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# The Market for Child Care

H. Naci Mocan\*

Recent research reveals a positive relationship between cognitive skills and labor market success.<sup>1</sup> Developmental psychologists argue that the cognitive, social, and emotional development of children is enhanced by exposure to high-quality child care and is harmed by low-quality care.<sup>2</sup> Given the relationship between the quality of child care, child outcomes, and children's future labor market achievement, it is critical to develop an understanding of the way the child care market operates and how it relates to quality. The issue is important because the average quality of center-based child care provided in the United States is thought to be mediocre, especially compared to the quality of care provided in other developed countries.<sup>3</sup> As a result, there is significant interest both at the federal and state levels in devising mechanisms to improve the quality of child care in this rapidly growing market.<sup>4</sup>

One main strand of my research focuses on the child care industry. From 1990 to 1993 I was a member of an interdisciplinary team that collected data from a stratified random sample of approximately 100 child care centers in Colorado, North Carolina, Connecticut, and California.<sup>5</sup> These data include very detailed information on classroom, staff, and center characteristics, as well as information about the parents of children attending the centers. Although center-based child care constitutes only 30 percent of all child care arrangements,<sup>6</sup> it is the sector which has the most detailed and reliable data, particularly for the analysis of provider behavior.

Using this dataset, my research addresses issues such as: the behavior of firms in supplying quantity and quality of child care services; the behavioral differences between for-profit and nonprofit providers; the determinants of child care workers' wages; the production of quality in child care centers; the determinants of fees; and the analysis of information asymmetry between parents and providers.

## Quality and Quality Production

There are two distinct but related concepts of quality in child care.<sup>7</sup> One is "structural quality," which describes the child care environment measured by such variables as the child-staff ratio, classroom size, the average education of the staff, and staff turnover. These structural measures of quality are thought to be inputs to the production of "process quality," which measures, among other things, the nature of the interactions between the care provider and the child and activities to which the child is exposed. Process quality is measured by instruments designed by developmental psychologists.<sup>8</sup> The index of process quality has a seven point scale, with a range from inadequate (1), to mediocre (4), to excellent (7). This index is used widely in early childhood literature to gauge the quality of the services produced at child care centers. I estimated quality-adjusted cost functions for child care centers and found an elasticity of cost with respect to (process) quality of 0.4.<sup>9</sup> By these estimates, it would cost \$243 to \$324 per child per year (in 1993 dollars) to increase the quality of child care services from "mediocre" to "good." David M. Blau and I obtained similar estimates of the marginal cost of quality.<sup>10</sup>

Our knowledge about how to increase quality, on the other hand, is limited. Using the same data, my co-authors and I estimated center-level quality production functions.<sup>11</sup> Although the estimates we obtained, as well as others in the literature, demonstrate the existence of a positive and statistically significant relationship between structural center characteristics (for example, staff-child ratios, group size of the children, average teacher education, and training) and center quality, the magnitude of that relationship is numerically small. We obtain the same result when estimating the quality production function at the classroom level.<sup>12</sup> Furthermore, production functions explain at most 50 percent of the variation in center or classroom quality, indicating that there exists a significant amount of residual center or classroom level idiosyncrasy that is related to quality.<sup>13</sup> This result has implications for the effectiveness of regulations.

## Why Low Quality?

Two natural questions to ask are why the average quality of child care is low in the first place, and whether low quality is something to be concerned about. If parents are fully aware of the benefits of high quality child care, if they can accurately assess the level of quality provided for their children, and if they have access to a range of quality-price alternatives, then whatever quality they choose to purchase should be optimal. Therefore, the relevance of these conditions requires careful investigation.<sup>14</sup> It can also be argued that average quality in the market is low because parents do not care about quality the way it is defined and measured by psychologists. If parents put a greater value on other aspects of the child care services, such as the proxim-

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ity to home and other conveniences, then they would look for these characteristics in a child care arrangement over those captured by the process quality index or its components.

## Parent Valuation of Quality and Information Asymmetry

To investigate parents' attitudes towards quality, I analyze survey data of parents who were given the same instruments used by child development experts to measure attributes of quality in their child's specific classroom. Parents were asked to evaluate how important those attributes were for them. An overwhelming majority of parents indicated that the specific aspects of quality measured by the instruments were "very important" for them, indicating that parents feel strongly about the same dimensions of quality deemed important by child development experts.<sup>15</sup> This result does not imply that parents do not value other aspects of child care, but it does seem to refute the hypothesis that average quality in the market is low because parents do not care about quality the way it is defined by child development experts.<sup>16</sup>

Of course, talk is cheap. That is, parents may indicate that they value quality, but their willingness to pay for it may be a better indicator of how much they really appreciate quality. Blau and I estimated fee equations and found that the price elasticity of process quality ranged from 0.13 to 0.4 in the four states analyzed (North Carolina, Connecticut, Colorado, and California).<sup>17</sup> On the other hand, Blau reported a very small relationship between family income and quality.<sup>18</sup> Thus, the analysis of a price-quality relationship does not depict a very clear picture of parent willingness to pay for quality.

It is plausible to hypothesize that the child care center is informed about the level of quality of its service, but the consumers (parents) have difficulty in distinguishing between the quality levels of alternative centers. Parents'

lack of information on quality may simply be attributable to their inability to spend enough time at the center to observe various dimensions of the operation. Given that it costs more to produce higher quality, providers would not have an incentive to increase the quality of their services if they could not charge higher fees. Furthermore, if parents cannot distinguish between high-quality and low-quality centers, then their willingness to pay higher fees is curtailed. Under this scenario, high quality centers exit the market, average quality falls, and eventually the market is filled primarily with "lemons" that provide mediocre quality.

I investigated this information asymmetry hypothesis using very detailed information on classroom, center, and parent characteristics. Classroom quality was assessed by trained observers, and individual aspects of the services provided for children were classified as difficult-to-observe (for example, the quality of nap time) and easy-to-observe aspects of quality (for example, cleanliness of the reception area). Parents were given the same questions and were asked to provide ratings using the same scale as trained observers. A comparison of parent and observer ratings indicated that parents are weakly, but not strongly rational. That is, parents do not use all available information when forming their quality assessments. Although parents are trying to extract signals of quality from classroom and center attributes, these attempts are, for the most part, unsuccessful because parents associate certain center characteristics with quality when they should not; and, they don't read other correct signals of quality. In addition, parents' attempts to extract signals are stronger in cases of difficult-to-observe items of quality. Parent characteristics, such as education and marital status, were found to affect the accuracy of the predictions. I also found some indication of moral hazard, evidenced by the fact that nonprofit centers with very clean reception areas tend to produce lower levels of quality for difficult-to-observe aspects.<sup>19</sup> These results, taken together, indicate that the market for

center-based child care has aspects of a "market for lemons."

## Regulations and Subsidies

Information asymmetry between sellers and buyers regarding the quality of a product is one of the main motivations for the implementation of regulations. In principle, buyers and sellers can write contracts contingent upon some child outcome that is correlated with the quality of service provided. However, the implementation of outcome-contingent contracts between providers and parents is not feasible because of the difficulty in observing and evaluating the outcome, and the time delay between the rendering of services and realization of the outcome. Under these circumstances, regulations are considered to be vehicles through which the provision of an "acceptable" level of quality to the market is ensured to protect the consumer. Another justification for regulatory action is that positive externalities are associated with the provision of high quality. It is argued that even if consumers are able to determine the level of quality, regulations may be desirable and socially optimal because they eliminate the lower-end of the quality distribution from the market. This is important for child care, since it may have aspects of a public or merit good.

Regulations are imposed at the state level and are targeted at structural center characteristics such as group sizes, child-staff ratios, and sanitation conditions. Child care regulations institute minimum standards but do not impose "optimal" standards as defined by the National Association for the Education of Young Children. However, even stringent regulations are not expected to significantly affect quality because compliance is not guaranteed. For example, by analyzing the frequency distributions of a large number of regulatory characteristics of child care centers, Blau and I show that a substantial portion of day care centers fail to comply, even though they face binding regulations.<sup>20</sup> Furthermore, even under full compliance, an increase in

the stringency of regulations is not expected to significantly translate into an improvement in quality because of the weak association between regulatory structural inputs (for example, child-staff ratios) and quality. For example, my co-authors and I found that to increase the quality of a center from average to good, the child-staff ratio must go down from 5.4 children to 1 staff to 1.6 children to 1 staff, which is an extremely expensive proposition.<sup>21</sup> Consequently, tightening regulations related to observable structural characteristics is not, by itself, a promising means of improving quality. Furthermore, even if mandates were effective, they are not without costs. Research shows that stronger regulations reduce the number of child care centers and family day care providers in the market, and reduce the demand for market-based child care.<sup>22</sup> Thus, stringent regulations may have detrimental effects on the availability of care, without increasing average quality significantly.

Subsidies, on the other hand, may be more effective in promoting quality. Blau and I estimated quality supply functions for child care firms.<sup>23</sup> The results showed that the supply of quality is moderately elastic with respect to price and child care workers' wages. These results suggest that wage subsidies for child care firms and price subsidies for consumers may be more promising tools in increasing quality.

## Nonprofit Sector

The emergence of nonprofit institutions is thought to help cure some of the market failure attributable to asymmetric information between firms and consumers. Since a prominent feature of the child care industry is the presence of the nonprofit sector, my research also analyzes behavioral differences between for-profit and nonprofit firms in child care. The results obtained from cost functions and quality production and supply functions reveal that for-profit and nonprofit firms have similar cost structures and that there is no efficiency difference between them. Both nonprofit and for-profit firms behave like profit-

maximizers. Quality supply is more elastic with respect to price in for-profit centers, likely because many nonprofit centers face constraints on improving quality because of reliance on donations.

Erdal Tekin and I exploit an employer-employee matched dataset and estimate wage and compensation equations for part-time and full-time child care workers, while adjusting for workers' selection into the nonprofit sector and full-time work. The results show that part-time jobs are "good jobs" in child care and that there are substantial nonprofit wage and compensation premiums, supporting the property rights hypothesis.<sup>24</sup>

## Conclusion

The average quality of center-based child care is low in the United States as measured by child development experts. The evidence suggests that parents value quality, yet, there is also evidence of information asymmetry in the market between parents and providers regarding the quality of the services. That is, parents have difficulty in assessing the quality of child care they are purchasing. If parents cannot distinguish between high-quality and low-quality services, then demand for quality is curtailed. Nonprofit centers provide no remedy to this problem as their production and supply behavior are very similar to those of for-profits, and average quality produced by nonprofits is similar to average quality produced by for-profits.

Although regulations may be desirable for eliminating the very bottom of the quality distribution, they are not a viable solution to improving average quality in the market because of low compliance and a weak association between regulated firm characteristics and quality. Policies targeted at consumers are more promising. Making information on quality available to consumers in the form of consumer guides and providing price subsidies are feasible policy options for improving quality.

A full-blown cost-benefit analysis of improved quality requires information on the magnitude of the causal

impact of quality on child outcomes. Although current research in the child development literature reports a positive association between quality of child care and child outcomes, the results have limited causal interpretation because of design and statistical analysis problems. Therefore, a useful direction of research would be to estimate child outcome production functions. Experiments in which children are randomly assigned to different levels of quality may be expensive and unfeasible, but there is potentially useful information in recent longitudinal datasets that link children and their families to child care quality and subsequent child outcomes.

<sup>1</sup> For example, R. J. Murnane, J. B. Willett, and F. Levy, "The Growing Importance of Cognitive Skills in Wage Determination," *Review of Economics and Statistics*, 77 (May 1995), pp. 251-66.

<sup>2</sup> Who Cares for America's Children? Child Care Policy for the 1990s, C. D. Hayes, J. L. Palmer, and M. L. Zaslow, eds. Washington: National Academy Press, 1990.

<sup>3</sup> N. H. Mocan, "Cost Functions, Efficiency, and Quality in Child Care Centers," *Journal of Human Resources*, 32 (Fall 1997), pp. 861-91; B. Bergmann, *Saving Our Children from Poverty: What the United States Can Learn from France*, New York: Russell Sage Foundation, 1996.

<sup>4</sup> In 1995, there were 19.3 million preschool-age children who were receiving some form of child care. Of these children, 11.2 million had a parent who was either employed or in school, and 9.3 million of these children received child care from somebody other than a relative. There were 1.2 million child care workers in 2000. See K. Smith, *Who's Minding the Kids? Child Care Arrangements: Fall 1995*, (Current Population Reports P70-70) Washington, DC: U.S. Census Bureau, 2000; *Occupational Outlook Handbook 2002-2003 Edition*, Washington, DC: Bureau of Labor Statistics, 2001.

<sup>5</sup> The team included economists, psychologists, and child development experts from the University of Colorado at Denver, Yale University, University of North Carolina at Chapel Hill, and UCLA. These states and particular regions within states were chosen



for their regional, demographic, and child care program diversity as well as the variation in their regulatory environment.

<sup>6</sup> Others are family day care homes and child care provided at home by relatives and non-relatives.

<sup>7</sup> J.M. Love, P.Z. Schochet, and A.L. Meckstroth, "Are They in Any Real Danger? What Research Does — And Doesn't — Tell Us About Child Care Quality and Children's Well-Being," manuscript, Princeton NJ: Mathematica Policy Research, Inc.; see also Who Cares for America's Children? Child Care Policy for the 1990s.

<sup>8</sup> These are the Early Childhood Environmental Rating Scale (ECERS) and its infant-toddler version, the Infant-Toddler Environmental Rating Scale (ITERS). For details about these instruments, and about the quality index and its components, see N. H. Mocan, "Can Consumers Detect Lemons? Information Asymmetry in the Market for Child Care," NBER Working Paper No. 8291, May 2001; N. H. Mocan, "The Child Care Industry: Cost Functions, Efficiency, and Quality," NBER Working Paper No. 5293, October 1995, and Journal of Human Resources, 32 (Fall 1997), pp. 861-91.

<sup>9</sup> N. H. Mocan, "Quality-Adjusted Cost Functions for Child Care Centers, NBER Working Paper No. 5040, June 1995, and American Economic Review, 85 (May 1995), pp. 409-13; see also N. H. Mocan, "The Child Care Industry: Cost Functions, Efficiency, and Quality."

<sup>10</sup> D. M. Blau and N. H. Mocan, "The Supply of Quality in Child Care Centers," NBER Working Paper No. 7225, July 1999; revised version forthcoming in the Review of Economics and Statistics.

<sup>11</sup> N. H. Mocan, M. Burchinal, J. R.

Morris, and S. Helburn, "Models of Quality in Center Child Care," in Cost, Quality, and Child Outcomes, S. Helburn, ed., Denver: Center for Research on Economic and Social Policy, University of Colorado at Denver, 1995.

<sup>12</sup> D. M. Blau, "The Production of Quality in Child Care Centers," Journal of Human Resources, 32 (Spring 1997), pp. 354-87.

<sup>13</sup> This problem is similar to the one observed in education production functions. See Hanushek's research summary in Spring 2001 NBER Reporter.

<sup>14</sup> Even under this scenario there would be room for incentives that aim to increase the demand for quality. If child care has aspects of a "public good" or "merit good" where high quality child care not only benefits its private consumers, but also the society as a whole, through positive externalities, then attempts to improve quality through incentives to consumers or regulations imposed on the providers may be justified. For example, if high quality care increases the cognitive skills of children and their labor market opportunities as young adults, then this suggests that high quality child care today would benefit society tomorrow by helping create more educated and more productive individuals, who have higher earnings potentials, and who have a smaller probability of welfare dependency and criminal activity.

<sup>15</sup> See also N. H. Mocan, "Can Consumers Detect Lemons? Information Asymmetry in the Market for Child Care."

<sup>16</sup> D. M. Blau and A. Hagy, "The Demand for Quality in Child Care," Journal of Political Economy, 106 (1998), pp. 104-46, did not find evidence that parents are willing to pay more for regulated attributes of care such as staff-child ratio, but D. M. Blau and N. H. Mocan, "The Supply of Quality

in Child Care Centers," NBER Working Paper No. 7225, July 1999, revised version forthcoming in the Review of Economics and Statistics, reports a positive relationship between fees and process quality.

<sup>17</sup> See D. M. Blau and N. H. Mocan, "The Supply of Quality in Child Care Centers."

<sup>18</sup> D. M. Blau, The Child Care Problem: An Economic Analysis, New York: Russell Sage Foundation, 2001.

<sup>19</sup> See also N. H. Mocan, "Can Consumers Detect Lemons? Information Asymmetry in the Market for Child Care."

<sup>20</sup> D. M. Blau and N. H. Mocan, "The Effects of Regulations on the Child Care Market," unpublished, University of Colorado at Denver, 2001.

<sup>21</sup> See also N. H. Mocan, M. Burchinal, J. R. Morris, and S. Helburn, "Models of Quality in Center Child Care."

<sup>22</sup> S. L. Hofferth, and D. D. Chaplin 1998, "State Regulations and Child Care Choice," Population Research and Policy Review, 17 (1998), pp. 111-40; S. Rose-Ackerman, "Altruistic Nonprofit Firms in Competitive Markets: The Case of Day Care Centers in the United States, Journal of Consumer Policy, 9, (1986), pp. 291-310; V. J. Hotz and M. R. Kilburn, "Regulating Child Care: The Effects of State Regulations on Child Care Demand and Its Costs," unpublished, RAND, 1994.

<sup>23</sup> See also D. M. Blau and N. H. Mocan, "The Supply of Quality in Child Care Centers."

<sup>24</sup> N. H. Mocan and E. Tekin, "Nonprofit Sector and Part-Time Work: An Analysis of Employer-Employee Matched Data of Child Care Workers," NBER Working Paper No. 7977, October 2000. Forthcoming in The Review of Economics and Statistics.

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