness

OFFICE	ACTUAL	Rank	PREDICTED	Rank	DIFFERENCE
ALTUS	2.95	23	2.98	19	-0.03
ARDMORE	3.47	11	3.62	4	-0.15
BARTLESVILLE	3.40	14	3.39	10	0.01
CHICKASHA	4.87	2	3.78	3	1.09
CLAREMORE	2.90	24	2.82	28	0.08
DUNCAN	3.74	6	3.14	16	0.60
DURANT	3.60	10	2.98	19	0.62
EL RENO	2.16	33	2.98	19	-0.82
ENID	2.49	29	3.39	10	-0.90
FAIRVIEW	2.14	34	3.14	16	-1.00
GUTHRIE	3.67	8	2.98	19	0.69
IDABEL	3.61	9	3.39	10	0.22
LAWTON	5.17	1	4.18	2	0.99
MCALESTER - STIGLER	3.36	15	4.35	1	-0.99
MIAMI - JAY	4.01	4	3.55	8	0.46
MUSKOGEE	3.07	19	3.62	4	-0.55
NORMAN	3.03	20	2.98	19	0.05
OKC_MWC	3.03	20	2.56	31	0.47
OKC-NORTH	2.28	31	2.56	31	-0.28
OKC-SOUTH	2.58	28	2.56	31	0.02
OKMULGEE	2.76	26	2.98	19	-0.22
PAULS VALLEY	3.45	12	2.98	19	0.47
PAWHUSKA	3.43	13	3.39	10	0.04
PONCA CITY	3.75	5	2.98	19	0.77
POTEAU - WILBURTON	3.09	18	2.98	19	0.11
SALLISAW	2.86	25	3.39	10	-0.53
SAPULPA	3.69	7	3.62	4	0.07
SAYRE - CLINTON	4.28	3	3.55	8	0.73
SHAWNEE	2.98	22	2.82	28	0.16
STILLWATER	3.34	16	3.39	10	-0.05
TAHLEQUAH	2.41	30	2.82	28	-0.41
TULSA EAST	2.64	27	2.56	31	0.08
TULSA WEST	2.26	32	2.56	31	-0.30
WEWOKA	3.16	17	3.62	4	-0.46
WOODWARD	2.06	35	3.14	16	-1.08

Note: The predicted values are formed using the regression in Table 1.

B. Cost Effectiveness: Collections per Case

Another potential measure of cost effectiveness is the ratio of collections to the number of cases. Although the pattern of performance across offices might be expected to be similar to that of collections per dollar of expenditure, examining collections per case allows for determination of whether additional expenditures increase collections per case. An office can be efficient because it handles more cases, but not appear efficient in terms of collections per case. In fact, the correlation between collections per case and collections per dollar of expenditure across counties equals 0.55.

The results of the final model, which includes significant variables, and those of interest but not significant, are shown in Table 3. From Table 3, we can see that an increase in expenditures per case increases collections per case. The results suggest that for every additional dollar expended per case over two additional dollars are collected per case.

Table 3. Collections/Case Regression Results

	Regression Coefficient
Constant	352.30[b]
Expend_Case	2.23[a]
DHS	-229.74
DA	-196.13
POP2859	94.71
POP6068	244.85[a]
POP7191	203.72[b]
R^2= 0.51, Adj. R^2=0.41, Regression p-value=0.00	

[a]indicates statistically significant below the 0.01 level (two-tailed test)
[b]indicates statistically significant below the 0.05 level (two-tailed test)

DHS and DA offices collect less per case than offices that contract out child support collections, but the difference is not statistically significant. This contrasts with the result above where contracting out increased collections per dollar of expenditure. The result may be explained by Lawton (a contracting office) having large collections per expenditure, but also having the highest number of cases per full-time equivalent staff, which leads to more typical collections per case; thus, Lawton's efficiency results from handling more cases, not collecting more per case.

The population variables are jointly significant (p-value=0.064). All else being equal, offices that serve areas with populations between 60 and 68 thousand collect over 244 dollars more per case than offices that serve populations greater than 91 thousand (i.e., the omitted categories). Offices serving population areas of 74 to 91 thousand collect 203 dollars more per case. Other variables listed in the previous section were examined for their influence, but again were found to be insignificant, while not appreciably affecting the other results.

Table 4 reports the comparison of actual collections per case and predicted collections per case. The office that collects the most relative to what would be predicted is Chickasha, followed by Miami-Jay, Lawton, Guthrie and Ponca City. Except Ponca City, these offices were in the top five for over-performing in terms of collections/expenditures ratios. The five bottom

performing offices according to this criterion are: Okmulgee, Sallisaw, Fairview, Woodward and Enid. Fairview, Woodward and Enid were also among the five most under-performing offices in terms of collections/expenditures. Two of the five poorly performing offices are new; yet, the coefficient for the variable indicating whether the office was opened since 1999 was statistically insignificant (though negative).

Table 4. Actual and Predicted Collections Per Case

OFFICE	ACTUAL	Rank	PREDICTED	Rank	%DIFFERENCE
ALTUS	953.0	15	970.3	13	-1.8
ARDMORE	725.0	32	825.2	25	-13.8
BARTLESVILLE	988.8	14	1048.7	8	-6.1
CHICKASHA	1087.8	7	823.7	26	24.3
CLAREMORE	1012.1	13	933.5	17	7.8
DUNCAN	898.6	17	752.4	30	16.3
DURANT	1086.9	8	923.3	18	15.1
EL RENO	794.4	23	941.7	15	-18.5
ENID	796.2	22	1113.2	5	-39.8
FAIRVIEW	870.9	19	1123.6	4	-29.0
GUTHRIE	1258.1	3	1014.4	11	19.4
IDABEL	1241.9	4	1167.2	3	6.0
LAWTON	938.6	16	756.6	29	19.4
MCALESTER - STIGLER	786.2	24	968.1	14	-23.1
MIAMI - JAY	1499.9	2	1200.4	2	20.0
MUSKOGEE	733.7	27	892.1	22	-21.6
NORMAN	1059.1	12	934.6	16	11.8
OKC-MWC	726.1	31	656.3	35	9.6
OKC-SOUTH	615.4	34	723.7	34	-17.6
OKC-NORTH	701.6	33	728.2	32	-3.8
OKMULGEE	586.2	35	723.9	33	-23.5
PAULS VALLEY	881.0	18	819.6	27	7.0
PAWHUSKA	1070.5	10	1096.1	6	-2.4
PONCA CITY	1113.6	6	912.2	20	18.1
POTEAU - WILBURTON	1077.4	9	1027.4	9	4.6
SALLISAW	798.3	21	1022.6	10	-28.1
SAPULPA	1219.5	5	1095.9	7	10.1
SAYRE - CLINTON	1060.7	11	919.4	19	13.3
SHAWNEE	767.4	26	729.7	31	4.9
STILLWATER	1537.6	1	1426.3	1	7.2
TAHLEQUAH	726.5	30	827.6	24	-13.9
TULSA EAST	798.8	20	796.5	28	0.3
TULSA WEST	733.2	28	845.1	23	-15.3
WEWOKA	782.1	25	911.1	21	-16.5
WOODWARD	731.4	29	1008.0	12	-37.8

Note: The predicted values are formed using the regression in Table 3.

C. Cost Effectiveness: Collections per Full-Time Equivalent Staff

Yet another way to define cost effectiveness is collections per full-time equivalent staff. Although this measure is very correlated with collections per dollar of expenditure (r=0.85), examination of collections per full-time equivalent staff allows for determination of whether additional non-staff expenditures, holding the number of staff constant, increases collection performance. The results are shown in Table 5.

The results in Table 5 generally confirm those of Table 1. DHS and DA offices collect significantly less than the two offices that contract out collection services. The difference between DHS and DA (-88,221.68 vs. –101,245.8) is not statistically significant (p-value=0.55). The population variables are jointly significant based on an F-test (p-value=0.058), in which offices that serve mid-sized population areas collect more per staff member. Of particular interest, increasing non-staff expenditures per staff member by one dollar increases collections per staff member by 3.41 dollars.

Table 5. Collections/FTE

	Regression Coefficient
Constant	64,577.86
EXPEND_FTE	3.41[a]
DHS	-88,221.68[b]
DA	-101,245.80[b]
POP6068	32,471.10
POP7491	52,280.09[b]
TULSA+OKC	-38,020.71
R^2= 0.50, Adj. R^2=0.39, Regression p-value=0.00	

[a]indicates statistically significant below the 0.01 level (two-tailed test)
[b]indicates statistically significant below the 0.05 level (two-tailed test)

D. Other Performance Measures

Other measures of performance also are examined in terms of the determinants of variation across offices: paternity establishment; order establishment; medical order establishment; and payment of arrears. Success in these endeavors likely leads to success in collection performance measures. Table 6 contains the correlations of the measures of performance in specific activities with overall cost effectiveness measures.

From Table 6, we see that collection of arrears is most correlated with collection success as defined by three measures (COLL_EXP, COLL_CASE, COLL_FTE). In general, the success rates in all activities are most correlated with collections per case, and somewhat less correlated with collections per dollar of expenditure or FTE. Variation in paternity establishment appears less related to variation in cost-effectiveness measures. In addition, collection of arrears is the activity in which success is most correlated with expenditures per case; thus, variation in expenditures per case appears most related to the variation in obtaining payments on arrears. In regressions not shown, the establishment of orders, and arrears collection rates are positively and significantly related to collections per case, while paternity is insignificant. The r-squared for the regression is 0.90, indicating that success in these activities mostly determines collections per

case. Yet, only collection of arrears is positively and significantly related to collections per dollar of expenditure, with the regression r-squared equal to 0.35. Thus, success in collection of arrears appears crucial for collection efforts to maximize benefits relative to costs.

Table 6. Correlation of Performance Measures

	COLL_EXP	COLL_CASE	COLL_FTE	EXP_CASE
PATERNITY	0.25	0.22	0.21	0.01
ORDER_EST	0.47	0.77	0.35	0.33
ARREARS	0.54	0.89	0.56	0.43
MEDICAL_EST	0.21	0.35	0.18	0.10

Tables 7-10 contain regression results regarding the determinants of success in each of the four activity measures. Table 7 reports the regression results for paternity establishment, in which few variables were found to be close to being significant determinants. The type of office is insignificant, while the teen birth rate and the percentage of the population that is Caucasian are mildly significant. Higher teen birth rates lower paternity establishment, while the percentage of the population that is Caucasian is positively related to paternity establishment. The rest of the economic and demographic characteristics were found to be insignificant.

Table 7. Paternity Establishment Regression

	Regression Coefficient
Constant	102.06[a]
TEEN_BIRTH	-0.42[b]
DHS	2.98
DA	5.10
PERC_CAUC	18.13[c]
R^2= 0.20, Adj. R^2=0.09, Regression p-value=0.15	

[a]indicates statistically significant below the 0.01 level (two-tailed test)
[b]indicates statistically significant below the 0.05 level (one-tailed test)
[c]indicates statistically significant below the 0.10 level (two-tailed test)

The final results of regression analysis of the determinants of order establishment are presented in Table 8. Following the paternity establishment results, the type of office is insignificant for success in order establishment, while the percent of the population that is Caucasian is positive and significant. Teen birth rates are insignificant, as were a host of other economic and demographic characteristics. Again, mid-sized service areas had greater success in establishing orders (all else being equal), with the largest areas having the least success. Expenditures per case significantly increased order establishment; each additional dollar spent per case increased the rate of establishment by 0.05 percentage points. This translates into a one standard deviation increase in expenditures ($60.94) being associated with a 0.32 standard deviation increase in the rate of order establishment (3.05 percentage points).

Table 8. Order Establishment Regression

	Regression Coefficient
Constant	52.47[a]
DHS	-5.25
DA	-3.60
POP6068	9.25[a]
POP7491	6.79[c]
POP98124	-4.44
TULSA+OKC	-5.68
PERC_CAUC	8.88[c]
EXPEND_CASE	0.05[b]
R^2= 0.68, Adj. R^2=0.58, Regression p-value=0.00	

[a]indicates statistically significant below the 0.01 level (two-tailed test)
[b]indicates statistically significant below the 0.05 level (two-tailed test)
[c]indicates statistically significant below the 0.10 level (two-tailed test)

Table 9 shows the results from regressing the rate of establishment of medical orders on various potential explanatory variables. In contrast to the previous regressions, DHS is significantly negative. The result indicates that DHS offices have significantly lower success in establishing medical orders than DA or contracting offices; all else equal, a DHS office has over a four and one-half percent lower rate of medical order establishment. The effect of DA was not statistically different than contracting out collection services. In contrast to establishment of collection orders, variation in expenditures per case does not significantly explain variation in the rate of medical order establishments. Consistent with previous regressions, offices serving areas with large populations have lower success, where service areas with population between 60 and 68 thousand have the greatest success (the population variables are jointly significant). Although insignificant in other regressions, the average payroll (PAYROLL) is positively and significantly related to the establishment of medical orders. This outcome probably results from higher paying jobs being more likely to provide health insurance benefits. Finally, the percentage of the population that is Caucasian also is positively and significantly related to the establishment of medical orders. Other demographic and economic variables were found to be insignificant.

Table 9. Medical Order Establishment Regression

	Regression Coefficient
Constant	54.26[a]
DHS	-4.56[c]
POP2859	1.05
POP6068	9.32[b]
POP7491	2.62
EXPEND_CASE	0.006
PAYROLL	0.0008[b]
PERC_CAUC	8.48[b]
R^2= 0.49, Adj. R^2=0.36, Regression p-value=0.01	

[a]indicates statistically significant below the 0.01 level (two-tailed test)
[b]indicates statistically significant below the 0.05 level (two-tailed test)
[c]indicates statistically significant below the 0.10 level (two-tailed test)

The final regression, shown in Table 10, examines the determinants of success in terms of collection of arrears. The results indicate that DA and DHS offices do not significantly differ from contracting offices in terms of collection of arrears. DA and DHS also do not significantly differ from each other. Population of the service area is again statistically significant, with mid-sized areas in terms of population collecting more. For example, an office that serves an area with population between 60 and 68 thousand has a nearly eight percent greater success rate. Expenditures per case also is positively and significantly related to collection of arrears. A one-standard deviation increase in expenditures per case ($60.94) leads to a 0.40 standard deviation increase in the rate of arrears collection (2.24 percentage points). As in the other regressions, the rest of the economic and demographic variables were statistically insignificant.

Table 10. Collection of Arrears Regression

	Regression Coefficient
Constant	40.69[a]
DHS	-0.24
DA	-0.94
POP2859	4.52
POP6068	7.68[b]
POP7491	6.17[c]
POP98124	3.48
EXPEND_CASE	0.04[b]
R^2= 0.37, Adj. R^2=0.21, Regression p-value=0.06	

[a]indicates statistically significant below the 0.01 level (two-tailed test)
[b]indicates statistically significant below the 0.05 level (two-tailed test)
[c]indicates statistically significant below the 0.10 level (two-tailed test)

Table 11 shows the difference between actual success and predicted success for: paternity establishment; child support order establishment; medical order establishment; and collection of arrears. A positive value indicates that actual success exceeded that predicted by the corresponding regression, suggesting that the office outperformed given the characteristics for the regression variables. The last column contains the average across the four indicators.

Based on the average across the four indicators, the top five performing offices are Chickasha, Pawhuska, Sayre-Clinton, Guthrie and OKC-South. The bottom five performing offices are Okmulgee, Bartlesville, Fairview, Woodward and Sallisaw. Yet, in correlations not shown, paternity is most correlated with the average; and, paternity was shown above to be generally uncorrelated with measures of collections. Thus, the office rankings also should be examined for each indicator. For example, in terms of difference in actual and predicted arrears, the top five performing offices are Guthrie, Ponca City, Miami-Jay, Sayre-Clinton and Chickasha. Except Sayre-Clinton, these offices were in the top five over-performing offices in terms of collections per case. The bottom five performing offices are Fairview, Sallisaw, Okmulgee, Woodward and Enid, which also were the bottom five offices in collections per case. Again, it should be noted that although numerous explanatory factors were examined, relevant factors might still be unaccounted for such that the predicted performance may not be accurate.

Table 11. Actual Minus Predicted Success Rates

Office	Paternity	Order	Medical	Arrears	Average
ALTUS	9.49	-2.92	1.94	3.56	3.02
ARDMORE	15.85	-5.72	-0.82	0.67	2.49
BARTLESVILLE	-33.98	4.11	0.89	-0.12	-7.27
CHICKASHA	24.05	10.12	3.64	6.01	10.96
CLAREMORE	6.22	4.60	-7.24	1.40	1.25
DUNCAN	-13.87	0.88	-0.74	3.46	-2.56
DURANT	-7.02	10.58	7.83	0.28	2.92
EL RENO	13.98	-5.42	-1.45	1.82	2.23
ENID	0.50	-6.45	3.53	-7.84	-2.56
FAIRVIEW	-18.83	-3.43	-4.08	-7.41	-8.44
GUTHRIE	10.23	0.07	4.18	8.88	5.84
IDABEL	3.65	8.93	1.82	-0.05	3.59
LAWTON	2.83	-0.90	0.04	4.31	1.57
MCALESTER - STIGLER	-2.83	0.90	-0.30	-4.31	-1.63
MIAMI - JAY	-16.43	7.96	0.21	6.92	-0.34
MUSKOGEE	-11.94	-9.89	6.30	0.20	-3.83
NORMAN	-3.55	-2.33	1.19	1.47	-0.80
OKC-MWC	5.45	4.27	-4.91	-1.11	0.92
OKC-NORTH	0.38	-7.13	5.28	-2.68	-1.03
OKC-SOUTH	15.81	1.96	4.26	-0.12	5.48
OKMULGEE	-6.57	-5.63	-8.96	-7.73	-7.22
PAULS VALLEY	24.46	-1.95	-8.45	1.69	3.94
PAWHUSKA	32.55	-4.62	-3.76	0.52	6.17
PONCA CITY	-6.75	8.37	8.42	8.63	4.67
POTEAU - WILBURTON	-11.34	4.05	5.98	0.74	-0.14
SALLISAW	-25.79	-3.81	-10.83	-7.63	-12.01
SAPULPA	16.49	3.28	-4.70	-1.52	3.39
SAYRE - CLINTON	10.40	-1.52	8.32	6.18	5.85
SHAWNEE	2.65	0.10	-0.61	-0.01	0.53
STILLWATER	0.60	-4.61	-0.18	2.02	-0.54
TAHLEQUAH	-16.94	1.62	8.15	0.20	-1.74
TULSA EAST	-3.53	1.89	-5.05	-3.18	-2.47
TULSA WEST	-2.21	-0.99	0.34	-2.10	-1.24
WEWOKA	1.19	2.21	-4.41	-5.36	-1.60
WOODWARD	-15.21	-8.59	-5.82	-7.80	-9.35

Note: The predicted values are formed using the regressions in Tables 6-10.

2. Oklahoma Pooled Time Series Regression

Since there may be factors omitted in the cross-sectional regression that may be relevant, pooled cross section-time series regressions also are performed. For example, recent employment growth was insignificant in the cross-sectional regressions, often having a negative sign. This might be attributable to offices having lower performance because of some omitted factor, but also coincidentally having strong employment growth. A cross-sectional regression would incorrectly suggest that strong employment growth lowers child support collection performance.

A method that avoids this problem involves the use of time series data for each office. In terms of the above example, it could be determined whether changes in employment lead to changes in child support collection performance. Cross-sectional differences across offices would be captured by constant terms (fixed effects) in each time series equation. In addition, the time series response could be restricted to be identical for all offices by pooling (combining) the data for all offices. Finally, the constant terms/fixed effects could then be examined for their determinants.

However, annual data for many of the explanatory variables do not exist, and are limited for the collections per dollar of expenditure to offices that have not been recently opened. Thus, a pooled regression is performed for 26 offices for the period 1996 to 2000. The primary independent variable used is employment growth. In addition, to capture changes in the dependent variable that are common across offices, perhaps due to changes in state and national economic conditions, policy changes, or methods of date reporting, dummy variables for each year (less one to avoid perfect collinearity) are included.

The slope coefficients and regression statistics for the pooled regression are shown in Table 12. The positive coefficients for the year dummy variables indicate that child support collections were higher in each year relative to 2000, in which they are jointly significant below the 0.01 level. For example, the ratio in 1998 averaged 0.53 higher across all offices than in 2000. In addition, employment growth for the year has a positive and significant effect on child support collections per dollar of expenditure, though the magnitude is modest. The coefficient is interpreted as 1 percent employment growth increasing the ratio of child support collections per dollar of expenditure by approximately 0.05. So, for example, it would require 10 percent employment growth to increase the collection ratio from 2.5 to 3.0.

Table 12. Pooled Regression: Collections/Expenditures

	Slope Coefficient
D96	0.21
D97	0.43[a]
D98	0.53[a]
D99	0.17
%EMP GROWTH	0.05[c]
R^2= 0.75, Adj. R^2=0.67, Regression p-value=0.00	

[a]indicates statistically significant below the 0.01 level (two-tailed test)
[c]indicates statistically significant below the 0.10 level (one-tailed test)

The fixed effects for the offices capture cross-sectional variation across the offices not accounted for by variation in employment growth. The fixed effects can then be used as a dependent variable, similar to that of the cross-sectional regression for collections/expenditures shown in Table 1. The primary difference is that the fixed effects capture average cross-sectional variation for 1996-2000, and reflects variation leftover after removal of that attributable to differences in employment growth. Since they are predicted variables, fixed effects induce heteroscedasticity (i.e., non-constant error variance), in which the standard errors are corrected for during estimation.

The fixed effects regression results are shown in Table 13. The results differ somewhat from those in Table 1, which simply examined the cross-sectional variation in the raw collection to expenditure ratios for 2000. As shown in Table 13, DA offices have significantly lower collection ratios than DHS or contracting offices. In Table 1, DA and DHS offices did not differ from each other, but did differ from the contracting-out offices. Teen birth rates also are negatively and significantly related to lower collection ratios in Table 13, but not in Table 1. The population variables are again jointly significant, with areas serving populations up to 124 thousand having higher collection ratios than larger population areas. The percentage of the service area population that is Caucasian is positively related to collection ratios in Table 13, but not Table 1.

Table 13. Fixed Effects Regression

	Regression Coefficient
Constant	4.04[a]
DA	-0.71[b]
TEEN_BIRTH	-0.02[b]
POP2859	0.63[c]
POP6068	0.62[c]
POP7491	0.84[b]
POP98124	1.11[b]
PERC_CAUC	0.67[c]
R^2= 0.54, Adj. R^2=0.36, Regression p-value=0.03	

[a]indicates statistically significant below the 0.01 level (two-tailed test)
[b]indicates statistically significant below the 0.05 level (two-tailed test)
[c]indicates statistically significant below the 0.10 level (two-tailed test)

The differences could be related to several factors. For one, only 26 offices were examined for 1996-2000, while 35 offices were included in the sample for 2000. Second, the fixed effects reflect mean effects for 1996-2000, making them less susceptible to year-to-year random fluctuations. Third, the fixed effects are purged of differences attributable to employment conditions, while employment conditions were not a factor for year-2000 cross sectional regressions. The difference in results suggests that the performance of the 35 offices should be tracked over time to obtain a better comparative assessment of their performance.

Finally, Table 14 displays the fixed effects produced by the pooled estimation, shown in Table 12, and used as the dependent variable in Table 13. The estimated fixed effects are shown in the second column, with the fixed effects predicted by the regression in Table 13 displayed in

column three. The final column contains the difference between the actual and predicted fixed effects. The difference, again, can be interpreted as the performance of the office relative to what would be predicted based upon its characteristics.

According to Table 14, the five top over-performing offices are Poteau-Wilburton, Chickasha, Lawton, Norman and Durant. The five bottom under-performing offices are Stillwater, Fairview, OKC-South, Claremore and McAlester. Chickasha and Lawton were offices that were also in the top five in terms of over performing based upon the Table 1 regression. Fairview and McAlester were also offices in the bottom five in terms of under performing according to Table 1.

Table 14. 1996-2000 Actual and Predicted Fixed Effects

Office	Actual FE	Predicted FE	Difference
ALTUS	2.54	2.56	-0.03
ARDMORE	2.75	2.91	-0.16
CHICKASHA	4.41	3.70	0.71
CLAREMORE	2.60	3.17	-0.56
DURANT	3.34	2.77	0.57
FAIRVIEW	3.48	3.96	-0.49
IDABEL	3.06	2.81	0.25
LAWTON	4.89	4.19	0.70
MCALESTER-STIGLER	2.93	3.68	-0.74
MIAMI	3.75	3.45	0.29
MUSKOGEE	2.83	3.01	-0.17
NORMAN	3.36	2.71	0.65
OKC-MWC	2.60	2.72	-0.12
OKC-NORTH	2.87	2.75	0.12
OKC-SOUTH	2.20	2.73	-0.53
OKMULGEE	3.06	2.99	0.07
PAWHUSKA	3.46	3.75	-0.28
PONCA CITY	2.83	2.95	-0.12
POTEAU-WILBURTON	3.92	3.19	0.73
SALLISAW	2.52	2.52	0.01
SAPULPA	2.92	2.88	0.04
SAYRE-CLINTON	3.82	3.65	0.17
SHAWNEE	3.17	3.31	-0.14
STILLWATER	3.05	3.48	-0.43
TULSA	2.70	2.81	-0.12
WEWOKA	2.61	3.03	-0.42

Note: The fixed effects are purged of differences attributable to employment conditions.

3. Explaining Differences in Adjusted Composite Federal Scores

To appraise the overall performance of the Oklahoma offices, the adjusted composite federal score is regressed on several categorical population variables, the growth rate of employment since 1990, the estimated share of cases involving Native American children, and the administrative type of the office. The share of Native American children served is estimated by the percent of cases transferred to the Ada office from September 2002 to June 2003. The other variables are defined as described in earlier sections.

Regression Results

Regressions are run using both the 2000 and 2001 composite scores. The results of both regressions indicate that the type of office administering the program is insignificant (not shown). For the year 2000 regression, the joint F-test for the significance of the two variables is 0.14 (p-value=0.72); while for the year 2001 regression, the joint F-test for the significance of the two variables is 0.09 (p-value=0.92). The results of rerunning the regressions, omitting the office category variables, are shown in Tables 1 and 2.

Table 15 shows that the adjusted composite federal score was significantly related to population in the service area (joint F-test=5.54, p-value=0.002). Relative to population less than 28 thousand in the service area, population between 60 and 68 thousand increases the composite score, while the other population categories decrease the composite score. Thus, all else being equal, offices serving areas between 60 and 68 thousand in population perform the best. The worst performing offices are those serving areas with more than 200 thousand in population. Employment growth from 1990 to 2000 significantly increases the composite score (below the 0.05 significance level), in which an office will register a 6.83 point higher composite score than another office for every one-percent greater employment growth over the decade. An increased share of cases involving Native American children decreases the composite score, being at the margin of conventional significance levels. For every one-percent greater share of cases involving Native American children, the composite score is expected to be lower by 6.49.

Table 15. Adjusted Federal Score Regression: 2000

Dependent Variable: ADJFED_00			
Variable	Coefficient	Std. Error	t-Statistic
C	-7.04	366.32	-0.02
POP2859	-80.21	100.51	-0.80
POP6068	170.53	102.25	1.67
POP98124	-169.42	115.05	-1.47
POPG200	-275.60	116.83	-2.36
EMP00/EMP90-1	6.83	3.28	2.08
NATIVE_SHARE	-6.49	4.06	-1.60
R-squared	0.457	F-statistic	3.93
Adjusted R-squared	0.341	Sig Level	0.006

As shown in Table 16 similar results are obtained in the regression employing the year 2001 adjusted composite federal score. The categorical population variables have the same signs relative to the omitted category. Employment growth from 1990 to 2001 has a slightly larger coefficient, while the Native American children share is slightly less negative. Nevertheless, the

consistency in results for the two years indicates stability in the determinants of the differences in office performance.

Table 16. Adjusted Federal Score Regression: 2001

Dependent Variable: ADJFED_01			
Variable	Coefficient	Std. Error	t-Statistic
C	-113.5	323.62	-0.35
POP2859	-67.44	89.90	-0.75
POP6068	87.19	91.60	0.95
POP98124	-135.21	102.90	-1.31
POPG200	-255.62	103.99	-2.46
EMP01/EMP90	7.90	2.87	2.76
NATIVE_SHARE	-6.12	3.63	-1.68
R-squared	0.418	F-statistic	3.35
Adjusted R-squared	0.293	Sig Level	0.013

Additional independent variables were added individually to each of the regressions and found to be insignificant: the percent of the population in poverty, per capita income, the unemployment rate, payroll-employment share, the manufacturing employment share, the service sector employment share, teen birth rate, and the racial composition of the service.

Office Evaluation

As suggested by the regression results, variation in office performance in terms of the adjusted composite federal score may be due to differences in exogenous factors in addition to differences in office efficiency. Thus, the regression results in Tables 15 and 16 are used to compare the actual performance of each office with the predicted performance by the regressions. The difference may be taken as a potential indicator of relative efficiency of the office. Tables 17 and 18 contain comparisons between predicted relative performance and actual performance.

The comparison between predicted and actual relative performance for year 2000 is shown in Table 3. The first column of numbers represents the actual adjusted composite federal scores less the unweighted mean score across offices. A number near zero indicates an average score. The numbers in the second column represent the predicted adjusted federal composites scores based on the statistical equation shown in Table 15 and the corresponding independent variable values less the unweighted mean across offices. The next three columns contain the contribution each factor makes to the prediction in the score relative to the mean.

The final column contains the difference between the actual differential score for each office and the predicted differential. The difference may reflect several factors. For one, the difference may be partially attributable to randomness. Potential random influences include errors associated with data collection and reporting. Likewise, there likely are random fluctuations in the composition of cases from year-to-year. However, observed consistency in predictions across 2000 and 2001 would reduce the likelihood of randomness playing a major role. Another potential source of the differential is the influence of omitted factors; yet the trial and error process of including numerous additional variables reduces the chance that omitted factors account for most of the difference. The final potential explanation is the difference in efficiency of operations across offices. If the actual differential exceeds (falls short of) the

predicted differential, the entry in the final column is positive (negative), suggesting that the office is relatively efficient (inefficient).

As shown in the first and last columns of Table 17, only the Miami-Jay office is both in the top five in terms of the actual composite federal score (the other four offices being Idabel, Sapulpa, Sayre-Clinton, and Stillwater) and estimated relative efficiency. The other four most efficient offices are Chickasha, Lawton, Norman and Ponca City. Correspondingly, only the OKC-North and Woodward-Guymon offices are in both the bottom five in terms of actual composite federal score (the other three offices being Fairview, Okmulgee and Tahlequah) and estimated relative efficiency. The other three least efficient offices are Ardmore, Enid and Sallisaw.

Therefore, some of the top performing and low performances across offices were attributable to the characteristics of the district, not relative efficiency of the offices. For example, the strong performances of the Idabel, Sayre-Clinton and Stillwater offices appear mostly attributable to their serving districts between 60 and 68 thousand people. In terms of exogenous factors, the weak performance of the Fairview office appears mostly attributable to lower employment growth, followed by a higher share of cases involving Native American children, and serving a population between 28 and 59 thousand. The weak performance of the Tahlequah office appears mostly attributable to it having a higher share of cases involving Native American children, followed by it serving a district with population between 98 and 124 thousand. Slightly offsetting these two effects for Tahlequah was a higher than average rate of employment growth in the 1990s.

Table 17. Comparison of Actual and Predicted Adjusted Federal Scores: 2000

Office	Actual Diff	Pred Diff	POP DIFF	EMP DIFF	NAT DIFF	Rel Perf
Altus	25.91	24.26	-22.53	-9.73	56.52	1.65
Ardmore	-110.09	82.77	57.68	-3.90	28.99	-192.86
Bartlesville	129.91	54.90	228.21	-195.39	22.09	75.01
Chickasha	178.91	-61.41	57.68	-40.64	-78.45	240.32
Claremore	1.91	-5.92	-111.74	100.34	5.48	7.83
Duncan	-59.09	-40.21	-22.53	-66.43	48.75	-18.87
Durant	145.91	60.87	-22.53	75.59	7.81	85.04
El Reno	-198.09	-62.75	-111.74	63.68	-14.70	-135.33
Enid	-86.09	192.55	228.21	-73.44	37.78	-278.64
Fairview	-247.09	-141.55	-22.53	-88.82	-30.20	-105.54
Guthrie	186.91	37.28	-22.53	3.15	56.67	149.63
Idabel	265.91	271.55	228.21	12.79	30.56	-5.64
Lawton	10.91	-159.79	-111.74	-72.42	24.37	170.70
McAlester	-69.09	-31.15	-22.53	-11.59	2.97	-37.94
Miami-Jay	657.91	290.02	228.21	116.23	-54.41	367.89
Muskogee	-147.09	23.86	57.68	-18.51	-15.31	-170.94
Norman	56.91	-101.46	-217.92	86.40	30.06	158.37
OKA (South)	-156.09	-168.82	-217.92	11.56	37.55	12.73
OKB (MWC)	-183.09	-160.01	-217.92	11.56	46.35	-23.07
OKC (North)	-332.09	-158.93	-217.92	11.56	47.43	-173.15
Okmulgee	-270.09	-109.84	-22.53	-48.86	-38.45	-160.25
Pauls Valley	-6.09	-79.93	-22.53	-79.19	21.78	73.85
Pawhuska	140.91	129.93	228.21	-40.66	-57.61	10.98
Ponca City	108.91	-158.57	-22.53	-99.83	-36.22	267.49
Poteau-Wilburton	183.91	28.43	-22.53	5.99	44.97	155.48
Sallisaw	-166.09	118.08	228.21	31.99	-142.12	-284.17
Sapulpa	224.91	118.09	57.68	25.26	35.15	106.82
Sayre-Clinton	217.91	201.67	228.21	-53.48	26.95	16.25
Shawnee	-107.09	-132.76	-111.74	9.23	-30.25	25.67
Stillwater	485.91	387.60	228.21	121.65	37.75	98.31
Tahlequah	-239.09	-170.21	-111.74	95.53	-154.00	-68.88
Tulsa East	-175.09	-169.02	-217.92	24.53	24.38	-6.06
Tulsa West	-135.09	-166.27	-217.92	24.53	27.13	31.19
Wewoka	-28.09	-44.74	57.68	6.07	-108.49	16.66
Woodward–Guymon	-309.09	101.46	-22.53	65.27	58.71	-410.54

The same information, but based on the regression results in Table 16, is presented in Table 18. Four of the estimated most efficient offices in 2001 were also most efficient in 2000: Chickasha, Miami-Jay, Norman and Ponca City. Guthrie replaces Lawton as the fifth member; yet both offices were among those more efficient in both years.

Four of the estimated least efficient offices in 2001 were also those found least efficient in 2000: Ardmore, Enid, Sallisaw, and Woodward-Guymon. Okmulgee replaces OKC-North as the fifth member of the group of least efficient offices; however, Okmulgee and OKC-North were among those less efficient in both years. In fact, the correlation between the estimated efficiency scores for 2000 and 2001 equals 0.87. This indicates stability in the efficiency estimates; stability bolsters interpretation of the differences between actual and predicted composite scores as efficiency estimates.

Averages across 2000 and 2001 for relative actual composite scores and efficiency estimates are presented in Table 19. They are listed in order of most efficient to least efficient. The first column of numbers represents the average of the adjusted composite federal scores for 2000 and 2001. The next column indicates the ranking of the offices in terms of actual composite scores. The third column of numbers then represents the average of the efficiency scores for 2000 and 2001, with the ranking of the efficiency scores in the last column.

Table 18. Comparison of Actual and Predicted Adjusted Federal Scores: 2001

Office	Actual Diff	Pred Diff	POP DIFF	EMP DIFF	NAT DIFF	Rel Perf
Altus	32.97	40.52	-3.03	-9.81	53.37	-7.55
Ardmore	-119.03	92.72	64.40	0.94	27.38	-211.75
Bartlesville	-123.03	-40.17	151.59	-212.62	20.86	-82.86
Chickasha	272.97	-52.92	64.40	-43.26	-74.07	325.90
Claremore	19.97	43.82	-70.81	109.45	5.17	-23.85
Duncan	-34.03	-48.14	-3.03	-91.13	46.03	14.11
Durant	70.97	130.44	-3.03	126.10	7.38	-59.47
El Reno	-122.03	-18.97	-70.81	65.72	-13.88	-103.06
Enid	-114.03	79.41	151.59	-107.85	35.67	-193.44
Fairview	-142.03	-142.30	-3.03	-110.76	-28.51	0.27
Guthrie	278.97	40.66	-3.03	-9.81	53.50	238.31
Idabel	361.97	255.33	151.59	74.89	28.85	106.64
Lawton	-1.03	-143.97	-70.81	-96.17	23.01	142.94
McAlester	-68.03	1.61	-3.03	1.84	2.81	-69.64
Miami-Jay	394.97	238.70	151.59	138.49	-51.38	156.27
Muskogee	-113.03	16.19	64.40	-33.76	-14.46	-129.22
Norman	67.97	-76.93	-191.22	85.90	28.39	144.90
OKA (South)	-143.03	-155.90	-191.22	-0.13	35.45	12.87
OKB (MWC)	-175.03	-147.58	-191.22	-0.13	43.76	-27.44
OKC (North)	-241.03	-146.56	-191.22	-0.13	44.79	-94.47
Okmulgee	-314.03	-105.81	-3.03	-66.48	-36.30	-208.22
Pauls Valley	13.97	-6.68	-3.03	-24.21	20.57	20.65
Pawhuska	188.97	47.02	151.59	-50.17	-54.40	141.96
Ponca City	130.97	-146.49	-3.03	-109.26	-34.20	277.46
Poteau-Wilburton	160.97	58.60	-3.03	19.17	42.46	102.37
Sallisaw	-183.03	29.93	151.59	12.53	-134.19	-212.96
Sapulpa	242.97	122.50	64.40	24.91	33.19	120.47
Sayre-Clinton	67.97	120.96	151.59	-56.07	25.44	-52.99
Shawnee	-97.03	-90.26	-70.81	9.12	-28.57	-6.77
Stillwater	421.97	284.59	151.59	97.36	35.64	137.38
Tahlequah	-104.03	-94.76	-70.81	121.46	-145.41	-9.27
Tulsa East	-145.03	-149.40	-191.22	18.81	23.02	4.37
Tulsa West	-187.03	-146.80	-191.22	18.81	25.61	-40.23
Wewoka	-140.03	-34.63	64.40	3.40	-102.44	-105.39
Woodward–Guymon	-163.03	145.26	-3.03	92.86	55.44	-308.29

Table 19. Actual and Predicted Scores: 2000 and 2001 Averages

Office	Ave Diff	Rank	Ave Eff	Rank
Chickasha	225.94	6	283.11	1
Ponca City	119.94	10	272.48	2
Miami-Jay	526.44	1	262.08	3
Guthrie	232.94	5	193.97	4
Lawton	4.94	15	156.82	5
Norman	62.44	12	151.64	6
Poteau–Wilburton	172.44	7	128.93	7
Stillwater	453.94	2	117.85	8
Sapulpa	233.94	4	113.65	9
Pawhuska	164.94	8	76.47	10
Idabel	313.94	3	50.50	11
Pauls Valley	3.94	16	47.25	12
OKA (South)	-149.56	25	12.80	13
Durant	108.44	11	12.79	14
Shawnee	-102.06	22	9.45	15
Tulsa East	-160.06	27	-0.84	16
Duncan	-46.56	18	-2.38	17
Altus	29.44	13	-2.95	18
Bartlesville	3.44	17	-3.92	19
Tulsa West	-161.06	28	-4.52	20
Claremore	10.94	14	-8.01	21
Sayre-Clinton	142.94	9	-18.37	22
OKB (MWC)	-179.06	31	-25.26	23
Tahlequah	-171.56	29	-39.08	24
Wewoka	-84.06	20	-44.37	25
Fairview	-194.56	32	-52.64	26
McAlester	-68.56	19	-53.79	27
El Reno	-160.06	26	-119.20	28
OKC (North)	-286.56	34	-133.81	29
Muskogee	-130.06	24	-150.08	30
Okmulgee	-292.06	35	-184.24	31
Ardmore	-114.56	23	-202.31	32
Enid	-100.06	21	-236.04	33
Sallisaw	-174.56	30	-248.57	34
Woodward-Guymon	-236.06	33	-359.42	35

From Table 19 we see that the top five efficient offices are: Chickasha, Ponca City, Miami-Jay, Guthrie and Lawton. Of the top five most efficient offices, only Miami-Jay and Guthrie also ranked in the top five for actual adjusted composite federal score. Stillwater drops from second in actual score to eighth in efficiency ranking, while Idabel drops from third to eleventh. The bottom five are Okmulgee, Ardmore, Enid, Sallisaw and Woodward-Guymon. Okmulgee climbs from 35th in actual composite score to 31st in terms of efficiency; OKC-North climbs from 34th to 29th; Woodward-Guymon drops from 33rd to 35th; Fairview climbs from 32nd to 26th and OKC-MWC climbs from 31st to 23rd.

Experimentation with April 2002-March 2003 Adjusted Scores

For a glimpse into whether these rankings have changed since 2001, just released adjusted composite federal scores for April 2002-March 2003 are regressed on the variables used in 2001 (Table 16). Since the independent variables are from an earlier time period, it is likely that the explanatory power of the regression will be less than that reported in Tables 1 and 2.

Table 20 displays the results of the regression for the 2002-2003 composite scores. The signs of the coefficients reported in Table 20 mirror those reported in Tables 15 and 16. The optimal size of the district continues to be between 60 and 68 thousand people; the least efficient district size is still over 200 thousand. Employment growth continues to be positive, but smaller in magnitude, possibly because it does not include 2002 and part of 2003 employment growth. The share of cases involving Native American children continues to be negative and significant, though the effect is smaller. The r-squared confirms the expectation that the independent variables will have less explanatory power because of their being outdated.

Table 20. Adjusted Federal Score Regression: 2003

Dependent Variable: ADJFED_03			
Variable	Coefficient	Std. Error	t-Statistic
C	218.39	338.53	0.65
POP2859	-39.99	94.05	-0.43
POP6068	90.55	95.82	0.94
POP98124	-98.86	107.64	-0.92
POPG200	-199.61	108.78	-1.83
EMP01/EMP90	554.36	300.01	1.85
NATIVE_SHARE	-4.23	3.80	-1.68
R-squared	0.30	F-statistic	1.96
Adjusted R-squared	0.14	Sig Level	0.11

As was done for years 2000 and 2001, the regression results in Table 20 can be used to construct relative efficiency measures. Table 21 shows the ranking of offices based on relative actual composite federal scores and relative efficiencies.

Three of the five offices ranked as most efficient in Table 21 were also ranked as most efficient for 2000 and 2001 (Table 19): Chickasha, Guthrie and Ponca City. Regarding the other two offices that are now in the top five, Idabel was previously 11th most efficient while Stillwater was 8th most efficient. The other two offices that previously were in the top five only drop to 6th (Lawton) and 7th (Miami-Jay) places. Thus, there appears to be consistency in ranking of the most efficient offices.

Three of the five offices ranked as least efficient in Table 21 were also ranked as least efficient for 2000 and 2001: Ardmore, Enid and Woodward-Guymon. Regarding the other two offices that are now in the bottom five, Durant was previously 14th most efficient while Wewoka was 25th most efficient. The other two offices that previously were in the bottom five climb to 10th (Okmulgee) and 19th (Sallisaw) places. Despite some consistency, there appears to be more movement in and out of the bottom five performing offices. Overall, the correlation between the efficiency estimates for 2000 and 2001 (Table 19) and those for 2003 (Table 21) equals 0.79. Therefore, even though added caution should be exercised in using the 2003 estimates because

they are based on a regression with potentially outdated independent variables, there is general consistency between the efficiency estimates for 2000-2001 and 2003.

Table 21. Actual and Predicted Scores: 2003

Office	Act Diff	Rank	Rel Eff	Rank
Chickasha	384.49	3	425.82	1
Guthrie	312.49	5	282.16	2
Idabel	432.49	1	229.25	3
Stillwater	417.49	2	193.79	4
Ponca City	45.49	9	145.54	5
Lawton	19.49	10	129.69	6
Miami-Jay	321.49	4	129.09	7
Poteau-Wilburton	159.49	7	116.46	8
Sapulpa	190.49	6	109.86	9
Okmulgee	-26.51	16	44.99	10
Norman	-42.51	17	37.01	11
Pawhuska	83.49	8	25.52	12
Tulsa East	-109.51	23	20.78	13
Duncan	-11.51	15	20.37	14
Pauls Valley	16.49	12	19.03	15
Fairview	-83.51	20	13.66	16
Tulsa West	-130.51	26	-2.01	17
Claremore	17.49	11	-4.23	18
OKC (North)	-140.51	28	-11.98	19
OKA (South)	-154.51	31	-19.53	20
Shawnee	-93.51	21	-21.52	21
OKB (MWC)	-153.51	30	-24.27	22
Altus	-2.51	14	-32.75	23
El Reno	-56.51	18	-34.38	24
Tahlequah	-143.51	29	-69.56	25
Sayre-Clinton	12.49	13	-96.52	26
Bartlesville	-106.51	22	-102.54	27
Sallisaw	-63.51	19	-110.31	28
McAlester	-117.51	24	-120.97	29
Muskogee	-140.51	27	-147.05	30
Wewoka	-193.51	35	-165.31	31
Durant	-119.51	25	-213.30	32
Ardmore	-163.51	32	-223.31	33
Enid	-188.51	34	-268.27	34
Woodward-Guymon	-171.51	33	-275.20	35

Appendix A – Literature Review

1. The Policy Relevance of Child Support

The link between payment of child support and reduction in poverty and welfare caseloads is well documented (e.g., Robins and Dickinson, 1985; Robins, 1986; Garfinkel, Robins, Wong, and Meyer, 1990). Meyer (1993) found that child support payments increased the probability of the dependent family leaving AFDC and reduced the probability of re-entering AFDC. Work by Meyer (1998) and Meyer and Hu (1999) suggest that child support leads to 5 percent fewer children being in poverty (Hanson, Garfinkel, McLanahan and Miller, 1996 suggest 6-7 percent).

The papers further find that child support liabilities have little effect on children in second families of the noncustodial parent (Bloom, Conrad and Miller 1998 suggest that stepchildren in the father's new marriage may experience increased poverty). More recently, Mead (1999) observed that county welfare caseload declines in Wisconsin between 1986 and 1994 were strongly linked to county success in securing child support, while Mead (2000) found the same for the nation as a whole. Based on the literature estimates of the link between child support and welfare caseload decline, Huang, Garfinkel and Waldfogel (2000) conclude that during the 1994-1996 period, strengthened child support explains between one-fourth and three-fifths of welfare caseload decline.

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2. Literature on Child Support Enforcement

In examining the effects of child support enforcement, economists emphasize the incentives that enforcement creates. Whether to pay, and how much to pay in child support, is an economic decision motivated and influenced by numerous factors. Child support enforcement provides incentives for changes in the behavior of both the recipients of child support and those responsible for child support. Garfinkel, Heintze and Huang (2001) list several potential effects: effects on the labor supply decisions of child support recipients (mostly mothers) and their future income; effects on the labor supply decisions of noncustodial parents paying the child support (mostly fathers); effects on marriage, divorce and remarriage; and effects on nonmarital births.

Economic Approach to Child Support Enforcement

Borrowing from Gary Becker's (1968) economic model of crime, Beron (1988) formulates a model of child support noncompliance by noncustodial parents. Beron's model postulates that the noncustodial parent decides how much of the support not to pay based on their utility from their own income versus the utility the family receives from the income. The decision also is influenced by the risk of enforcement and the potential penalty associated with noncompliance. Thus, the noncustodial parent chooses the amount of non-payment to maximize their expected utility. Beron extends Becker's model in specifying the probability of enforcement as a function of the marginal gains to enforcement relative to the marginal costs of enforcement. These depend upon the amount of support owed, the cost of enforcement, the agency's budget and its expectation of successful enforcement. In particular, agencies may have an incentive to enforce against absent fathers who have mothers receiving public assistance since states may keep some of the amounts collected, and the mothers are required under conditions of receiving aid to assist the agency in collecting the support owed.

Child support enforcement also may affect the labor supply decisions of fathers and mothers. Conventional economic wisdom suggests that fathers would increase their supply of labor to make up the lost income. Yet, if child support is awarded as a percent of his income, this reduces his reward for work, which may lead him to substitute leisure for work. Nevertheless, to the extent that child support awards predominantly are fixed amounts, the income effect should dominate the substitution effect, leading to increased work effort. Proportionate child support orders also provide an incentive to hide income, though a benefit of proportionate orders is that they provide for indexing. In addition, if the father did not value the well being of the family, and was even spiteful towards the family, a reduction in work effort may result, particularly in employment that provided income readily accessible for child support collection.

The labor supply of mothers receiving child support also may be affected. For those not on public assistance, an increase in received child support payments could reduce work effort through an income effect. That is, they no longer need to work as much for a desired income level. For mothers receiving public assistance, if the child support is sufficiently large, they may leave public assistance and work so as to receive both the benefits of work and child support, which they may not be able to do on public assistance.

Child support enforcement also may affect the decision to divorce or re-marry. Increased child support enforcement raises the cost of divorce to fathers, reducing the probability of divorce. Yet, for mothers it lowers the cost of divorce, increasing the probability of divorce. This makes the net effect ambiguous in general. Enforceable child support also may cause divorced fathers to be reluctant to re-marry and assume additional support responsibilities. Likewise, enforceable child support could be expected to reduce the number of nonmarital births.

Empirical Evidence on Child Support Enforcement

Investment in Enforcement Efforts and Compliance

There have been numerous studies documenting the effects of specific components of child support enforcement and child support payments. Related to increasing the probability of enforcement, laws allowing paternity to be established up to age 18 (Garfinkel and Robins, 1994), blood and genetic testing (Sonnestein, Holcomb, Seefeldt, 1994; Miller and Garfinkel, 1999), and increased efforts at obtaining voluntary paternity acknowledgements at birth (Pearson and Thoennes, 1995), have reportedly contributed to increased child support collections. Requiring income withholding by employers and payments through other third parties also contributed to increased child support collections (Garfinkel and Klawitter, 1990; Garfinkel and Robins, 1994; Freeman and Waldfogel, 1998; and Sorenson and Halpern, 1999). Yet, del Boca (1996) finds that compliance is lower for proportionate child support orders than fixed amount orders. Nevertheless, because of other benefits, such as indexing, Garfinkel, McLanahan, Meyer and Seltzer (1998) argue that awards should be made as a percentage of income.

Freeman and Walfogel (2000) report that tougher laws only lead to increases in child support collections if they are accompanied by increased expenditures directed towards enforcement. They report that for every additional 100 dollars spent on enforcing child support policy, the proportion of never-married mothers receiving child support payments increases by 1.4 percentage points. Turetsky (1998) also notes that a direct correlation exits between increased staffing levels and improved program performance.

Garfinkel, Heintze and Huang (2001) report that if a potentially eligible woman lives within a state that adds one law to its composition of child support legislation, the proportion of income that is child support increases by 10 percent. They report that the best approach to increase child support is one that combines a large number of laws related to child support with a medium to high amount spent on enforcement. Support for expenditures on child support increasing child support payments also can be found in Garfinkel and Robins (1994).

Sorensen and Oliver (2002) conclude that the child support reforms of PRWORA have had positive impacts. Children living with a never-married mother and nonresident father, and those under 300 percent of the poverty threshold, experienced increased child support payments over the 1997 to 1999 period. Two of the four child support policies in PRWORA appeared to significantly improve child support outcomes in this group: new hire directories and increases in the rate of paternity establishment. No effects were found for mothers who were divorced or remarried. In an empirical examination of the predictions of his model, Beron examines divorce and paternity cases filed in Genesee County (Michigan) Circuit court. He reports that an increase in the probability of enforcement does decrease the amount unpaid.

Sonenstein, Holcomb and Seefeldt (1994) found that the ratio of county AFDC child support cases to the number of full-time-equivalent staff was negatively related to paternity establishment in child support cases, while the ratio of the number of staff to the number of divorces was positively related to paternity establishment. They also find that offices that relied on both the services of district attorney offices/courts and state human service offices have higher paternity establishment rates. That is, the human services agency typically handles the voluntary cases, while the contested cases are turned over to a legal agency. Yet, only about one-third of the 250 counties examined (in 1990) used this model. (Forty-three percent relied solely on a human service agency and about one-fifth relied solely on the legal agency model). Other factors contributing to increased rates of paternity establishment include using: criminal record and school checks; allowing for multiple opportunities for voluntary paternity establishment; using a computer system to generate standardized forms for paternity-related actions; and the county child support office in the same agency as that of the state. A surprising result was that counties using an automated computer system between the AFDC and child support programs were associated with lower rates of paternity establishment.

Gordon (1994) reports systematic inefficient practices found in local child support offices: failure to automate record-keeping systems; failure to adopt high-volume processing equipment typical of that found in the private sector; and duplication arising from having different agencies engaged in the same activities. Likewise, Williams (1994) argues for less costly and more efficient income withholding processes for employers, and Adams, Landsbergen and Cobler (1992) note the gains to paternity establishment of more efficient administrative processes. Garfinkel and Robins (1994) found a negative relationship between the non-AFDC fee charged for child support services and child support collections. They also report positive effects on child support collections of publicizing the availability of child support services.

Other Factors Contributing to Compliance

Growth in arrearage has been found to increase noncompliance (Beron, 1988). If the arrearage becomes unrealistic, the father apparently flees from responsibility. The policy implication is that enforcement needs to be immediate and continuous. In the same vein of thought, Lin (1997) finds a statistically significant negative correlation between compliance and the nonresident father's perceived fairness of the child support awards.

Yet at odds with these results, Beron finds that the probability of attempted enforcement increases with the amount unpaid. Beron reports that every dollar increase in the award amount increases the amount unpaid by 11 cents. However, numerical guidelines for child support have increased awards and collections (Thoennes, Tjadent, and Pearson, 1991; Meyer, Bartfeld, Garfinkel and Brown, 1996). On the contrary, Paull, Walker and Zhu (2000) in an analysis of child support in the United Kingdom, find a positive relationship between the amount of child support liability and compliance. They also find that younger nonresident fathers and those out of work are less likely to pay. Similarly, Beron finds that skilled fathers are less likely to not pay, while other income measures were unrelated to the amount unpaid. Higher income among the mothers at divorce leads to more unpaid support. Yet skilled mothers were more likely to receive their awarded payments. Finally, fathers leaving the county significantly reduced the amount of awarded support that they paid.

For low-income fathers increased enforcement and increased penalties for nonpayment may simply drive some into the underground economy and reduce effort to find work (Mincy and Sorenson, 1998). Onerous awards and harsh penalties, such as periodic jailing of the nonpayer, is argued to create hostility towards the family and the system, making the whole process counterproductive (Johnson and Doolittle, 1998). Mincy and Sorensen (1998) report that in 1990 a lack of income was a significant barrier for child support payments for 16 to 33 percent of young noncustodial parents.

Sonenstein, Holcomb and Seefeldt (1994) report that county rates of paternity establishment were significantly and negatively related to the county unemployment rate, the county population growth rate, and large urban areas. Perhaps surprisingly, the rate of poverty was positively associated with paternity establishment, which the authors surmise may be related to the requirement of paternity establishment in AFDC cases.

Enforcement Effects on the Labor Supply of Fathers and Mothers

Freeman and Waldfogel (1998) report that stricter enforcement of child support does not decrease male labor supply, in which they contend that the primary reason for low payments is low wages. They report that in states with stronger child support enforcement, nonresident fathers were slightly more likely than resident fathers to be working, and slightly less likely to be self-employed, in which earnings are easier to protect from garnishment. Klawitter (1999) finds no child support effect on noncustodial parent income after adjusting for the child support award. In fact, Bitler (2001) found modest positive effects on labor supply of noncustodial fathers associated with enforcement of child support awards, suggesting that the income effect dominated the labor supply decisions.

Based on the results of case sorting strategies employed by the Parents' Fair Share multi-state demonstration project, Doolittle and Lynn (1998) conclude that increased collections result when enforcement efforts are directed towards fathers already employed, while services were offered to those who were unemployed. Turetsky (2000) offers numerous suggestions for additional services to be provided to families in addition to automatic enforcement efforts.

Empirical evidence also points to effects on the labor supply of recipients of child support. Early evidence reviewed by Garfinkel, Heintze and Huang (2001) suggested a positive association between the labor supply of recipient mothers and child support. More recent evidence, however, have found that child support leads to less hours worked (Graham and Beller, 1989; Hu, 1999), which accords with the predictions of the theoretical income effect on mothers who are not receiving public assistance. Yet, in further analysis, Garfinkel, Heintze and Huang (2001) found that "stronger child support enforcement increases the incomes of single mothers and their dependent children by approximately two dollars for each dollar of child support received by single mothers." They take this to suggest that the positive impact on income of reduction in welfare recipients outweighs the potential negative labor supply responses of those who are not welfare recipients.

Pass Through Payments and Compliance

In addition, the incentives for both women on public assistance to cooperate, and men to pay, are lower the less that child support collections "pass through" to them (Waller and Plotnick, 2001). Early evidence in Wisconsin (Meyer and Cancian, 2001) is that modest effects on the overall percentage of noncustodial fathers paying child support were found for allowing full pass-through versus partial pass-through (56.3 versus 53.2 percent). They also report larger average monthly payments of 54 dollars, and lower levels of informal employment, by fathers that were allowed full pass-through of their payments to the families. Waller and Plotnick argue that many low-income parents prefer more informal arrangements, and the rules of child support and welfare agencies are so complex that they are difficult to comply with. Paull, Walker and Zhu (2000) likewise find that the introduction of an income disregard will increase compliance and benefit families. They also contend that there should be no exemptions to making a minimum payment. Based on an examination of alternative normative theories of justice, Minow (1998) also recommends that poor nonresident parents be required to pay at least a "token" amount of child support. She notes, however, that child support awards that are impossible to pay would be counterproductive, and that the nonresident parent's child support should go to the child instead of the state to offset public assistance costs.

Non-Labor Market Indirect Effects of Enforcement Efforts

Nixon (1997) finds that child support reduces the probability of divorce, with the largest effect for those on public assistance. Case (1998) and Garfinkel, Gaylin, Huang and McLanahan (2002) report that some aspects of child support enforcement reduce childbearing outside of marriage. Folk, Graham and Beller (1992) find that child support lowers the probability of remarriage for mothers who do not remarry within five years of their divorce, while it has no effect among those who do remarry within five years. Research also exists that suggests that stronger enforcement reduces the probability of fathers remarrying (Bloom, Conrad and Miller, 1998). There are also potential adverse effects on the stepchildren of the fathers who re-marry. Garfinkel, McLanahan, Meyer and Seltzer suggest that these types of indirect effects of enforcement may have greater effects on the well being of those involved than the direct effects of the payments.

A possible side-benefit to increased enforcement may be that fathers feel more connection to their children, making fathers involved in the lives of their children. Seltzer, McLanahan and Hanson (1998) report on net that fathers who pay child support become more involved with their children and see them more frequently than those who do not. Involvement of fathers in the lives of children has been shown to benefit them in many ways (Amato and Rivera, 1999), though it is likely to be more beneficial when there is harmony between mother and father. McLanahan, Seltzer, Hanson and Thomson (1994) find, however, that the gains from obtaining child support outweigh any negative consequences associated with conflict arising from child support orders. Knox (1996) finds that child support income increases educational performance of children more than income from other sources, while Knox and Bane (1994) conclude that generally life for children in families with child support is more "developmentally positive." Yet, fathers have used payments to ensure visitation rights in the past, whereby automatic payment reduces the incentives for some mothers to honor the visitation rights. Fathers resent paying money without having access to their children, and thus may refuse to pay,

which suggests that enforcement of visitation rights will be associated with child support compliance. The literature is mixed on this issue, with some studies finding a positive relationship between visitation and child support (e.g., Teachman, 1991), while other studies have not found such a relationship (Arditti and Keith, 1993).

Trends and Patterns in State Spending on Enforcement

Case (1998) argues that states with low rates of non-marital births may have characteristics, such as a conservative electorate, that leads to strict enforcement policies. Yet, states with rapidly rising rates of out-of-wedlock births may react by enacting tougher policies. Other factors associated with child support policies are changes in state economic conditions, demographic composition, political forces in the state, and the proportion of women in the state legislature (Case, 1998). Turetsky (1998) reports that while per capita income appears to influence the level of state child support spending, it is not the key factor. She observes that states with less child poverty tend to spend more on the child support program.

In a nationwide study, Freeman and Waldfogel (2000) report that the largest gains in child support collections over the 1978 to 1995 period were for never married women, which the authors expected given the federal efforts to focus on the AFDC population. In fact, middle-class families have often reported having trouble getting the state to help them collect child support because the state does not receive the payments (Garfinkel, McLanahan, Meyer and Seltzer, 1998). Turetsky (1998) argues that a program shift is required from that of promoting cost-recovery to one of promoting self-sufficiency for families.

Garfinkel, McLanahan, Meyer and Seltzer (1998) note that the tendency for the overall rate of child support collections not to rise over the period is attributable to the increasing proportion of families headed by never-married mothers. In fact, Garfinkel, Heintze and Huang (2001) note that according to the March Current Population Survey from 1979-1996, receipt of child support among single mothers only increased from 30 to 31 percent. Yet, child support receipt among those receiving welfare nearly doubled from 13 to 25 percent.

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