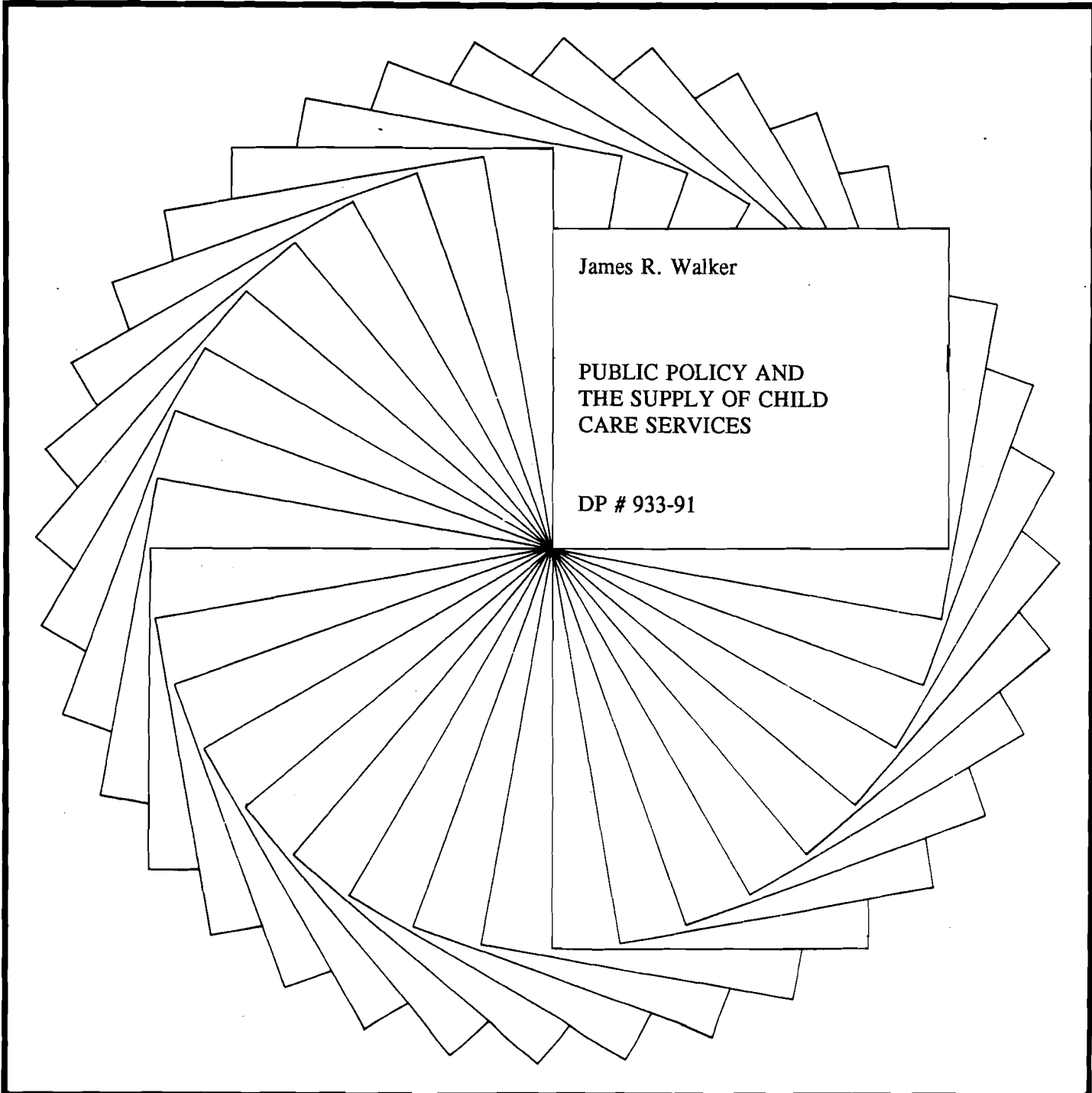




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## Discussion Papers



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PUBLIC POLICY AND  
THE SUPPLY OF CHILD  
CARE SERVICES

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**PUBLIC POLICY AND THE SUPPLY OF CHILD CARE SERVICES**

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## **PUBLIC POLICY AND THE SUPPLY OF CHILD CARE SERVICES**

### **INTRODUCTION**

There is almost a complete absence of reliable statistical evidence on the operation of the child care market, yet one encounters a (seemingly) infinite supply of personal experiences when discussing child care. This and the emotive nature of children's issues make policy discussions on child care spirited if unconstrained by objective evidence. A common perception held by many users and experts is that the child care market functions poorly. This paper evaluates this perception in light of recent evidence on the child care market and particularly on the supply of child care services.

To make this evaluation, I link the informal notion of a poorly functioning market with the formal, precise concept of imperfect markets developed by economists. In the technical language of economists, perfect markets are fully efficient (the ability to produce the most goods and services for the resources available) and exhibit "an absence of regret"--no individual can be made better off without making another individual worse off. Imperfect markets are inefficient and do not possess the desirable "absence of regret" property. Idealized, perfect markets exist only under very restrictive conditions. Failure of these conditions produces market imperfection (sometimes called market failure). By this view, to state that the child care market functions poorly is equivalent to stating that at least one of the conditions required for market perfection is violated. This paper considers the application of these conditions to the child care market.

A complete evaluation of market performance considers efficiency and equity (the distribution of the goods and services to individuals). This paper focuses exclusively on the efficiency of the child care market. This focus is adopted for two reasons. First, economics is most insightful on efficiency issues (i.e., the allocation of scarce resources). Moreover, market efficiency is an objective goal, with widespread support, which lends itself to dispassionate consideration. Second,

because they are not fully efficient, imperfect markets invite political intervention. A systematic review of the sources of market imperfection is, simultaneously, a systematic review of potential targets of government policy. Moreover, many market imperfections cause distributional inequities. Ignorance of the operation of the market inhibits (arguably prohibits) developing effectiveness redistributive programs. Understanding market operation (or equivalently assessing market efficiency) precedes normative policy analysis and design. By concentrating on market efficiency, the paper clarifies the motivation for government intervention in the child care market.

The outline of the paper is as follows. Section 1 presents a brief review of recent patterns of child care usage and cost to provide a context for subsequent discussion. Then, current perceptions of policy concerns are presented. Section 2 initiates the development of an interpretative framework by considering the special features of the child care industry. Section 3 uses these insights and neoclassical economic theory to identify sources of market imperfections. Some discussion is also presented on the expected effectiveness of government intervention into the child care market. Section 4 presents a research agenda of the most important issues.

## **I. CHILD CARE USAGE: RECENT TRENDS AND POLICY ISSUES**

The best recent summary on the general trends of supply and demand for child care in the United States is by Hofferth and Phillips (1987). The most notable of these trends is the increased labor force attachment of women with children. (See also Hayghe, 1986.) From 1970 through 1985 the labor force participation rate of married women with children under the age of three doubled so that in 1985, approximately 51 percent of these women participated in the labor market. The Census Bureau predicts the trend will not abate. This rapid growth rate is only one factor responsible for returning child care to place of prominence on the policy agenda.<sup>1</sup>

Hofferth and Phillips also document that from 1970 through 1985, the use of relative care declined while market care (by centers and by family home providers) increased. Current usage statistics reveal that, for working mothers with preschool children, about one-half of all child care is provided by relatives, a quarter by centers and preschools, and the remaining quarter by family home providers. Furthermore, the mode of care used varies with the age of the child. Centers provide care mostly for preschoolers; family home providers extend care to all ages, and supply most of the market care for infants.

Information on prices in the child care market is scarce; however, a few patterns emerge. For instance, the hourly cost is low. Estimates range from \$1.35 to \$2.50 for center care and from \$1.00 to \$1.30 for family home providers (see Hofferth, 1988; Kisker et al., 1989; Blau, forthcoming), putting the weekly cost of full-time child care between \$40 and \$100. Moreover, recent work by Blau (forthcoming) and Hofferth (1988) reveals that from 1976 through 1985, real weekly household expenditures for child care services remained virtually constant. Not surprisingly, real wages and salaries of child care workers were also low (Blau, forthcoming). In fact, wage levels near the minimum are not unusual in this sector.<sup>2</sup> Moreover, returns to education and experience in the industry appear to be minimal (Riley and Rodgers, 1989; Walker, 1990).

Juxtaposed against the recent trends in child care usage and expenditures is the perception that the child care market does not function well. Such is the concern of David Edie, forcibly expressed in a recent paper (1989):

Low and moderate income families simply cannot afford what it costs to have quality services with reasonably paid workers. This dysfunctional supply and demand system frequently results in inadequate supply, mediocre to poor care and poor wages and high turnover.

Others have noted that the inadequacy of supply is seen in the lack of infant care, evening and weekend care, and care of children with special needs (Hofferth and Phillips, 1987; Kahn and

Kammerman, 1987; Brush, 1987; Kisker et al., 1989). The market seems unable to generate the full array of care that consumers demand.

In trying to meet the rapid increase in the demand for services, many fear the child care industry has been forced to compromise the quality of care it currently offers. The absence of government regulations that enforce minimum care standards intensifies this fear. While all states regulate center care and 48 states regulate family home providers, agency budgets are small, supporting limited enforcement staffs.<sup>3</sup> Moreover, because family home providers caring for less than a prescribed number of children are exempt from regulation in many states, between only 5 and 10 percent are licensed or certified.<sup>4</sup> Child development experts note that quality care also results from stable, child-provider relationships, but high turnover rates among low-paid workers may make such relationships rare (Floge, 1985).

Unfortunately, the trends just presented yield no direct information on the functioning of the child care market. They can indicate either a perfectly competitive or an imperfect market. To demonstrate, consider the constant, real weekly expenditures on child care discussed on page 5. Expenditure, of course, is the product of two terms, the price per unit of the good and the number of units purchased (quantity). These terms reflect, implicitly or explicitly, a given level of quality (e.g., "grade-A" eggs). Expenditures will be constant if the price, quantity, and quality are constant over time. If quantity and quality are constant, then constant expenditures imply that prices are also constant. Similarly, if prices and quality are constant in the presence of a large increase in demand, this too indicates that the market is functioning well: supply is sufficiently forthcoming to meet the increasing demand. However, increased demand may open the market to low-quality providers. Per-unit prices will then decline in response to the decreased quality of care available in the market. In this instance, expenditures are constant but reflect a lower quality of child care by the end of the period. (The real price per unit of quality increased over the reference period.) These two scenarios

illustrate that widespread concern over the availability of quality care may be justified even when expenditures patterns are stable.

As this discussion illustrates, market performance is too subtle to be evaluated using only descriptive statistics; also needed are explicit models of household and firm behavior. Hence, evaluating how well (or how poorly) the child care market functions requires an interpretative framework. This framework is presented in Section 4 where I consider the sources of market failure. In preparation for such a framework, and to provide a perspective on the child care market, I now consider the market's special features.

## **II. SPECIAL FEATURES OF THE CHILD CARE MARKET**

Implicit in many policy discussions is the presumption that the child care market is unique, or at least substantially different from other markets. Identifying its special features will help frame our discussion of the policy instruments available to the government that, if employed, would affect the child care market. In the following two sections, I discuss the specific features that make the child care market unique. These include the multidimensional aspect of the service and relatively low cost of entry, particularly in the family home sector. A third subsection presents some descriptive evidence on these issues.

### **The Multidimensional Nature of Child Care Services**

An obvious yet extremely important feature is that child care services possess many dimensions such as price, convenience, reliability, availability, and quality, to mention only a few. These dimensions include characteristics of the child, the provider, and the service. That is, services are identical only if all the attributes or dimensions which describe the care are identical. Child care arrangements that differ in convenience, reliability, safety, flexibility, learning opportunity, or

nurturing are different services. Children of different ages have different developmental needs which require different mixtures of care attributes. Consequently, the services provided in the care of children of different ages are distinct--infant care is a different service from after-school care or toddler care. Unlike the standard homogeneous "good" of economic textbooks, child care services are heterogeneous.

This product differentiation has two implications for understanding the market. First, because child care services vary on so many dimensions, consumers may trade off various attributes in making their decision. Some consumers, for example, may be willing (at the offered price) to tolerate lower convenience in exchange for greater flexibility; others may be more concerned about a service's reliability than its flexibility; still others may place a higher value on an excellent health and safety record than on a reputation for reliability. The price of child care in part depends upon how consumers value the different attributes of care: both the intensity of consumers' preferences and the number of consumers with identical preferences determine prices. Hence forms of care which are seen as more similar should be better substitutes and should (other factors equal) sell at more similar prices than do less similar services. If two services are not identical they need not sell at the same price. Even if the child care market is perfectly competitive the market will experience price dispersion.<sup>5</sup>

An important aspect of this economic framework is that child care "quality" is only one of the many dimensions of child care. As a short-hand device when considering heterogeneous products, economists typically collapse the multiple attributes of a product under the single label, "quality." (The discussion of the constant expenditures on page 7 is an example.) While convenient for purposes of analysis and a useful expositional device, such a practice unfortunately presents an oversimplified view of the consumer's decision-problem. The use of different terminology, such as "child care services" instead of "quality," recognizes the wider aspect of choice implicit in the



economist's perspective and will clarify and facilitate discussions between economists and professionals from other fields. (As noted by Blau, 1990, economists and developmental psychologists currently use "quality" for two different concepts.)

The second implication product differentiation has for understanding the child care market is that it justifies the diversity of modes currently observed in the market. Different attributes of care may be supplied most effectively by different types of providers. For example, in-home maternal care is one mode, in-home nonrelative care is another, as is the care provided by a family day home or a center. While each mode offers every attribute of care to some degree, one mode can offer a particular attribute more efficiently (least costly) than the others can. For example, a child's cognitive skills may be developed most efficiently by a mother at home whereas a child's social skills may be developed most efficiently at a center. These cost advantages in the provision of care lead to the specialization and diversity observed in today's market. As in other industries, cost advantages are a primary determinant of firm behavior. Unfortunately, knowledge of these relationships, although important, is virtually nonexistent for the child care industry.<sup>6</sup>

### **The Supply of Child Care Services**

An important feature of any industry is the ability of new suppliers to enter. Industries with fewer entry and exit barriers generally have larger responses of quantity supplied to changes in price (supply elasticities) because an increase in price stimulates additional output from existing producers and induces new suppliers to enter. Since capital requirements and regulations are entry barriers, and since family providers face lower capital and regulatory requirements, the supply elasticity of family providers should be greater than that for centers, and greater for unregulated providers than for regulated ones.

Supply elasticities are useful because they summarize information on behavioral responses to changes in market conditions. Since there are different supply elasticities for different modes of child care, policies that affect the price of care will change the proportion of suppliers of different types of care and the attributes of care offered in the market.

Although the preceding discussion makes the usual distinction between households and firms, it is noteworthy that this distinction is somewhat blurred in the child care market: unlike the situation in most markets, consumers and producers are not always distinct. Women can act either as a net consumer or a net producer (Connelly, 1988). As the price of child care increases and the net gain from working declines, women can leave their jobs to care for their children at home. In turn, this shift to parental care puts downward pressure on the price of care (consumers have access to good alternatives). But although there is some evidence that family home providers tend to be women with young children (Hofferth and Phillips, 1987), Blau (forthcoming) estimates that the child care industry (including family providers) employs only about 1 percent of the female work force. Apparently, paid child care is a service few women decide to offer.

Reasons for this choice are fairly obvious. Caring for other children reduces the time available to spend alone with one's own child, and a mother may not want to sacrifice that time, especially for the low wage family providers earn. Moreover, many women simply lack the time (especially when their children are very young) and perhaps the special entrepreneurial skills necessary to run a small business. Finally, a family home provider makes so little money caring for a few children that, absent other sources of income, she cannot afford to take such a job.

### **Some Evidence on the Family Home Care Market**

Family home providers play roles as both consumers and producers and exhibit features of both. As producers, they maximize profits, while as consumers they maximize utility (which may not

yield maximum profits). But is one role played to the exclusion of the other? Data collected from the Child Care Supply and Needs Survey fielded in 1988 by Mathematica Policy Research for the U.S. Department of Health and Human Services helps answer this question (see Tables 1 and 2). The markets covered were in Newark, New Jersey, Camden, New Jersey, and South Chicago, Illinois. This survey is one of the few sources of information on the characteristics of the family providers and the care they offer.<sup>7</sup>

Summary statistics on several characteristics are presented in Table 1. Table 2 summarizes the educational attainment of family providers (Panel A), and offers a comparison with local educational attainment levels reported in the 1980 Census (Panel B).

Before reviewing Tables 1 and 2, it is important to note that at the time of the survey, the regulatory environments differed in New Jersey and Illinois. Family providers in Illinois caring for four or more children were required to be licensed; in New Jersey, family providers could voluntarily register with the state. Consistent with national estimates, approximately 7 percent of all family providers in South Chicago were licensed. Because of the newness of the program, less than 5 percent were registered in New Jersey.

Panel A of Table 1 reports the number of children under care per establishment (i.e., all children excluding the provider's own). Regulated providers, not surprisingly, care for more children on average. Differences in the average number of children under care per establishment among unregulated providers (in Newark, Camden, and South Chicago) are small. The unregulated providers care for about two children on average; in fact, one-third to almost one-half care for only one child. Unregulated providers appear to offer a form of care that is intensive in the time of the provider.

The statistics on child-to-staff ratios reported in Panel B of Table 1 support this view. (A provider having no helpers and caring for one child will have a ratio of one.) Unregulated providers

Table 1

Measures of Establishment Size, Child-Staff Ratios, Experience,  
Child Care Earnings, and Commitment to the Profession for Family Providers in  
Newark, N.J., Camden, N.J., and South Chicago, Ill.

Panel A  
Number of Children per Establishment

Statistic	Newark	Camden	South Chicago (Unlicensed)	South Chicago (Licensed)
Mean	1.98	2.32	1.99	5.66
Std dev	1.01	1.88	1.31	2.45
Number of providers	85	119	106	144
Percentage of providers with:				
1 child	35.0	46.6	47.9	1.1
4 or more children	8.0	16.6	14.9	70.9
8 or more children	0.2	3.0	0.0	5.0

Panel B  
Child Hours to Provider Hours

Statistic	Newark	Camden	South Chicago (Unlicensed)	South Chicago (Licensed)
Mean	1.77	1.47	1.66	3.09
Std dev	0.83	0.75	0.92	1.07
First quartile	1.00	1.00	1.00	2.16
Median	1.89	1.26	1.50	3.00
Third quartile	2.01	2.00	2.00	4.75
Interquartile range	1.01	1.00	1.00	2.59

(table continued)

Table 1 (Continued)

Measures of Establishment Size, Child-Staff Ratios, Experience,  
Child Care Earnings, and Commitment to the Profession for Family Providers in  
Newark, N.J., Camden, N.J., and South Chicago, Ill.

Panel C  
Years of Experience

Statistic	Newark	Camden	South Chicago (Unlicensed)	South Chicago (Licensed)
Mean	7.3	6.6	5.3	10.2
Std dev	8.2	8.3	7.0	9.8
First quartile	1.8	1.0	1.4	2.5
Median	4.0	3.0	3.0	8.0
Third quartile	10.0	10.0	5.0	15.0
Interquartile range	8.2	9.0	3.6	12.5

Panel D  
Annual Gross Earnings from Child Care  
(In units of \$1,000)

Statistic	Newark	Camden	South Chicago (Unlicensed)	South Chicago (Licensed)
Mean	3.3	3.9	4.1	9.9
Std dev	3.7	4.6	5.8	5.5
First quartile	.6	1.1	1.0	6.1
Median	2.1	2.2	2.4	9.7
Third quartile	5.0	5.1	4.7	13.6
Interquartile range	3.4	4.1	3.7	7.7

(table continued)

Table 1 (Continued)

Measures of Establishment Size, Child-Staff Ratios, Experience,  
Child Care Earnings, and Commitment to the Profession for Family Providers in  
Newark, N.J., Camden, N.J., and South Chicago, Ill.

Panel E  
Commitment to the Profession

	<u>Percentage Responding Yes</u>			
	Newark	Camden	South Chicago (Unlicensed)	South Chicago (Licensed)
Member of Family Care Association	0.0	3.2	0.0	0.0
Wants to be in a directory	57.5	33.2	27.4	68.6

Source: The Child Care Supply and Needs Survey (1988).

Notes: In Panel B, children of all ages are included in the numerator of the ratio. Provider hours include the hours of all individuals reported as helping with the care of children. In Panel D, annual gross earnings from child care is defined as (weekly revenue - cash payments to helpers) times (number of weeks/yr of care).

Table 2

## Frequency Distribution of Educational Attainment

Panel A  
Family Providers in Newark, N.J., Camden, N.J.,  
and South Chicago, Ill.

Education Level	Newark	Camden	South Chicago (Unlicensed)	South Chicago (Licensed)
Less than high school	47.1%	42.9%	29.0%	19.4%
High school graduate	31.8	24.1	39.0	37.5
Some college	20.0	31.3	30.0	42.4
Post college	1.2	1.8	2.0	0.7
Courses in child development	25.9	33.0	35.0	63.2
Special training in child development	23.5	29.0	20.0	56.9

Panel B  
Persons 18 Years and Older  
(1980 Census)

Education Level	Newark	Camden	South Chicago
Less than high school	41.5%	34.8%	30.9%
High school graduate	35.3	37.9	37.8
Some college	13.0	14.3	18.8
College degree	5.9	7.9	7.3
Postcollege	4.2	5.0	5.2

Notes: Percentages in Panel A are from The Child Care Supply and Needs Survey (1988). Years of schooling reported in Panel B are weighted by the sampling frequency of the zipcodes appearing in The Child Care Supply and Needs Survey (1988).

care for only about half as many children per hour as do licensed providers.

Summary statistics on years of experience are reported in Panel C of Table 1, while educational attainment is reported in Table 2. Experience and education are offered as (perhaps crude) measures of the quality of labor input. Licensed providers have a distinct advantage: they have twice the experience of unregulated providers on average (as measured by the median), are less likely to have dropped out of high school, and are slightly more likely to have some college experience. (The proportion of high school dropouts [the national average is roughly 10 percent], especially among unregulated family providers, is indeed disturbing.) In addition, licensed providers are twice as likely to have had special training or courses in child development.<sup>8</sup> Recall, however, that the Child Care Supply and Needs Survey surveyed only metropolitan areas. To adjust for the composition of the sample, Panel B of Table 2 reports the educational attainment from the 1980 Census for these areas weighted by zipcode to match the sample composition of the survey. A comparison of Panels A and B suggests that the educational attainment of family providers still generally reflects the educational patterns in their neighborhoods.

Panel D of Table 1 reports gross earnings of family providers. Only wages paid to helpers have been deducted; the other expenses connected with providing services have not and consequently the figures in Panel D overestimate earnings. Nevertheless, the mean and median reported in Panel D are consistent with the low wages child care workers earn, as discussed in Section 2. Licensed providers make two to three times the annual earnings of unlicensed providers. In fact, earnings in the first quartile for licensed providers exceed the third quartile earnings of unregulated providers. This earnings distribution is consistent with the distribution of children under care reported in Panel B. The difference between licensed and unlicensed providers is most evident in terms of income: licensed providers earn little; unlicensed providers earn even less.



Finally, Panel E of Table 1 presents some evidence on degrees of attachment to the profession. The first row reports the percentage of family providers who are members of the Family Care Association. (Membership in this association is considered to indicate a level of commitment to the profession.) Practically speaking, only licensed providers are members; in fact, none of the unregulated providers in Newark or South Chicago are. The second row reports the percentage of each group willing to be listed in a child care directory (another sign of commitment). Although the difference between licensed and unlicensed providers is not as striking here, licensed providers still show a greater willingness to be listed (compare the responses in Chicago). Experience within the profession is yet another measure of attachment. The greater experience levels of licensed family providers reported in Panel C are consistent with the responses in Panel E.

To answer the question, "What is the correct characterization of the behavior of family providers?," my interpretation of the patterns reported in Tables 1 and 2 is that both pure types exist. And, for policy purposes, the categories can be distinguished by their regulatory status: licensed family providers appear to be "profit maximizers" while unlicensed providers appear to be "utility maximizers," not interested in maximizing their income from child care.

The substantial heterogeneity of family providers has two important policy implications. First, regulated family providers are not representative of all family home providers; therefore, inferences drawn from samples of only regulated providers will be biased. For example, because they already (or more closely) adhere to existing regulations, it may be less costly for licensed family providers to satisfy additional, more stringent ones. For this group, compliance rates may be high and exit rates, induced by the regulations, low. Similarly, for unregulated providers, the cost of meeting new regulations (if enforced) may be prohibitive; unlicensed providers will either cease providing services or go (deeper) underground to avoid detection. Again, although regulated

providers are easier to sample, inferences drawn from such highly selective samples will be misleading; therefore, samples must include regulated and unregulated providers.

Second, the low earnings of family providers in general, and their implied preference of child care as an item of consumption ("utility maximization") rather than a source of income, seriously limit the ability of unregulated providers to make investments that would improve the quality of the care they provide. Minimum standards (e.g., stricter building requirements) impose a cost on providers and may, as discussed above, severely affect supply (withdrawal) or compliance (evasion). Regulatory policy must therefore operate on a razor's edge.

These differences between providers and the wide variety of services available in the market make the coordination of buyers and sellers complex. Any analysis of the child care market entails an analysis of several distinct but related services. A coordination problem in any of these services may perpetuate the perception that "the child care market does not work well." In the next section I review this and other sources of market imperfection.

### **III. SOURCES OF MARKET IMPERFECTION**

To study market imperfections, it is useful to have the concept of a perfect market as a reference point. Our guide is the first law of welfare economics: that if firms and households act competitively (i.e. are price-takers and not monopolists), and have complete information, and if a full set of markets exists, then the market will be efficient (Atkinson and Stiglitz, 1980, p. 343). That is, the market will tend toward an equilibrium in which no one can be made better off without making someone else worse off. This is the standard efficiency result of competitive markets and is a formal statement of Adam Smith's "invisible hand." Market imperfection occurs when one or more of these conditions are violated. Although boundaries between causes of market imperfection are blurred (a

violation of one condition produces violations of the others), the conditions of the theorem provide a useful framework for reviewing possible forms of imperfection in the child care market.

In identifying a market imperfection, one identifies a potential target of government intervention, and not, contrary to what is said in the child care advocacy literature, a mandate for it. The latter requires additional evidence that intervention will be effective. In the presence of a market imperfection, support for government intervention requires some evidence that the government can avoid the problems which induced the imperfection in the first place. In the following discussion I highlight two areas in which government intervention may not be effective.

### **Noncompetitive Behavior**

Noncompetitive behavior traditionally results when a firm or household is no longer "small" in comparison with the market and its actions affect the market price (market power). Classic examples are monopolies (one seller) and monopsonies (one buyer). Competitive firms have no market power and must take the market price as given; any attempt to charge more results in the loss of all customers (consumers know plenty of identical firms willing to sell the product at the market price). But when the market structure is characterized by product differentiation and a large number of firms, all with some market power, the result is known as monopolistic competition. Issues normally associated with monopolistic competition are inefficient production and brand proliferation. Inefficient production occurs when firms act like monopolies and set prices above marginal cost; brand proliferation occurs as firms seek to carve separate niches in the marketplace. The welfare cost to society of these noncompetitive acts depends on the exact structure of the market (Tirole, 1988, p. 288). Generally, however, as the number of firms increases, welfare costs of monopolistic competition decrease. Returning to the child care market, since home production is another form of care, the inefficiency introduced by monopolistic competition is small (there are a large number of

potential providers). Viewing the child care industry as monopolistically competitive raises a question as to the source of the market power of providers. In the next section, I argue that child care providers have market power because of imperfect information.

### Imperfect Information

The lack of perfect information is the most striking difference between the child care market and the idealized perfect market. There are two reasons why imperfect information exists. First, unlike the consumers described in economic textbooks, child care users do not know the identity of every potential supplier. Information is obtained informally and consumers must actively search to find a provider. Second, consumers do not know the quality of care offered by providers once identified. Even after a long period of use, consumers will not be fully informed about the behavior of the provider. Both forms of uncertainty have important implications for market performance.

An important aspect of the child care industry is the informal way in which information is obtained about providers. According to the responses recorded in Table 3, approximately 75 percent of all users either know their provider personally beforehand or are referred via friends, neighbors, or relatives. More formal sources, such as newspapers and referrals by community agencies and caseworkers, are less widely used. These results suggest that once informal leads are exhausted, consumers may have limited information to help them locate adequate child care. Consumer awareness on the amount of time and effort required to find an adequate provider perpetuates the notion that the "child care market does not function well." The willingness of consumers to search for a family provider depends on the expected ease of finding one, as well as the availability and characteristics of alternative forms of care. Women with partners or relatives available to help with care are less likely to search, as are women with strong preferences to stay home and care for their own children. Consequently, women with limited access to market care and women with good

Table 3

## How Users First Learned of Providers

	Newark		Camden		South Chicago	
	Center	Family Provider	Center	Family Provider	Center	Family Provider
Referrals from friends/ neighbors/relatives	66.5%	57.7%	53.2%	45.9%	52.7%	55.4%
Already knew provider	14.5	27.8	7.0	28.5	21.6	18.6
Newspapers and advertisements	7.8	6.6	20.3	15.1	6.3	14.6
Referrals from community agency (not caseworker)	3.3	2.7	2.7	2.1	4.1	6.2
Referrals from caseworker	0.0	0.0	5.7	1.4	1.3	0.9
Cared for older child	0.0	0.0	3.6	0.0	0.3	0.0
Other	7.9	5.2	7.5	7.0	13.7	4.3

Source: The Child Care Supply and Needs Survey (1988).

alternatives to market care may both report that a long time was needed to find "adequate" market care. An important task for future research will be to distinguish between these two groups of women.

To lower search costs, policy makers frequently recommend programs to fund resource and referral agencies that help match users and providers. The success of these programs hinges on their ability to maintain comprehensive and accurate lists of providers in each neighborhood. The responses reported in Table 4 suggest that unregulated family providers are quite passive in seeking clients. More than half of the unregulated family providers report taking no steps to find clients. Consistent with the results presented in Table 3, most providers make contact with users through referrals from friends, neighbors, and relatives. A comparison of the actions taken by licensed and unregulated providers suggests that the latter are unwilling to reveal their identity to third parties. (Most striking in this regard is the difference between licensed and unlicensed providers in S. Chicago.) This unwillingness works against resource and referral programs. The small size of most family providers and the informal manner in which information is obtained also work against detection. Furthermore, high turnover rates among unregulated providers make referral lists costly to maintain. In summary, high turnover rates among family providers because of low wages and the difficulty of identifying those not registered inhibit any referral program. These considerations suggest that government intervention on behalf of referral programs may not be effective. The second reason why imperfect information exists for all firms (and persists for as long as the child is in care) is that consumers are imperfectly informed about the attributes of care and the effort of the provider, because, as with other services, it is difficult for consumers to monitor the producer. The provider can be interviewed and the facilities inspected, yet the consumer can never be perfectly informed about the care their child receives.<sup>9</sup>

Table 4

## Actions Taken by Family Providers to Find Clients

	Newark	Camden	South Chicago (Unlicensed)	South Chicago (Licensed)
No steps	54.8%	53.3%	56.1%	29.1%
Referrals from friends, neighbors, and relatives	19.4	17.4	16.2	45.7
Newspapers and advertisements	9.0	17.5	2.7	30.6
Referrals from community agency (not caseworker)	0.0	1.2	2.7	22.8
Bulletin boards	2.5	2.1	2.3	25.8
Talk to families with children	2.3	1.2	0.9	8.6
Referrals from caseworker	1.5	0.2	0.0	5.9

Source: The Child Care Supply and Needs Survey (1988).

Notes: Some providers may take more than one action to find clients. Column percentages may sum to more than 100.

A key feature of this imperfection is that consumers know less about the quality of care than do providers. Well-studied in the economics literature, this informational problem is separated into two types: adverse selection and hidden action (moral hazard). In models of adverse selection, potential providers have no control over quality, but decide, depending on market conditions, whether to enter the market. Adverse selection occurs if only low-quality providers enter the market (high-quality providers have better opportunities outside the child care market).<sup>10</sup> Notice that market quality of care is "low" because the average ability of providers entering the industry is "too low," not because providers defraud or cheat consumers. In models of hidden action, providers control their quality of service. Furthermore, it is assumed that higher quality care is more expensive to produce. "Moral hazard" occurs when providers cheat in their provision of quality: they defraud consumers who cannot perfectly monitor them.

Adverse selection and hidden action can occur simultaneously and can affect both family providers and centers. With centers, the potential for adverse selection is perhaps lower than that for providers, while the potential for hidden action is higher. Center care is more closely regulated: their facilities should conform to minimum standards set by the industry, and the members of their staff must have formal child care training. Thus, low-quality centers should be few and the potential for adverse selection slight. The day-to-day action of the staff, however, can not be monitored so easily; therefore, the potential for hidden action is (theoretically) high.

With family home providers, the situation is reversed: the potential for adverse selection is perhaps higher, while that for hidden action is lower. Because of the low wages family providers earn, individuals with more marketable skills will seek employment in other fields. Thus, low-skill individuals are most likely to become family providers; the potential for adverse selection is relatively high. However, if a family provider cares for her own child while caring for another's, any malfeasance will jeopardize her own child's welfare; thus, the presence of one's own child guards against



shirking. Also, the apparent lack of interest on the part of providers in maximizing income makes it unlikely that they will cheat or mistreat children to save a few dollars.

Leland (1979) considers the problem of adverse selection and Shapiro (1986) that of hidden action as they both investigate the effects of occupational licensure on the provision of professional services. In the model by Leland, licensure restricts lowest-quality providers from entering the market; thus average provider quality increases as does market price.<sup>11</sup> Leland finds that minimum quality standards will be more advantageous to consumers under the following conditions: (1) the price elasticity of demand is low; (2) demand is sensitive to variation in quality; (3) the marginal cost of providing quality care is low; and (4) consumers place a low value on low-quality service. Whether these conditions are met by the child care market (and perhaps most particularly by the market for family provider care) is an empirical issue; nevertheless, two speculative observations are offered. First, since child care can be produced at home, the price elasticity of demand for care may be large (violating condition (1)). Second, the apparent inability of family providers to obtain a return for increased training implies that demand is not sensitive to variations in quality variation (violating condition (2)).

Shapiro's model (1986) recognizes that because of information problems, regulations control inputs and, indirectly, the quality of service, while providers control quality through investments in training. Since occupational licensure establishes minimum educational requirements, individuals with the highest level of training are assumed to produce the highest quality of service. Licensed providers establish a reputation for the provision of high-quality care. Any licensed provider caught shirking is deemed (now and forever) to be a low-quality provider.

Two predictions emerge from this model. First, licensed providers must receive a premium to cover the cost of training and education. Indeed, the potential loss of this premium dissuades providers from shirking. Second, regulations benefit consumers who value quality more than those

who do not, and raise the cost (and the level) of the lowest-quality of service available. Individuals previously satisfied consuming this lowest-quality service must purchase, after regulation, care from "overtrained" professionals at a higher price. No empirical studies of the fee structure of centers exist as of yet that evaluate these predictions.

Two important caveats must be noted here that may negate predictions derived from these models. First, both models assume that quality is unidimensional. Under this assumption it is meaningful to speak of "high-" versus "low-quality" providers. Such simple categories vanish once quality is permitted to have more than a single dimension. Second, the models assume that care standards are costless to enforce. This is impossible, however, especially in the case of family providers. Since only providers caring for more than a prescribed number of children are regulated, licensure can be avoided by caring for a number of children below that prescribed. Monitoring the remaining providers required to be licensed is certainly not free (nor easy). Indeed, since it is so costly, the provocative question arises: Do government agencies possess an advantage in monitoring compliance? The answer appears to be no. Without the same access to the informal sources of information, and with their limited enforcement staff, government agencies may be less efficient at monitoring compliance than an individual consumer may be.

A license is an indication of high-quality service.<sup>12</sup> But a family provider caring for her own child while caring for another's can indicate high-quality service, too (the potential for hidden action is low). In fact, this may be a more reliable indicator than licensure or certification. The use of volunteers may lower the potential for hidden action in centers, too, and hence encourage high-quality service.<sup>13</sup> Therefore, information problems exist, but it is not certain that licensure is an effective remedy for them. The models of Leland and Shapiro provide useful frameworks but must be modified to be fully applicable to the child care market.

### Incomplete Markets

The last source of market imperfection is incomplete markets. Complete markets exist when any individual is able to exchange any good, either directly or indirectly, with any other individual (Wilson, 1987, p. 180). Implicit in this definition is that the exchange is possible at some price. For an exchange not to occur, however, does not necessarily indicate incomplete markets; a lack of exchange may only mean that the price consumers are willing to pay for a good is less than the cost of producing it.

Many examples of incomplete markets involve the inability to arrange trades across time periods. (Complete markets require the ability to exchange goods now and in the future.) A classic example, tailored to the child care market, is as follows. Suppose that women will enter the labor force only if center care is available. Furthermore, assume that the construction of child care centers requires substantial investment and planning. Now, if women cannot reveal their future demand for center care, no construction of child care centers will occur. Center care will not be available, and an incomplete market will result. If a future market for day care slots exists, however, consumers can reveal their demand for future care by paying now for the right to a day care slot in the future period, and the market becomes complete. The existence of incomplete markets depends directly upon current institutional forms, including the establishment of property rights, trading mechanisms, and costs of exchange. The present example illustrates that the absence of complete markets frequently reflects another form of market imperfection.

Another common source of incomplete markets is "externalities." An externality is any action by an individual or firm that directly affects others beyond any effect communicated by the price system (Atkinson and Stiglitz, 1980, p. 8). Water pollution is a classic example of a negative externality. The polluting manufacturer, in determining a production plan, considers only the value of the output and not the cost of the pollution on others. Externalities give rise to incomplete markets

in the following sense. Expansion in the number of markets, through the assignment of property rights, sometimes solves problems caused by externalities.<sup>14</sup>

Concern over externalities plays a major role in policy discussions of the child care market. To recognize this, view child care as a form of education. Just as underinvestment in education by some households exerts negative effects on others, so would underinvestment in the quality of child care.<sup>15</sup> Issues and problems generated by externalities are important. However, there is little consensus on the appropriate remedies for externalities.<sup>16</sup>

Incomplete markets need not eliminate all transactions, but imply that some individuals will be unable to make their desired transactions. Indeed, the most frequent complaint made against centers is of rationing: some consumers who would like to use center care cannot and must queue for care. Of consumers who queue for care, some eventually receive center care, while others never do. Queues and waiting lists can indicate rationing and an undersupply (excess demand) of center care. Implicit is that this undersupply is persistent. Yet, as the following discussion reveals, queues can arise for several reasons, of which long-run excess demand due to incomplete markets is only one.

At a fundamental level, services cannot be stored. Queues (waiting lists) are a way to smooth fluctuations in demand. Also, queues can reflect only short-run phenomenon. If there are adjustment costs, an otherwise well functioning market requires time to adjust to changes in the environment. For example, an increased demand for center slots (generated perhaps by increased consumer subsidies) cannot be met immediately; time is required for existing centers to expand and new ones to open. In the short run, queues exist as supply expands. While possible, this scenario does not accord with the special features of the child care industry. Low capital requirements and minimal care regulations permit substantial flexibility by potential family providers. The industry is not characterized by the long investment lead times connected with adjustment costs. Moreover, slow supply adjustments to changes in demand should increase prices and wages. Blau's (forthcoming)

evidence, cited earlier, indicates that this does not occur. To the extent that queues exist for child care they are not the result of adjustment costs.

A further analogy to the education industry may be used to support the argument that queues are productive. Colleges and universities use queues (applications), yet few would argue that college and universities are in short supply. For a school, queues provide a means by which demand is smoothed and a preferred mix of student attributes is maintained. When application costs are low, gains from acceptance high, and a substantial uncertainty of acceptance exists, a student need not spend much time determining whether a particular school is her most preferred school. Rather the student applies to several schools, waits for acceptance, and then, with knowledge of all the available alternatives, selects a school. For schools and for prospective students, queues are productive.

In this example, apparent demand (the sum of all the waiting lists) far exceeds actual demand (number of individuals seeking acceptance); thus, waiting lists are a poor measure of actual demand. Moreover, knowing the queue discipline--who is served and how waiting lists are processed--is an important datum for evaluating supplier behavior. Child care centers may use queues for the same reasons as do other selective educational institutions.

Child care centers are also similar to colleges in a way that provides another motivation for using queues and waiting lists: many are highly subsidized by private groups or the government, so that fees charged do not reflect the total cost of providing the service. In these circumstances, queues may serve the role of prices which are unable to adjust to the excess demand because of the regulations imposed by the subsidizing agency. In the child care market, for example, many churches subsidize day care centers by renting space at zero or below market rental fees. Volunteer labor can also offset the cost of service, as can government subsidies such as the Child Care Food Program.

Although for-profit and nonprofit organizations can receive subsidies, the work of Weisbrod (1988) suggests that the latter have greater access to subsidies. Assume for the sake of argument that

this is true. Also assume (as seems plausible) that since nonprofit organizations have a greater number of objectives than just profit maximization, the number of slots and the prices charged by nonprofit centers will not be determined by the market. Consequently, a limited number of slots priced below the market can be offered by nonprofit centers. For-profit institutions, facing the same operating costs but with less access to operating subsidies, can not offer the same price, and therefore must compete on nonprice dimensions. For example, they may offer quicker (if not immediate) access to child care. If true, then prices and queues will be used to allocate the limited number of fixed-price slots. Individuals wanting quicker access to center care will then pay the higher price and use for-profit center care; those who can wait and those who are most price sensitive queue for care by applying for a slot at a nonprofit center. In equilibrium, prices and queue lengths balance the demand for with the supply of low-cost and high-cost slots.<sup>17</sup>

## V. FUTURE RESEARCH

The preceding discussion has used the first law of welfare economics to identify several potential sources of imperfection in the child care market. Future research remains to determine whether these imperfections indeed exist. The variety of explanations proposed to rationalize the recent trends of expenditures, wages, and usage in the child care market illustrate how little we know about its operation. What issues seem to be the most pressing? To focus my comments, I limit my answer to three.

1. Unidimensional notions of child care "quality," while conventional and convenient, are misleading. We must recognize the multidimensional nature of child care and define precisely the attributes of care under evaluation. The diversity of suppliers existing in the market can be understood only by recognizing these many dimensions. Such recognition will eliminate simple notions such as "low-" and "high-" quality providers, while recognizing the many attributes valued by consumers. Since output measures of quality are impossible to define and quantify, I urge economists to adopt an input-based measure of quality, similar to the one in the developmental psychology literature. A focus on inputs naturally leads to studying the process of child care.

2. Knowledge of costs and supply elasticities for each mode of care is needed. Even in competitive markets, knowledge of supply and demand elasticities are required to evaluate the effect of policy changes on market prices (and consumer welfare). Measuring these elasticities requires knowledge of several factors, including entry and exit barriers. Only through this information, in conjunction with studies of demand, can we assess whether policies operate through the demand or supply side of the market.
3. Knowledge of behavioral differences between regulated and unregulated providers is also needed. What is the effect of regulations on the provision and characteristics (especially quality) of the services offered by family providers and on their decision to remain in the unregulated sector? We do not know. Clearly such knowledge is central for designing appropriate regulations. Concerning the behavior of centers, additional studies are needed to determine how the combination of nonprofit and for-profit firms influences market outcomes (e.g., the attributes of care offered or the pricing policies used). Additional studies are also needed to assess whether queues for center care are productive or merely reflect long-run excess demand.

Decision makers are forced to act. The proposed research agenda will increase the knowledge required to evaluate the operation of the child care market and how effective government intervention would be. Perhaps the economist's primary contribution to public policy discussions is the recognition and acceptance that policies directly and indirectly affect behavior. The better we understand the behavior of child care consumers and providers the better chance we have of reducing any unintended consequences of interventions in the marketplace. This paper has presented many conjectures on the behavioral relationships that lie behind the descriptive statistics summarizing our knowledge of the child care market. The fact that many different interpretations are plausible indicates how limited our knowledge currently is; better data and improved behavioral models are needed to determine which interpretation is correct. Therein lies the challenge of future research.

## Notes

1. Another contributing factor is the 1988 Family Support Act, which requires women with children ages three and older to work, train, or enroll in school to retain eligibility for AFDC benefits.
2. Using a recent survey of day care establishments in Wisconsin, Riley and Rogers (1989) estimated that the average starting hourly wage for an assistant teacher (the entry level position) at a day care center was \$3.94; the average hourly wage for an assistant teacher was \$4.12; teachers (individuals with full responsibility for children) averaged about \$5.00 per hour.
3. According to a recent U.S. Government Accounting Office report (1989), 26 states license family providers, 14 have mandatory registration, three have voluntary registration, and five regulate only subsidized family providers.
4. The prescribed minimums vary considerably: family home providers caring for three or more children are regulated in 22 states, those caring for four or more in 17 states, and those caring for five or more in nine states.
5. As noted above, price and expenditure are distinct concepts. This discussion refers to price.
6. Mukerjee, Witte, and Hollowell (1990) is an initial study in this area.
7. An interesting feature of the survey is that both sides of the child care market are covered. For a detailed discussion of the survey, see Kisker et al. (1989).
8. Unlike other states, licensure in Illinois requires no minimum standards for education or training. Family providers must only be at least eighteen years of age and of "good moral character." Almost all of the regulations apply to the facilities, not the family provider themselves.
9. In his remarks made at "The Economics of Child Care," May 16, 1990, at The University of North Carolina-Chapel Hill, Richard Clifford noted that study teams have observed that centers tend to change children's diapers just prior to pick-up by the parents. Also, when questioned by parents on staff shortages, center staff tend to underreport the duration of the (temporary) shortfall.
10. In these models, the value of the provider's next best opportunity is the relevant cost of quality.
11. Leland's model is an application of the insight of Akerlof's (1970) model on the used car market. Demand for the service depends on its price and the average quality of the service in the market. Market failure occurs because the market rewards average quality while providers seek a return on marginal quality. For higher-quality providers, the value of their marginal quality exceeds the average quality in the market. Consequently, the higher-quality providers work elsewhere. In the extreme case, no providers enter and there is complete market failure. In general, the extreme case need not occur, as there will be only some reduced (suboptimal) provision of care.
12. For consumers, the license does not seem to separate high- from low-quality providers. In South Chicago, only 7 percent to 10 percent of all family providers are licensed, yet over 30 percent of those who use family providers state their provider is licensed.



13. To ensure a quality environment for her child, a volunteer will provide quality care to other children. Moreover, efforts to increase volunteer involvement also signal that the care establishment is of a sufficiently high quality to withstand continued parental inspection.
14. Taxes and subsidies represent another solution. Which method is used to correct the externality depends on the viability and enforceability of each. In the water pollution example, the creation of a market for "pollution rights" expands the set of markets and incorporates the pollution externality within the price system (Laffont, 1988, p. 14).
15. See Crawford and Pollak (1990) for an extensive discussion of this and related issues.
16. However, as in many educational issues, taxes and subsidies are common policy instruments. No one takes seriously a proposal that, in addressing underinvestment in child care quality, defines "child quality rights" as analogous to the "pollution rights" mentioned above.
17. If nonprofit centers are viewed by consumers as offering higher-quality care, then the demand for nonprofit slots will be even greater. The equilibrium queue length will be longer, relative to the one described in the text.

**References**

- Akerlof, G. 1970. "The Market for Lemons." Quarterly Journal of Economics 84: 488-500.
- Atkinson, A. and J. Stiglitz. 1980. Lectures in Public Economics. New York: McGraw Hill Publishing Co.
- Blau, D. 1990. "The Quality of Child Care: An Economic Perspective." Unpublished manuscript, University of North Carolina, Chapel Hill.
- Blau, D. forthcoming. "The Child Care Labor Market." Journal of Human Resources.
- Brush, L. 1987. "Child Care Used by Working Women in the AFDC Population: An Analysis of the SIPP Database." Unpublished manuscript, McLean, Virginia.
- Connelly, R. 1988. "The Barriers to Increasing the Supply of Quality Affordable Child Care." Unpublished manuscript, Bowdoin College, Brunswick, Me.
- Crawford, D. and R. Pollak. 1990. "Child Care Policy." Unpublished manuscript, University of Washington, Seattle, Wash.
- Edie, D. 1989. "Public Policy Crossroads: Child Care and Early Education in Wisconsin." Bureau of Children, Youth and Families, Department of Health and Social Services, Madison, Wis.
- Floge, L. 1985. "The Dynamics of Child-Care Use and Some Implications for Women's Employment." Journal of Marriage and Family (February): 143-154.
- Hayghe, H. 1986. "Rise in Mothers' Labor Force Activity Includes Those with Infants." Monthly Labor Review (February): 43-45.
- Hofferth, S. 1988. "The Current Child Care Debate in Context." Unpublished manuscript, National Institute of Child Health and Development, Bethesda, Md.
- Hofferth, S., and D. Phillips. 1987. "Child Care in the United States, 1970 to 1995." Journal of Family and Marriage 49 (August 1987): 559-571.

- Kahn, A. and S. Kammerman. 1987. Child Care: Facing the Hard Choices. Dover, Ma.: Auburn University House Publishing, Inc.
- Kisker, E., R. Maynard, A. Gordon, and M. Strain. 1989. "The Child Care Challenge: What Do Parents Need and What is Available in Three Metropolitan Areas." Report prepared for Department of Health and Human Services by Mathematica Policy Research, February, 9, 1989.
- Laffont, J.-J. 1988. Fundamentals of Public Economics. Cambridge, Ma.: MIT Press.
- Leland, H. 1979. "Quacks, Lemons, and Licensing: A Theory of Minimum Quality Standards." Journal of Political Economy 87: 1328-1346.
- Mukerjee, S., A. Witte, and S. Hollowell. 1990. "Provision of Child Care: Cost Functions for Profit-Making and Not-For-Profit Day Care Centers." Working paper #3345, National Bureau of Economic Research.
- Riley, D., and K. Rodgers. 1989. "Pay, Benefits and Job Satisfaction of Wisconsin Child Care Providers and Early Education Teachers." Report to the Wisconsin Early Childhood Association, Madison, Wis.
- Shapiro, C. 1986. "Investment, Moral Hazard, and Occupational Licensing." Review of Economic Studies 53: 843-862.
- Tirole, J. 1988. The Theory of Industrial Organization. Cambridge, Ma.: MIT Press.
- U. S. General Accounting Office. 1989. "Child Care: Government Funding Sources, Coordination and Service Availability." October, GAO/HRD-90-26BR.
- Walker, J. 1990. "New Evidence on the Supply of Child Care: A Statistical Portrait of Family Providers and An Analysis of Their Fees." Unpublished manuscript, University of Wisconsin, Madison, Wis.
- Weisbrod, B. 1988. The Nonprofit Economy. Cambridge, Ma.: Harvard University Press.

Wilson, C., (1987) "Incomplete Markets." In The New Palgrave: Allocation, Information and Markets, edited by J. Eatwell, M. Milgate and P. Newman. New York, New York: W. W. Norton and Company.