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Provision and price of child care services: For-profits and nonprofits

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ABSTRACT

We study the market for child care services, with a special focus on examining competition between for- and nonprofits. We estimate a two-stage oligopoly model of product differentiation. The first stage estimates a model of endogenous market structure and the second stage corrects for market structure to examine the prices charged and capacity choices for child care centers. We find that the actions of "same-type" providers have a statistically significant impact on a provider's entry and pricing decisions but we fail to find evidence that the actions of "other types" have a significant impact. Nonprofit child care providers and Head Start centers do not appear to crowd out for-profit providers. Further, we find that for-profits and nonprofits respond differently to market characteristics generating spatial differences in the types of center available in a market. Our data suggest that for-profits are more likely to enter markets with higher percentages of economically disadvantaged students, but they primarily serve those who work, rather than live, in the market. The prevalence of disadvantaged students does not impact the entry decision of nonprofits leaving disadvantaged areas with relatively fewer non-profit options to serve residents. Policies to encourage for-profit daycare would likely lead centers to locate in markets where they can provide service for workers, whereas a policy to encourage nonprofit entry might be more effective in providing low cost care for nearby residents.

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1. Introduction

The availability of affordable child care is an important component for the growth and development of a region. Access to convenient and affordable day care is often a crucial determinant of parents' labor supply decisions (e.g. Compton and Pollak, 2014; Graves, 2013; Herbst and Barnow, 2008; Lefebvre and Merrigan, 2008; Davis et al., 2005; Kimmel, 1998). Spatial differences in child care availability may be correlated with spatial variation in labor markets because day care access influences labor market opportunities. Government policies have provided subsidies for child care assistance to low income families including over $5 billion in block grants to states in 2012 (Department of Health and Human Services, 2012). Day care enrollment rates have increased for decades and each week nearly 9 million children under the age of five are placed in the care of a non-relative (US Census Bureau, 2010). However, enrollment rates remain much lower for low income families (Magnuson et al., 2007) and viable child care options remain limited in many areas of the US (NACCRRA, 2010; Gordon and Lindsay Chase-Lansdale, 2001).[1] Child care access has long term implications because the quality of child care can directly influence children's learning and behavioral outcomes that shape future human capital accumulation (Hotz and Xiao, 2011; Cleveland and Krashinsky, 2009; Caughy et al., 1994).

Our primary goals are to investigate the factors that influence the entry, pricing, and capacity decisions of different types of providers in a child care market in order to improve our understanding about the nature of competition between nonprofit and for-profit centers. It is important to investigate the strategic interactions between different types of day care providers in markets because they may respond differently to market characteristics. Public expenditures for child care assistance programs are large enough to influence private providers if they are directly competing to provide services to families. If, for example, Head Starts and nonprofits crowd out licensed for-profit providers, some of the policy objectives for child care assistance could be undermined. Whether different types of center are in direct competition and crowd each

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[1] In President Barack Obama's February 12, 2013 State of the Union Address, he addressed the importance of child care issues saying, "the sooner a child begins learning, the better he or she does down the road. But today, fewer than 3 in 10 four year-olds are enrolled in a high-quality preschool program…I propose working with states to make high-quality preschool available to every single child in America."

other out is an empirical question which we seek to address. After addressing the crowd out issue, our analysis reveals some important spatial differences in child care access that have implications for the effectiveness of policy.

We construct a data set of all nonprofit, for-profit, and Head Start child care providers in four counties in the region surrounding Nashville, Tennessee, and define geographic markets using elementary school zones.[2] We specify a differentiated products oligopoly model similar to Mazzeo (2002a) and Cohen and Mazzeo (2010). In the first stage we estimate parameters of a model that accounts for the entry decisions of nonprofit and for-profit firms based on market characteristics. The second stage estimates the price of day care services and also the capacity of centers after correcting for market unobservables correlated with observed market configurations.

We find strong evidence that the actions of other centers of the "same type" (either for- or nonprofit) impact entry, price, and capacity decisions, yet we fail to find evidence that Head Starts or nonprofits (for-profits) crowd out for-profit (nonprofit) centers. These market structure estimates also indicate that local market conditions have differing impacts on the two types of center's entry decisions. We use the estimates from the structural model to predict the required growth in workers, households, and commercial and residential building permits that would be necessary before we would expect a child care provider to enter into three different local markets which currently do not have child care options. The spatial differences in predicted responses between these markets demonstrate the importance of accounting for endogeneity in the decision to enter a market and the importance of allowing the influence of market characteristics to vary by the type of firm. Failure to correct for the endogeneity of the entry decision lessens the estimated magnitude of the competitor's influence on price in our sample. We believe the same forces are present in other urban related questions and should be considered in future work.

Our results reveal some features of the child care market that may influence the effectiveness of policies designed to promote access to, or reduce the price of day care.[3] By allowing the types of center to respond differently to the same market characteristics, we are able to observe policy relevant spatial differences in the type of daycare provided in a market. For-profit centers are significantly more likely to enter markets with a greater number of workers, but the residential population does not have a significant impact. For-profits are also significantly more likely to enter a market with a greater percentage of disadvantaged students. As a result, lower income markets have a relatively high ratio of for-profits to nonprofits. For-profits generally cost more than nonprofits so the type of day care supplied seems consistent with the care demanded by workers in the market, but mismatched with the demand preferences of residents. Therefore, we expect that a program aimed at encouraging for-profit entry is not likely to be as effective as one encouraging nonprofit entry if the goal is to align the supply in a local market with the care demanded by residents. The for-profit and nonprofit centers in our data behave as if they are competing in distinctly different markets so a program could increase the number of day care opportunities among nonprofits in underserved areas without harm to the for-profit portion of the market.

2. Empirical methodology

2.1. Model overview

One of the main goals of this paper is to understand the competitive environment that exists between types of day care centers. The nature of competition interacts with other factors to influence the price of child care services. From previous research, it is clear that the question as to whether nonprofits or publically funded entities crowd-out for-profits has a market-specific answer. For example, Figlio and Stone (2001) find that different community characteristics influence the enrollment characteristics of students at public and private schools. Eriksen and Rosenthal (2010) and Sinai and Waldfogel (2005) find evidence that subsidized housing crowds out unsubsidized construction. Cohen et al. (2013) find that the presence of nonprofit outpatient substance abuse treatment centers significantly reduces the probability that a private (for-profit) center will also participate in the market. However, Harrison and Seim (2012) examine the location choices of fitness centers and find no evidence that the presence of a nonprofit firm has a significant deterrent effect on the location choices of for-profit fitness centers.[4]

Following Mazzeo (2002a) and Cohen and Mazzeo (2010), we propose the following equation to model the relationship between child care prices and market characteristics:

$$P_{j,m} = Z_{j,m}\gamma + h(\theta; \overrightarrow{N}_m) + \varepsilon_{j,m} \qquad (1)$$

where $P_{j,m}$ is the observed price for day care center j in market m, $Z_{j,m}$ is a vector of control variables, $\overrightarrow{N}_m$ is the observed market structure in market m, and $\varepsilon_{j,m}$ captures unobserved (by the econometrician) factors that influence j's price. The vectors γ and θ are parameters to estimate. As will be discussed in greater detail below, $Z_{j,m}$ contains a number of market characteristics that may influence price, as well as possible firm-specific factors.

Simply estimating Eq. (1) via ordinary least squares would result in biased parameter estimates, due to the endogeneity of market structure (as measured by $\overrightarrow{N}_m$). It is likely that the unobserved factors that affect price may also affect the equilibrium market structure. For example, negative parental attitudes towards using non-residential child care in one market may affect both the number of child care providers that choose to locate in that market, as well as the price any given provider can optimally charge.

In order to overcome this endogeneity issue, we employ a two-step estimation procedure similar to those used by Mazzeo (2002a), Manuszak and Moul (2008) and Cohen and Mazzeo (2010).[5] In the first step, we estimate a model of endogenous market structure. This model, which is discussed in greater detail below, is a game-theoretic based model of child care provider behavior. We specify child care provider payoff functions in order to estimate the parameters associated with observed market structures ($\overrightarrow{N}_m$). Using these parameters we are then able to construct several correction terms that address the correlation between $\overrightarrow{N}_m$ and $\varepsilon_{j,m}$.

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[2] The short supply of child care in the Nashville metropolitan area has been identified as a factor which limits employment opportunities for some working families. The perceived shortage has received considerable attention from the local media and political leaders (see, for example, Bliss, 2012).

[3] In this research, we draw no conclusions regarding the normative statement pertaining to the affordability of child care. The sentiment can be seen, however, in both the popular press (Bliss, 2012) and academic literature. For example, Warner et al. (2003) provide an overview of issues related to child care affordability.

[4] We are unaware of any study which directly tests for the competitive environment for child care between for-profits and nonprofits. Rennhoff and Owens (2012) assume nonprofits and for-profits operate in different markets in a study of church child care center decisions, however this assumption was untested. Bassok et al. (2012) utilize a natural experiment and find that a government policy to fund universal preschool increased the number of public and private childcare centers in Georgia, whereas a policy to publically provide preschool in Oklahoma increased public provision of preschool without crowding out private providers.

[5] An alternative to this Heckman-style two-step approach would be to use an instrumental variables methodology whereby variables that are correlated with market structure but uncorrelated with price are used as instruments in Eq. (1). Unfortunately, it is extremely rare that researchers have been able to identify measures that predict market structure accurately.