

# The market for foster care: an empirical study of the impact of foster care subsidies

Joseph J. Doyle Jr. · H. Elizabeth Peters

Received: 25 October 2006 / Accepted: 19 July 2007 / Published online: 13 August 2007  
© Springer Science+Business Media, LLC 2007

**Abstract** When parents are suspected of child abuse or neglect, their children may be placed with foster families. We estimate the relationship between the monthly subsidies paid to foster families and the quantity of foster care services provided. The empirical model uses variation in subsidies and foster care populations within 37 states and the years 1987–1995. One innovation in our approach is that we exploit the idea that states do not appear to set market clearing rates, as evidenced by a foster home shortage during this time period. In this case of excess demand, variation in the monthly subsidy traces out the supply curve. Our results show that states with high demand may be able to use economic incentives to recruit foster families.

**Keywords** Labor supply · Child welfare · Foster care

**JEL Classifications** I3 · D1 · J2

## 1 Introduction

When parents are suspected of child abuse or neglect, their children may be placed with foster families. Each year in the U.S., over 800,000 children spend time in foster care (US DHHS 2006). But despite the fact that over 20 billion dollars are spent each year providing homes and services to children in out-of-home care (Bess et al. 2002), the number of non-relative foster homes is decreasing (Committee on

---

J. J. Doyle Jr. (✉)  
MIT Sloan School of Management and NBER, 50 Memorial Drive, E52-447,  
Cambridge, MA 01890, USA  
e-mail: jjdoyle@mit.edu

H. E. Peters  
Department of Policy Analysis and Management, Cornell University, Ithaca, NY, USA  
e-mail: ep22@cornell.edu

Ways and Means 2000). Between 1984 and 1990 the number of non-relative foster families declined from 147,000 to 100,000. This decline has been attributed to the rise in two worker families, increases in geographic mobility, and other demographic trends (Hegar and Scannapieco 1995). The decrease strained the foster care system and led the GAO to declare a foster care crisis (GAO 1995). Testa and Rolock (1999) argue that increasing wages to attract professional foster homes is one way the shortage of family foster homes will be dealt with in the future. Currently, one-third of foster children are placed with relatives as a means to relieve the foster parent shortage.

The aim of this paper is to estimate the impact of changes in subsidies—the monthly amount states pay foster parents to care for foster children—on the quantity of foster care services provided. One innovation in our approach is that we exploit the idea that states do not appear to set market clearing rates, as evidenced by the foster home shortage in the 1980s and 1990s. In states with excess demand for foster care services, variation in foster care subsidies will trace out the supply curve.

We develop a reduced-form model of the relationship between foster care placement rates and the monthly subsidy, and estimate it using within-state variation from 1987 to 1995. Past empirical investigations of this relationship provide some evidence that higher subsidy rates increase the quantity of labor supplied to the foster care market (Simon 1975; Campbell and Downs 1987; Chamberlain et al. 1992; Doyle 2007; Paxson and Waldfogel 2003). This paper provides new evidence and, for the first time, explicitly controls for factors which affect demand and supply in the foster care market. The results suggest that the relationship is positive, but only up to a point. For states with high subsidy rates, there appears to be little relationship between the subsidies and placement rates, consistent with the idea that at high subsidy rates some states may have excess supply of foster homes.

The paper is organized as follows: Section 2 provides background on the demand and supply of foster care services. Section 3 describes the data and offers a first look at the subsidy-foster care placement relationship. Section 4 discusses the identification strategy and presents the empirical model and results. Section 5 offers some conclusions.

## 2 Background

Each year over 2 million children are investigated for abuse or neglect, and roughly half of the allegations are substantiated (US DHHS 2004). Approximately 10% of these children will eventually be placed in foster care. Foster care is meant to be a temporary arrangement, though children stay in care for an average of 2 years (US DHHS 2006). Roughly 60% of foster children return home; 15% are adopted; and the remainder “age out” of foster care (Wulczyn et al. 2000). The empirical analysis will attempt to control for factors that affect the demand and supply of foster care services when estimating the relationship between the subsidy rate and foster care placement.

## 2.1 Demand for foster care services

Demand in the foster care market can be defined as the number of children potentially needing foster care services. Thus, demand is a function of factors which put children at risk of foster care placement. Five legal categories comprise the criteria for placement: abuse, neglect, voluntary placement, children in need of supervision, and relinquishment of parental rights (Leon 1991, p. 6). Abuse (which includes physical, sexual, or emotional abuse) and neglect constitute approximately three-quarters of foster care placements (GAO 1994, p. 6). Berger and Waldfogel (2004) find that low-income levels and single parenthood predict out-of-home placements, with single parenthood also associated with a lack of family reunification.

Table 1 provides empirical evidence from other studies about the characteristics associated with the demand for foster care services. That table displays factors associated with children who entered foster care in four metropolitan areas. For comparison, the last column shows the prevalence of these characteristics during a similar time period for the U.S. population as a whole. Two characteristics—single parenthood and drug abuse—stand out. Data from the early 1990s show that two-thirds of children were not living with their biological father just prior to foster care placement, compared to a 20% rate of father absence for the U.S. as a whole. Similarly, parental drug abuse was a factor in 31–78% of foster care placements, with 6% of DC parents being admitted to a drug program compared to less than 0.5% of adults in the U.S.<sup>1</sup> In addition, infants are more likely to enter the child welfare system because of health problems due to the mother's prenatal drug use (Committee on Ways and Means 1993). Child maltreatment has also been found to be associated with stresses associated with poverty and single parenthood (NRC 1993).

Another dimension of foster care service is the length of stay in care. Aside from an increased number of children entering care, the foster care population may grow because children are staying in care longer. Barth et al. (1994) summarize the literature which attempts to identify the determinants of longer stays in foster care. In addition to the child maltreatment risk factors, this literature suggests children born to a teen-aged mother are more likely to have longer stays in care. Also, while studies are not conclusive, it appears that minority children have longer stays in foster care, controlling for other factors.

In the context of state data, we assume that the aggregate demand varies across states and across time with changes in measured risk factors. These include drug arrest and other crime rates, child abuse rates, household structure measures, child poverty and unemployment rates, the racial composition of the population, and the prevalence of teen pregnancies. Demand can also be viewed as a function of state preferences. In particular, states have some discretion in how vigorously they pursue marginal cases of abuse and neglect. Differences in state policies and procedures

---

<sup>1</sup> The wide variation in estimates for parental drug abuse for the foster care population is due to different definitions of drug abuse in the different studies included in the table.

**Table 1** Factors contributing to foster care placements: percent of children w/ specific risk factors

Parental characteristics	Foster care entrants		US (%)
	Washington, DC (%)	NYC & Los Angeles (%)	
Abuse/Neglect (of the child)	93	68	4
Drug abuse	31	78	–
Admission to a drug program	6	–	0.43
Incarceration	8	12	0.03
Homelessness	18	32	0.2
Unemployment	15	–	5.3
Father absent	–	67	20

Percentages do not add to 100 because placements may have multiple child factors

D.C. Foster Care Entrants (1/91-3/91),  $N = 400$  Source: Leon (1991)

NYC, Philadelphia, & LA: Foster Care Population in 1991; Source: General Accounting Office (1994)

*US Estimates:*

National Drug and Alcohol Treatment Survey, 1992

1991 Statistical Abstract of the United States

Green Book, 1990

U.S. Bureau of the Census, 1990

NCANDS Child Abuse Report Data; Number of Reports/Child Population

regarding the importance of family preservation versus child protection will affect the way in which risk factors translate into foster care placements.<sup>2</sup>

## 2.2 Supply of foster parents

Potential suppliers include all families who are fit to take foster children into their homes, as defined by state licensing procedures. As compensation for providing foster care services, each state pays foster parents a monthly subsidy rate for each foster child. The average monthly rate is roughly \$400 per month, and these rates vary widely across states (Child Welfare League of America 1999). The mean foster care subsidy rate for a 9-year old child in our sample is \$258 per month (in 1987 dollars) with a standard deviation of \$66. Using USDA estimates of average monthly family expenditures for a nine to 11 year-old child, we calculate that the average foster care subsidy ranges from 77% of this expenditure for a low-income family to 56% for a middle-income family (USDA 1994). This comparison indicates that the subsidy rate and the variation across states are non-trivial proportions of the monetary costs of child rearing.

Two related economic models suggest that higher subsidy rates will increase the number of available foster parents. Labor supply models predict that the quantity of

<sup>2</sup> As long as these differences are not correlated with the explanatory variables in the model, and, especially, the foster care subsidy rate, our estimates will be unbiased. In addition, the fixed-effects models control for attitudes that are constant in a state across time.

labor supplied is positively related to the amount of compensation offered, in this case the foster care subsidy rate. Similarly, economic models of fertility have shown that families will demand more children as the price of children decreases (Becker 1981; Whittington et al. 1990). In the foster care market, higher subsidies can be interpreted as lower prices for foster children, which lead to a greater quantity of foster care services supplied.

The economics of fertility literature identifies additional factors which may affect the willingness of families to provide foster care at any given subsidy (i.e. may shift the supply curve). This literature suggests that higher female wage rates (opportunity costs) negatively affect the demand for foster children. Depending on how education affects home productivity relative to market productivity, however, higher female education may or may not increase the likelihood of becoming a foster parent. More generally, the amount of satisfaction a family receives from raising children will enter into the decision.

Further insights into the foster care supply function come from the literature on the cost of children (Calhoun and Espenshade 1988; Espenshade 1973, 1984; Lewin/ICF 1990; Turchi 1975). The conclusions useful for this analysis include: (1) expenditures increase with the age of the child; (2) economies of scale exist in raising children; (3) race and ethnicity are correlated with parental expenditure levels; and (4) expenditures increase with family income.

There have been few profiles of foster parents to offer insights into the likelihood that a given individual will become a foster parent. One such profile of over 1,000 foster families in eight states was provided by Campbell and Downs (1987). These data suggest that foster mothers are usually married and have fewer years of education as compared to all adult women in the U.S.

### 2.3 Kinship foster care

Another source of caregiver supply comes from the relatives of foster children. Such placements are referred to as kinship foster care. From the late 1980s to the present, the number of children in kinship foster care has increased substantially. A glimpse of the dramatic increase in kinship care in large cities is evident in New York where there were 151 official kinship care cases in 1985, compared to 23,591 cases in 1991 (Hegar and Scannapieco 1995). This increase was not uniform across states, however, partly because of different legal and regulatory rulings regarding the eligibility of kin to receive foster care subsidy payments instead of the generally lower Aid to Families with Dependent Children (AFDC) payments.

Kinship care can be less costly than traditional foster care, at least initially, which may have encouraged states to move towards that type of placement. Such placements usually receive less monitoring than non-kin placements, and, in some states, the subsidy paid to kin is lower than the rate paid to non-kin (Boots and Geen 1999). However, children have longer lengths of stay in kinship foster care and have greater placement stability, despite hopes that placement 'closer to home' would facilitate family reunification, (Berrick 1998). This result is not surprising given that payments made to kin under the foster care system are often much greater than

payments made to kin under the AFDC program. This disparity in child welfare benefits serves as a tax on reunification, as parents and kin who are altruistic toward the child have a financial incentive to keep that child in kinship care. Thus the lower monitoring costs of kinship foster care are largely offset by the costs associated with the longer stays in care. In the mid- to late-1990s states such as Illinois responded to the growing costs of foster care over this period by reforming subsidy policies for kinship care and creating new ways for kin to establish permanent, subsidized relationships outside the more costly foster care system (Testa 1997). Given the large changes in the use of kinship foster care, we control for kinship foster care policies when estimating the effect of subsidy rates on the quantity of foster care services provided, and we also control for the fraction of the state living in a metropolitan area, as kinship foster care was found to grow more rapidly in cities.

In sum, the rate of foster care placement is likely affected by risk factors that lead to child abuse and neglect on the demand side and factors that affect potential foster families' opportunity costs on the supply side.

### 3 The data

Data on the number of children in family foster care come from the Voluntary Cooperative Information System Survey (VCIS) collected by the American Public Welfare Association (APWA). The VCIS is the most comprehensive source of foster care populations for this period and results using the more recent Adoption and Foster Care Analysis and Reporting System (AFCARS) are discussed below.<sup>3</sup> The dependent variable in our model is the number of children in family foster care per 1,000 children in each state.<sup>4</sup> This ratio is used as a proxy for the quantity of foster care services. The numerator can change in two ways: the number of foster children per foster home can change, or the number of foster homes can change. Either explanation implies a greater quantity of foster care services supplied.

Descriptive statistics are reported in Table 2. In our sample the foster care rate is 3.7 children per 1,000. Texas had the smallest proportion of children in foster care with six per 10,000 children. The largest proportions were in New York and Illinois, where more than one out of every 100 children is in foster care.

<sup>3</sup> The response rates to this voluntary survey ranged from 14 states to 32 states over this period. Approximately 30 states responded between 1987 and 1990, dropping to 17 for 1991–1993, 20 for 1994 and 14 for 1995. The response rate dropped when new federal reporting requirements—the Adoption and Foster Care Analysis and Reporting System (AFCARS)—were scheduled to begin. Unfortunately, implementation of AFCARS was delayed. Results using these data are discussed below. In total, seven states have reported for all nine years, three for 8 years, four for 7 years, four for 6 years, one for 5 years, eight for 4 years, four for 3 years, and six for 2 years. Four states (including D.C.) reported for 1 year and are dropped for comparison with the state fixed effects models, though results are similar when they are included. Ten reported for none of the years.

<sup>4</sup> To focus on foster parent supply, these data include only children in family foster care (including kinship care), not group homes, pre-adoptive homes, etc. Seventy-five percent of children in out-of-home-care were in family foster care in 1991. Special thanks to Pat Shapiro at the American Public Human Services Association (formerly the APWA) for providing the unpublished data.

**Table 2** Summary statistics: state-level 1987–1995

	Mean	Std. Dev.	Min.	Max.
<i>Dependent variable</i>				
Children in foster care (per 1,000 children)	3.71	2.24	0.64	12.32
<i>Explanatory variables</i>				
Foster care subsidy rate (1987 Dollars)	258	66	138	465
Subsidy squared (divided by 1,000)	71	37	19	216
<i>Risk factors</i>				
Economic problems				
Percent of children in families w/ income less than 0.75 of poverty line	13.48	5.11	1.37	31.05
Unemployment rates (%)	5.70	1.49	2.70	10.20
Family risk factors				
Child abuse reports (per 1,000 children)	42.45	11.30	22.41	63.68
Family crime arrest rate (per 1,000 pop.)	4.46	3.92	0.28	21.69
Teen motherhood (per 1,000 females, 15–17)	34.16	11.09	15.00	61.00
Single parent households (%)	23.51	4.07	12.90	36.40
Other risk factors				
Metropolitan population (%)	64.63	23.03	19.60	100.00
Crime rates (per 1,000 population)	50.32	12.06	25.61	89.38
Juvenile arrest rates (per 1,000 children)	9.86	4.81	1.02	24.16
Adult drug arrest rate (per 1,000 population)	3.21	2.07	0.30	8.63
Non-white population (%)	20.01	12.47	1.72	50.47
<i>Opportunity costs</i>				
Women w/ H.S. Degree (%)	22.20	5.94	8.80	36.70
Women w/ Less than H.S. (%)	38.84	4.65	26.84	52.26
Women w/ some college (%)	20.94	4.32	12.34	32.08
Women w/ college degree (%)	18.01	4.15	8.88	29.38
Female full time wage (1987 dollars)	8.30	1.29	6.31	11.15
<i>Kinship care</i>				
Less strict kinship foster care licensing	0.54	0.50	0.00	1.00
Sample size	200			

The foster care subsidy rate is the “basic monthly maintenance rate” for a 9 year-old child

Sample size for child abuse is 196; Family and drug arrests is 198; Juvenile arrest is 195

Foster care “basic monthly maintenance rates”—the subsidy paid by states to foster families—are published each year by the APWA, beginning in 1987. One limitation of these rates is that they do not include payments for children with special needs, as well as supplements that states provide for clothing and services such as respite care and healthcare. Rather, we use the basic subsidy rate as a measure of the generosity of the subsidy rate schedule for each state. Further, we concentrate on the rate paid for children aged 9, so that our estimates do not depend on the age composition of foster children in a given state. All subsidy rates have been converted to 1987 dollars, and our data show a substantial amount of variation

in the subsidy level across states. In our sample, Mississippi had the lowest subsidy (\$138 per month) and Maryland had the highest (\$465 per month).

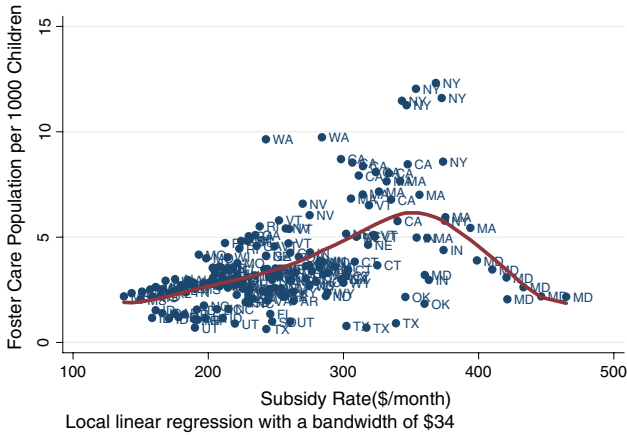
The main results will consider models that control for factors that can affect the demand and supply of foster care services, as described in Sect. 2. Explanatory variables are taken from a variety of sources and are listed in Table 2.<sup>5</sup> They include economic factors (the percent of children in families with incomes less than three-quarters of the poverty line and state unemployment rates); family risk factors (child abuse rates, teen birth rates, the percent of children in single-parent households, and family crime rates); other risk characteristics (the percent of the state's population living in a metropolitan area, crime rates, juvenile arrest rates, adult drug arrest rates, and the percent of the population that is nonwhite); and opportunity cost measures (female education and the median wage for women in the state). The wage measure also serves to control for cost-of-living differences across states. Most of these variables are available across states and time. Child abuse rates are only available beginning in 1990, so we use the 1991 abuse rates—the mid-point of our time period—to capture stable across-state differences in abuse rates. Similarly, drug arrests and family crime arrests (including domestic abuse and child support delinquency) are available from 1991 onward. The relative stability of these estimates within states over time suggests that using the 1991 measures provide meaningful controls. The 4-year correlations from 1991 to 1995 for rates of abuse, adult drug arrests, and family crime arrests are 0.79, 0.82, and 0.83, respectively.

A number of kinship foster care measures are used to control for the change in policy and practice over this time period. The main analysis uses a survey conducted in 1996 by Boots and Geen (1999). The survey documents which states had less stringent licensing standards for kinship caregivers and which states allowed kinship caregivers to receive foster care subsidies only if they met regular foster care requirements. Where licensing is less strict, states are more likely to have increases in foster care placement due to relatives joining the formal foster care system in order to collect the higher subsidies. The survey also reports the difference between the foster care subsidy rate and the alternative AFDC payment relative caregivers could receive if they were not officially foster parents. The average difference in our sample is \$83 per month, with 20 of the 37 states setting the foster care rate equal to the AFDC rate. Only Rhode Island pays foster parents less than the AFDC rate with a difference of \$33, while Maryland pays foster parents \$375 more than the AFDC rate—the largest difference in the sample.

Two other surveys provide information about kinship foster care at this time. Petit and Curtis (1997) report the proportion of all foster children who are in kinship foster care in the mid 1990s. Last, a survey of administrators in state child welfare agencies conducted by the US Department of Health and Human Services indicates whether the state had a “significant increase” in kinship foster care between 1987 and 1991 (Kusserow 1992a, b).

A first look at the subsidy rate-placement rate relationship is provided in Fig. 1, which simply plots the data. A local linear regression of the relationship is also provided as an estimate of the relationship, with a bandwidth of \$34 (Fan and

<sup>5</sup> The data appendix documents the source for each variable.



**Fig. 1** Foster care population versus subsidy rate

Gijbels 1996). The bandwidth was chosen by minimizing the sum of squared errors between the local linear regression and a fourth-order polynomial model.

The figure demonstrates the positive relationship when subsidy levels are between \$150 and \$350 per month (foster care placement increases from 2 per 1,000 children to 6 per 1,000 children). There appears to be little relationship between the subsidy rate and placement rate at higher monthly payment levels. Despite similar subsidy levels, some states such as New York have a high foster care placement rate, while states such as Oklahoma have a low placement rate. The highest subsidy rate state, Maryland, had lower placement rates at higher subsidy levels, leading to a negative relationship at high subsidy rates.

#### 4 Empirical model and results

This section will estimate the relationship between the foster care subsidy rate and the quantity of foster care services supplied using controls for state characteristics and state fixed effects. First, the conditions under which the relationship can be regarded as a supply response are considered.

##### 4.1 Identification

Consider a simple structural model that specifies demand and supply as follows:

$$Q^D = f(\text{risk factors, state preferences})$$

$$Q^S = g(\text{subsidy level, opportunity costs of time, monetary cost of child rearing, tastes})$$

$$Q^D > , = , \text{ or } < Q^S$$

$Q$  is the quantity of foster care services demanded and supplied in the market. This model implies that the number of children in foster care is a function of the risk factors for placement into foster care, state preferences, the subsidy level, the opportunity costs to fostering (both time and money), and tastes among potential foster families. Note that the model explicitly allows for the possibility of disequilibrium: that the quantity demanded may not equal the quantity supplied. This will happen if the state does not set a market clearing rate. The model also assumes that the subsidy rate does not enter the demand equation—that demand is perfectly inelastic due to the source of the demand stemming from child protection initiatives and the insulation provided by federal matching funds that are not limited by current law.

The empirical model will estimate a reduced-form relationship between the subsidy rate and the foster care placement rate.<sup>6</sup> To regard this as a supply relationship, the main identifying assumption is:

Identifying assumption :  $Q^D(W_m) > Q^S(W_m)$  for all  $m$

where  $m$  represents a foster care market. This will be defined at the state level to match the level of policy variation.

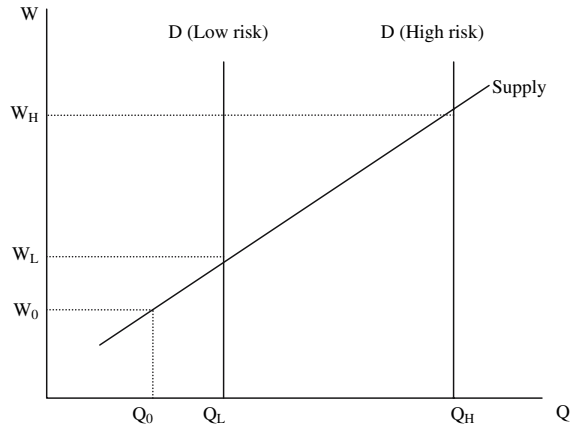
In other words, the supply curve is identified so long as there is excess demand. Figure 2 illustrates identification in this simple model. Consider a state with risk factors such that the quantity demanded (i.e. number of children potentially needing services) in the state is given by  $Q_L$ . At a low subsidy rate of  $W_0$ , only  $Q_0$  foster care services would be supplied. An increase in the subsidy rate would be associated with an increase in the foster care placement rate up until  $W_L$ . Above  $W_L$ , there would be no additional increase in placement with higher subsidy rates; at that point all children considered for placement have been placed.

The identifying assumption appears plausible given the concerns about foster parent shortages during the time period studied (Chamberlain et al. 1992; GAO 1989, 1995). Historical evidence also suggests that increases in subsidies due to federal funding served to partially alleviate excess demand, representing a movement along the upward sloping supply curve. Hegar and Scannapieco (1995) speculate that federal funding for foster care in 1962 “surely fueled the rate of placement.”

Another implication of the model described by Fig. 2 is that high-risk states are likely to have a higher market clearing rate ( $W_H$ ) than low-risk states ( $W_L$ ), controlling for state characteristics. Put another way, the identifying assumption is more likely to be valid in high-risk states, and we are more likely to identify an upward sloping supply curve among those states.

<sup>6</sup> An alternative strategy would instrument for the foster care subsidy rate, potentially with risk factors that shift demand. Unfortunately, most exclusion restrictions are suspect, as conditions that increase the pool of parents suspected of child abuse or neglect tend to be conditions that lower the opportunity costs of providing foster care. This article instead relies on the disequilibrium in the market as described by the foster parent shortage during this time period. We address the issue of the possible exogeneity of the subsidy rate later in the article.

**Fig. 2** Foster care labor markets: high versus low risk states



Our emphasis is on supply given the shortage during this time, but the model's assumption that the demand curve is vertical can be relaxed to include downward-sloping demand due to state budget constraints.<sup>7</sup> In that case, the variation in the subsidy rate would trace out the supply curve at low subsidy levels (relative to the market clearing rate) and trace out the demand curve at high subsidy levels. In the presence of an upward-sloping supply curve and a downward sloping demand curve, the point at which the subsidy rate is no longer associated with foster care placement would identify the market clearing rate—the rate at which there is no longer any excess demand.

One caveat to this interpretation is the possibility is that the supply curve is backward bending, especially on the intensive margin when foster families may decide to accept fewer children into their homes at higher subsidy rates due to income effects. Nevertheless, the point at which subsidy increases are no longer able to elicit increases in the quantity supplied can be estimated, and this information would be useful when considering policies that aim to recruit foster families.

At this point it may be useful to discuss why a state might not set the foster care subsidy rate at the market clearing level. Abstracting from errors in calculation, a state might set a low rate if it puts a low value on child protection as opposed to other government services. Simply put, the state does not want to pay the full cost of child protection. As a result, children will be more likely to remain in abusive situations. It is more difficult to explain why a state might set a subsidy rate that was higher than the market clearing rate, because higher rates only increase costs and do not increase the quantity of services supplied. One explanation is that states set rates solely to reimburse foster parents for the expenses of the child irrespective of the quantity of services demanded, at least locally. In fact, recruitment materials often

<sup>7</sup> It might also be argued that the demand curve is upward sloping. If families willingly give children to the state, they may be more willing to do so if the subsidy to take care of the child is higher. This is especially important with kinship foster care, where the subsidy will go to a non-coresident family member. In order to take advantage of higher subsidies, though, a family will have to declare themselves unfit to parent and risk losing the child. The empirical work attempts to control for changes in the use of kinship foster care over this time period.

justify the “board rates” in these reimbursement terms. Furthermore, Boots and Geen (1999) show that in 1996, 24 states set their foster care subsidy to the AFDC rate for one child. There is little reason to believe that this rate is set to clear the foster care market. Another possible explanation is that foster care services can vary by quantity and quality. By setting a higher rate, more families will supply their services and the state can choose those who are the most qualified.<sup>8</sup> The idea that the subsidy rates may be set independently of the demand for foster care services is considered in the empirical work below.

#### 4.2 Empirical model and results

To control for demand and supply differences across states and over time, the empirical model includes the controls listed in Table 2, year indicators, and state fixed effects. Given the few states with available data, a quadratic in the subsidy rate is estimated as a parsimonious way to allow a non-linear relationship suggested by Figs. 1 and 2. That is, for state  $s$  in year  $t$  the following model is estimated:

$$\begin{aligned} \text{Foster Care Placement}_{st} = & \beta_0 + \beta_1 \text{Subsidy Rate}_{st} + \beta_2 \text{Subsidy Rate}_{st}^2 \\ & + \beta_3 \text{Risk Factors}_{st} + \beta_4 \text{Opportunity Costs}_{st} + \delta_s + \eta_t + \varepsilon_{st} \end{aligned}$$

These fixed-effects models attempt to control for unobserved heterogeneity, such as child protection attitudes and child welfare policy and practice that are assumed to be constant within a state over time. Year indicators are included to capture changes in the risk of foster care placement or supply factors that are common across states but may vary over time. The standard errors are clustered at the state level to reflect dependence across observations within the same state.

Table 3 shows the main results, and they are similar to the relationship found in the raw data. Using estimates for  $\beta_1$  and  $\beta_2$ , a subsidy critical point can be calculated—the dollar amount at which the slope ceases to be positive. In the simple model that only includes the subsidy rate measures and year indicators, the critical point is estimated to be \$371, a number close to the maximum in Fig. 1. Column (2) incorporates the control variables, and the point at which the subsidy rate is no longer positively associated with foster care placement is \$263.<sup>9</sup> With state fixed effects, the estimate of the subsidy critical point ranges from \$264 to \$267. To place these estimates in context, 65% of the states in the sample have subsidy rates below \$267. The estimates suggest that the supply elasticity is close to zero near the mean

<sup>8</sup> Doyle (2007) finds that reducing the subsidy to kinship providers in Illinois by 30% led to a 20% decrease in the likelihood of family members providing foster care services. In addition, child health, education, and placement outcomes do not appear to suffer following the decline in public resources. It appears that the quality of foster parents may increase with the fall in subsidies, as lower quality foster parents select out of the program.

<sup>9</sup> There are fewer observations due to missing control variables. When a model that included the controls available for all 200 observations was considered, the result was similar with a critical point of \$287. Further, the subsidy levels do not include other payments, such as clothing allowances. When an indicator for the state providing an additional clothing allowance was included, the estimates were nearly identical. This indicator will be absorbed in the state fixed effects models.

**Table 3** Regression results

	No state fixed effects		State fixed effects	
	(1)	(2)	(3)	(5)
<i>Dependent variable: foster care placement rate</i>				
Subsidy	0.065 (0.033)	0.056 (0.019)**	0.032 (0.009)**	0.034 (0.01)**
Subsidy <sup>2</sup>	-0.087 (0.062)	-0.106 (0.035)**	-0.061 (0.015)**	-0.064 (0.020)**
Fraction of children below 0.75 of poverty line		0.087 (0.067)		0.045 (0.021)*
Unemployment		0.224 (0.109)*		0.110 (0.067)
Teen motherhood		-0.156 (0.057)**		-0.028 (0.031)
Single-parent families		0.245 (0.086)**		0.002 (0.023)
Metropolitan population		0.015 (0.015)		0.011 (0.027)
Non-white population		0.033 (0.023)		0.194 (0.208)
Juvenile arrest rate		-0.029 (0.068)		0.042 (0.039)
Overall crime rate		-		0.035 (0.023)
Child abuse reports (1991)		0.024 (0.021)		-
Family crime arrest rate (1991)		-0.104 (0.053)		-
Adult drug arrest rate (1991)		0.371 (0.204)		-
Female full time wage		0.121 (0.446)		-0.015 (0.269)
Women w/ less than H.S.		-0.022 (0.076)		0.020 (0.036)
Women w/ H.S. degree		0.047 (0.072)		0.020 (0.030)
Women w/ some college		0.024 (0.104)		0.007 (0.045)
Less strict kinship foster care licensing (1996)		0.393 (0.535)		-
Subsidy critical point	371	263	264	267
Sample size	200	186	200	195
R <sup>2</sup>	0.30	0.67	0.94	0.95

All models are estimated using ordinary least squares, with standard errors calculated using the Huber-White correction, clustered by state. All models include year indicators. Subsidies are measured in 1987 dollars and subsidy-squared is divided by 1,000. \* Significant at 5%, \*\* Significant at 1%

of the subsidy rate, as the subsidy level may hit the demand ceiling described above. For monthly subsidies that are one standard deviation below the mean (approximately \$200), the supply elasticity is roughly 0.3. This is consistent with uncompensated wage elasticities for married women that have been estimated to be higher than those estimated for married men when taking into account sample selection (Blundell and MaCurdy 1999).

The coefficient estimates are smaller in magnitude in the fixed-effects models, as expected. First, this specification likely reduces any endogeneity between subsidy rates and foster care demand that can lead to larger estimates. Second, attenuation bias due to measurement error is exacerbated when within-state differences in subsidies and foster care placement rates are used to estimate the model.

The other covariates generally have the expected signs. In the model with no state fixed effects, the unemployment and single-parent family measures are positively related to foster care placement. Unemployment may raise risks to children and lower opportunity costs to foster parents—both suggesting the positive relationship with foster care found in the data. The teen motherhood measure is negatively related to foster care placement, though this result is largely due to high teen motherhood rates and low foster care placement rates in the South. When controls for census division are included, the relationship between foster care placement and teen motherhood is positive.<sup>10</sup> Meanwhile, the other coefficients are fairly small and not statistically significant. The risk factors as a whole are marginally significant ( $F = 2.1$ ,  $P = 0.05$ ) but the opportunity cost measures are not ( $F = 0.49$ ,  $P = 0.74$ ). Alternative measures of female opportunity costs, including the 10th percentile of the female wage distribution, the wage of female, non-college graduates, and the minimum wage in the state were not significant and yielded similar coefficients on the subsidy rate.

When state fixed effects are included, the coefficients on the covariates generally decrease in magnitude, and only child extreme poverty is statistically significant. The risk factors are jointly significant ( $F = 3.59$ ,  $P = 0.004$ ), while the opportunity cost measures are not jointly significant ( $F = 0.22$ ,  $P = 0.93$ ). The lack of explanatory power is partly due to the fact that there is little variation in risk factors within states over these 9 years.

#### 4.2.1 High versus low-risk states

Figure 2 suggests that the relationship between the foster care subsidy and placement rate is more likely to be positive in high risk states. To test this hypothesis we first identify low- and high-risk states by regressing foster care placement rates on demand factors alone.<sup>11</sup> We classify high-risk states as those with mean predicted foster care placement rates above the median.

<sup>10</sup> Results available from authors on request.

<sup>11</sup> The model was estimated with 200 observations, and results are robust to the specification that is used to categorize the states. As in Table 3, single-parent families and unemployment show statistically, and economically, significant positive relationships with foster care placement, while the teen motherhood measure is negatively related to placement.

**Table 4** High versus low risk states

	Low risk (1)	High risk (2)	Low risk (3)	High risk (4)
<i>Dependent variable: foster care placement rate</i>				
Subsidy	0.016 (0.018)	0.089 (0.033)*	0.002 (0.016)	0.089 (0.020)**
Subsidy <sup>2</sup>	-0.038 (0.036)	-0.148 (0.048)**	-0.004 (0.034)	-0.149 (0.034)**
State fixed effects	No	No	Yes	Yes
Subsidy critical point	211	299	227	300
Sample size	97	89	97	98
R <sup>2</sup>	0.69	0.80	0.92	0.95

All models are estimated using ordinary least squares, with standard errors calculated using the Huber-White correction, clustered by state. All models include full controls, including year indicators

Subsidies are measured in 1987 dollars and subsidy-squared is divided by 1,000

\* Significant at 5%; \*\* Significant at 1%

Table 4 reports the results separately for the 19 states categorized as high-risk and the 18 low-risk states. The subsidy rate-placement relationship found in Table 3 is found for the high risk states, where the subsidy rate measures are statistically significant and the subsidy critical point is estimated to be \$300. In particular, the point estimates are nearly identical in the models with and without state fixed effects for the high risk states. Among high-risk states, 65% have subsidy rates below \$300, suggesting that they could use higher foster care subsidies to alleviate a foster parent shortage.<sup>12</sup>

#### 4.2.2 Exogeneity of subsidy rates

Our identification strategy exploits the idea that subsidy rates are not set to clear the foster care market—rather they may be set to partially reimburse foster parents for child expenditures and are often tied to rates set in other welfare programs. If states do respond to foster care market conditions when they set subsidy rates, the estimated relationship between subsidy rates and foster care placement would capture both this state response and the response of potential foster parents. The idea that the subsidy rate may not enter the demand function also facilitates the interpretation of the reduced-form results as a supply response.

Fortunately, it is possible to investigate these assumptions by considering whether observable risk factors predict subsidy rates. While the opportunity cost measures can shift both supply and demand—higher wages, for example, should lower supply and demand—the risk factors are more closely associated with

<sup>12</sup> Similar analysis was conducted using the opportunity cost measures to determine predicted supply of care. The difficulty in dividing states into high supply versus low supply is that the opportunity cost measures can also be thought of as risk factors. States with low wages or low levels of educational attainment may lead to higher demand for foster care, as well as supply. The results mirrored the high-risk versus low-risk analysis, with “high supply” states having the quadratic relationship, while little relationship in the “low supply” states was found.

changes in demand. If states do not respond to these risk factors, then the association between these factors and subsidy rates should not be economically or statistically significant. Further, if the risk factor measures were consistently positively (or negatively) associated with subsidy rates, it would appear that states may respond to market conditions.

In addition to the risk factors in Table 2, the maximum AFDC payment rate for a family of four is considered to test whether the foster care subsidy rate is set in accordance to the AFDC rate—a rate unlikely to be set to clear the foster care market. One caveat is that welfare generosity may affect foster care placement. Indeed, Paxson and Waldfogel (2003) find that welfare rates are negatively related to child maltreatment. If welfare generosity implies greater foster care payments, then the estimated effect of the subsidy rate on foster care placement would incorporate the indirect effect of welfare on foster care.<sup>13</sup> In addition, if foster care subsidies were set based on demand conditions, then the negative association between AFDC rates and child maltreatment would imply that high AFDC payment states need to set lower foster care subsidies to clear the market, which is not supported by the data.

Table 5 shows the results of tests regarding the response of subsidy rates to changes in demand. Each row represents a separate regression that includes year indicators and state fixed effects, as indicated. The association between AFDC rates and foster care subsidies is shown in the first row. AFDC rates are positively associated with the foster care subsidy rate, in models with and without state fixed effects, with coefficients of 0.2–0.27. The coefficient of less than one is expected, as the AFDC rate applies to three children while the foster care subsidy rate is applicable to each child.<sup>14</sup>

Given the mechanical nature of the correspondence between AFDC rates and foster care subsidies in some states, we chose to exploit this variation in AFDC generosity rather than control for it in the main estimating equation. Nevertheless, when the AFDC subsidy rate is included in the model that predicts foster care placement, the effect of foster care subsidies is unaffected, with coefficients of 0.035 (s.e. = 0.012) and  $-0.064$  (0.022) in a model with state fixed effects and full controls, implying a subsidy critical point of \$273. The AFDC rate itself was unrelated to foster care placement in a model with state fixed effects (coeff. = 0.0003, s.e. = 0.008), conditional on the foster care subsidy rate.

<sup>13</sup> Paxson and Waldfogel (2003) also find that the fraction of children in extreme poverty is a better predictor of child maltreatment compared to the fraction of children in poverty. We find extreme poverty to better predict foster care placement. In addition, they find that the fraction of children with *working* single mothers predicts maltreatment, while we find that the fraction of children in all single parent families is a better predictor of foster care placement. Our analysis is done prior to 1996, which does not consider the changes in opportunity costs and risk factors due to welfare reform—the context of their paper. Further, AFDC rates were not included in the main regressions as the variation in subsidy rates partially stem from variation in AFDC rates, and this is the type of variation that we want to use to identify the supply response.

<sup>14</sup> The average welfare payment in the sample was \$319 with a standard deviation of \$135. It is higher than the foster care rate due to the larger family size used to define the payment.

**Table 5** Subsidy rate exogeneity

	No state fixed effects		State fixed effects		<i>R</i> <sup>2</sup>
	Coeff.	Obs.	Coeff.	Obs.	
<i>Dependent variable for each row: subsidy rate</i>					
Maximum AFDC Rate for a family of four	0.269 (0.056)***	200	0.199 (0.114)*	200	0.88
<i>Economic problems</i>					
Percent of children in families w/ income less than 0.75 of poverty line	-3.427 (2.111)	200	0.159 (0.920)	200	0.88
Unemployment rates (%)	-7.646 (6.179)	200	-4.851 (3.020)	200	0.88
<i>Family risk factors</i>					
Child abuse reports (per 1,000 children)	-0.249 (1.029)	192	-	-	-
Family crime arrest rate (per 1,000 pop.)	-2.848 (1.718)	198	-	-	-
Teen motherhood (per 1,000 Females, 15-17)	-2.025 (0.854)**	200	-2.226 (1.214)	200	0.88
Single parent households (%)	2.939 (3.435)	200	1.171 (1.191)	200	0.88
<i>Other risk factors</i>					
Metropolitan population (%)	1.370 (0.497)***	200	0.682 (1.814)	200	0.88
Crime rates (per 1,000 population)	1.674 (0.748)**	200	2.177	200 (0.771)**	0.88
Juvenile arrest rates (per 1,000 children)	0.826 (2.950)	195	0.900 (2.169)	195	0.88
Adult drug arrest rate, 1991 (per 1,000 population)	13.863 (5.350)**	198	-	-	-
Non-white population (%)	0.547 (1.012)	200	-7.075 (4.418)	200	0.88

Each row is a coefficient from a separate OLS regression that included a constant term and year indicators. Mean of Dep. Var.: \$258. Standard errors are calculated using the Huber-White correction, clustered by state. \* Significant at 10%; \*\* Significant at 5%; \*\*\* Significant at 1%

Most of the remaining factors are unrelated to subsidy rates.<sup>15</sup> Only crime rates are statistically–significantly related to subsidies in the state fixed effects models. In the model without state fixed effects, the teen motherhood measure, and measures highly correlated with urbanicity (metropolitan population and crime rates) are positively associated with the subsidy rate. The results suggest that high cost of living areas have higher subsidy rates, which makes controlling for cost of living, either through the female wage measure or state fixed effects, appropriate. Further, the nearly random nature of the signs of these relationships is what would be expected if states do not set subsidy rates according to demand conditions.<sup>16</sup> In the models without state fixed effects, six regressors have the expected sign if higher risk levels led to higher subsidies, while the other six have the opposite sign.

### 4.2.3 Robustness

Our preferred control for kinship policy is whether there was a different licensing standard for kin versus non-kin, as this is a measure of policy rather than a behavioral response by families such as the frequency of kinship placement. Given the importance of kinship care at this time, however, we experimented with the alternative indicators of kinship foster care policies described in Sect. 3. Appendix Table A1 shows that similar results are found when these measures were used, though the critical points are approximately \$250 in models that use the “significant increase” indicator or the 1995 kinship share, and \$290 in the model that included the payment differential between formal and informal kinship care.

Table 1 shows that child abuse reports and drug abuse are key factors in this market, and we estimated a model with state-specific random effects that allowed the use of our time-invariant measures of these risk factors. We find a subsidy critical point of \$280, similar to the state fixed effects models. Child abuse and drug arrest rates are positively associated with foster care placement as expected. Similar results were also found when census division indicators were included in the base model, though the subsidy critical point is closer to \$320 in those models.

Another test excluded the nine observations from the state of Maryland, as Fig. 1 shows that the downward-sloping relationship in the raw data stems from this state, and Maryland has such a different foster care subsidy compared to its AFDC

---

<sup>15</sup> Similar results are found when the lead subsidy rate—the rate in the following year—is used as the dependant variable to test whether rates slowly respond. In the state fixed effects specification, unemployment is negatively related to the next year’s subsidy rate, while the nonwhite population is negatively related to the subsidy rate. The pattern of signs is similar to those presented in Table 5. Similar results are also found when considering coefficients in a single-equation context.

<sup>16</sup> The expected response of states reacting to changes in female education or wages is ambiguous. In similar regressions, wages were generally found to be positively associated with the subsidy rate, though not statistically significant with state fixed effects. The fraction of women who are high school dropouts had a marginally significant negative relationship with subsidy rates.

subsidy. In a model with state fixed effects, the subsidy critical point is \$295 when Maryland is excluded, though the coefficient point estimates are less precise.

Further, the main results employ a quadratic functional form as an approximation of the shape found in Fig. 1. When indicators for the quintile of subsidy rates within a given year were included in a model without state fixed effects, the foster care placement rate is positively associated with the subsidy rate for the first three quintiles. While these models ask more of the data, resulting in larger standard errors, the results are qualitatively similar to the more restrictive models of Table 3.<sup>17</sup>

#### 4.2.4 Later years

Finally, more recent data are available from the Adoption and Foster Care Analysis and Reporting System (AFCARS). Given the transition from the voluntary survey to the new reporting system, the two data sets are not thought to be comparable. Further, data from 1995 to 1997 are thought to be less reliable, and inspection of the 1998 data shows anomalous reports (NDACAN 2002). We experimented with models that included 1999, 2000, and 2002 data, years for which we have subsidy information. When models with full controls and state  $\times$  data-source fixed effects are included, the results are similar to those presented earlier, with significant linear and quadratic terms and a critical subsidy level of \$270 in 1987 dollars. That said, this result stems solely from the earlier time period, a time when there were greater concerns about a foster parent shortage. Indeed, if demand shocks to foster care, due to the increased reliance on kinship care or improving economic conditions in the late 1990s, resulted in the demand side of the market determining foster care placement levels, then no relationship would be expected between subsidy rates and foster care placement as in Fig. 2. In sum, the late 1980s and early 1990s have the greatest potential to use the exogeneity of subsidy rates to trace out the supply curve.

## 5 Conclusions

Our results show that states may be able to use economic incentives to attract foster parents in order to remedy what has been labeled a foster parent shortage. Controlling for demand and supply conditions, the reduced-form estimates show that the supply of foster care providers is positively associated with subsidies up to a

---

<sup>17</sup> Similar models were estimated using state fixed effects, and little relationship was found between subsidy rates and foster care placement. However, the identification would come from states changing subsidy rate categories over time and it appears that there is too little variation to provide meaningful estimates.

rate of \$267 per month (\$470 in 2006 dollars), with an elasticity of 0.3 on this upward-sloping portion of the relationship. Most states have subsidies less than this rate, which suggests that there may be excess demand in the foster care market, though there are competing explanations as well. Regardless, it appears that states can use subsidy rates as policy tool to increase the number of available homes in high-risk states.

While the potential for excess demand and the foster home shortage during the time period signals a supply constraint, there is evidence that some states may have excess supply. The problem of excess supply is more likely to be true for low-risk states. It is puzzling to see states setting foster care rates higher than the market clearing rate, because for these states an increase in subsidy rates increases state costs of foster care without increasing placements. One area for future research is to investigate whether states with higher rates are able to select a higher quality of foster care parent and thus increase the well-being of foster care children.

**Acknowledgements** The authors would like to thank Phil DeCicca, Steve Levitt, Dean Lillard, Alan Mathios, and Mark Testa for helpful comments and insights. All remaining errors are our own.

## Data appendix

### Foster care data

VCIS foster care data: American Public Welfare Association (now, American Public Human Services Association (APHSA)). Unpublished data by placement type.

Adoption and Foster Care Analysis and Reporting System. National Data Archive on Child Abuse and Neglect. [www.ndacan.cornell.edu](http://www.ndacan.cornell.edu)

### Subsidy rate data

American Public Welfare Association (now, American Public Human Services Association (APHSA)) "Foster Care Rates." *W-Memo*. vol. 5 no. 6. June 1993. Also reported in:

Committee on Ways and Means, United States House of Representatives. "Overview of Entitlement Programs." *Green Book*. Various years.

### Child abuse rates

National Child Abuse and Neglect Data System reported by the Child Welfare League of America's national data analysis system: [ndas.cwla.org](http://ndas.cwla.org)

## Child poverty, teen motherhood, single-parent families

March CPS, Vital Statistics, and Census data reported in *Annie E. Casey Foundation Kids Count 1999*. <http://www.aecf.org/kidscount/kc1999/rawdata.htm>

## Unemployment data

Bureau of Labor Statistics. "Unemployment Rate, Not Seasonally Adjusted." <http://stats.bls.gov/cgi-bin/survey/most>. 1999

## Metropolitan, crime, non-white data

U.S. Bureau of the Census. *Statistical Abstract of the United States*. Various years. Metropolitan population data was found from a linear interpolation for 1991, 1993, and 1995 though the percentages do not change very much. However, for 1992 and 1994, the number of metropolitan areas did change with corresponding increases in the metropolitan area population. The results are not sensitive to the inclusion of this variable however.

## Arrest data

FBI. Uniform Crime Reports. Various Years.

## Female education and wage data

March CPS Supplement 1987–1995.

## Minimum wage data

U.S. Department of Labor, Employment Standards Administration. *The Book of States: 1996–1997*. Table 8.20.

## Kinship foster care data

Kusserow, R.P. *Using Relatives for Foster Care*. Washington: Department of HHS, Office of the Inspector General. July 1992.

Kusserow, R.P. *State Practices in Using Relatives for Foster Care*. Washington: Department of HHS, Office of the Inspector General. July 1992.

Petit, M.R. and P. A. Curtis. *1997 CWLA Stat Book*. Washington: Child Welfare League of America. 1997.

**Table A1** Robustness to kinship foster care controls

	Kinship controls		
	Significant increase (7)	Kin-AFDC payment diff. (8)	1995 Kinship share (9)
Dependent variable foster care placement rate			
Subsidy	0.048 (0.022)*	0.055 (0.020)**	0.035 (0.018)
Subsidy <sup>2</sup>	-0.096 (0.041)*	-0.095 (0.037)*	-0.069 (0.034)
Kinship foster care measure	1.720 (0.522)**	-0.004 (0.002)	0.014 (0.017)
State fixed effects	No	No	No
Subsidy critical point	251	290	253
R <sup>2</sup>	0.64	0.60	0.65
Sample size	187	200	152

All models are estimated using ordinary least squares, with standard errors calculated using the Huber-White correction, clustered by state. Models include all controls available for every state

Subsidies are measured in 1987 dollars and subsidy-squared is divided by 1,000

\*Significant at 10%; \*\*Significant at 5%; \*\*\*Significant at 1%

## References

- Barth, R. P., Courtney, M., Berrick, J. D., & Albert, V. (1994). *From child abuse to permanency planning*. New York: Aldine de Gruyter.
- Becker, G. S. (1981). *A treatise on the family*. Chicago: University of Chicago Press.
- Berger, L. M., & Waldfogel, J. (2004). Out-of-home placement of children and economic factors: An empirical analysis. *Review of Economics of the Household*, 2(4), 382–411.
- Berrick, J. D. (1998). When children cannot remain home: Foster family care and kinship care. *The Future of Children*, 8(1), 72–87 Spring 1998.
- Bess, R., Andrews, C., Jantz, A., Russell, V., & Geen, R. (2002). *The cost of protecting vulnerable children III: What factors affect states' fiscal decisions*. Assessing the New Federalism Occasional Paper No. 61. Washington DC: Urban Institute.
- Blundell, R., & MaCurdy, T. (1999). Labor supply: A review of alternative approaches. In O. Ashenfelter & D. Card (Eds.), *Handbook of Labor Economics* (Vol. 3A). Amsterdam: Elsevier.
- Boots, S. W., & Geen, R. (1999). Family care or foster care? How state policies affect kinship caregivers. *New Federalism: Issues and Options for States*, Number A-34. Urban Institute.
- Calhoun, C. A., & Espenshade, T. J. (1988). Childbearing and wives' foregone earnings. *Population Studies*, 48, 5–37.
- Campbell, C., & Downs, S. W. (1987). The impact of economic incentives on foster parents. *Social Service Review*, 61(4), 509–609.
- Chamberlain, P., Moreland, S., & Reid, K. (1992). Enhanced services and stipends for foster parents: Effects on retention rates and outcomes for children. *Child Welfare*, LXXI(5), 387–404.
- Child Welfare League of America. (1999). *State child welfare agency survey*. Washington, DC: CWLA.
- Doyle, J. (2007). Can't buy me love?: Subsidizing the care of grandchildren. *Journal of Public Economics*, 91, 281–304.
- Espenshade, T. J. (1973). The cost of children in the urban United States. *Population monograph series*, No.14. Berkeley: International Population and Urban Research.
- Espenshade, T. J. (1984). *Investing in children: New estimates of parental expenditures*. Washington, DC: Urban Institute.
- Fan, J., & Gijbels, I. (1996). Local polynomial modelling and its applications. *Monographs on Statistics and Applied Probability*, 66.

- Hegar, R., & Scannapieco, M. (1995). From family duty to family policy: The evolution of kinship care. *Child Welfare, LXXIV*(1), 201–215.
- Kusserow R. P. (1992a). *Using relatives for foster care*. Washington: Department of HHS, Office of the Inspector General.
- Kusserow R. P. (1992b). *State practices in using relatives for foster care*. Washington: Department of HHS, Office of the Inspector General.
- Leon, R. R. (1991). *Why are kids in foster care*. Washington: Metropolitan Washington Council of Governments.
- Lewin/ICF (1990). Estimates of expenditures on children and child support guidelines. *Report to the office of the assistant secretary for planning and evaluation: U.S. Dept. of Health and Human Services*.
- National Data Archive on Child Abuse and Neglect (2002). Adoption and Foster Care Analysis and Reporting System (AFCARS), 1995–1999: User’s Guide and Codebook, May.
- National Research Council (U.S.) (1993). *Panel on research on child abuse and neglect. Understanding child abuse and neglect*. Washington, DC: National Academy Press, (pp. 106–160).
- Paxson, C., & Waldfogel, J. (2003). Welfare reforms, family resources, and child maltreatment. *Journal of Policy Analysis and Management, 22*(1), 85–113.
- Petit, M. R., & Curtis, P. A. (1997). *CWLA stat book*. Washington: Child Welfare League of America.
- Simon, J. (1975). The effect of foster-care payment levels on the number of foster children given homes. *Social Service Review, 49*(3), 405–411 September.
- Testa, M. F., & Rolock, N. (1999). Professional foster care: A future worth pursuing? *Child Welfare, LXXVIII*(1), 109–124.
- Testa, M. F. (1997). Kinship Foster Care in Illinois. In J. D. Berrick, R. P. Barth, & N. Gilbert (Eds.), *Child Welfare Research Review* (Vol. 2), New York: Columbia University Press.
- Turchi, B. A. (1975). *The demand for children: The economics of fertility in the United States*. Cambridge, Mass: Ballinger.
- United States Department of Agriculture. (1994). *Expenditures on children by families*. Washington, D.C.: USDA.
- United States General Accounting Office. (1989). *Foster parents: Recruiting and preservice training practices need evaluation*. Washington: GPO.
- United States General Accounting Office. (1994). *Foster care: Parental drug abuse has alarming impact on young children*. Washington: GPO.
- U.S. Department of Health and Human Services, Administration on Children, Youth and Families. (2004). *Child Maltreatment 2002* Washington, DC: US Government Printing Office.
- U.S. Department of Health and Human Services, Administration for Children and Families. (2006). *The AFCARS Report* Washington, DC: US Government Printing Office.
- United States General Accounting Office. (1995). *Child welfare: Complex needs strain capacity to provide services*. Washington: GPO.
- US House of Representatives, Committee on Ways & Means. (2000). *Overview of entitlement programs: The green book*. Washington: GPO Various years.
- Whittington, L., Alm, J., & Peters, H. E. (1990). Fertility and the personal exemption: Implicit pronatalist policy in the United States. *American Economic Review, 80*(3), 545–556.
- Wulczyn, F. H., Hislop, K. B., & Goerge, R. M. (2000). *Foster care dynamics 1983–1998*. Chicago: Chapin Hall Center for Children.