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Does Child Care Pay?: Labor Force Participation and Earnings Effects of Access to Child Care in the Favelas of Rio de Janeiro

by

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Executive Summary

This study undertakes an econometric analysis of data on child care services usage and labor force participation drawn from a survey of 1720 households in 15 "favelas" or slums, in Rio de Janeiro. The analysis examines the impact which access to child care services has on female labor force participation and final earnings.

Child care services in the favelas of Rio de Janeiro are hard to find. Less than one-third of favela residents surveyed in 1995 had access to such services, which range in cost and quality from rationed, low-cost, high quality public day care centers to higher-cost and lower-quality babysitting services provided in the homes of neighborhood women. Untangling the earnings effects of having access to child care services yields clear recommendations for a cost recovery strategy which could facilitate the expansion of the publicly- financed network.

The central issue addressed in this paper is the estimation of labor force participation and child care choice decisions through limited dependent variable models, where the household's choice of mode of child care used and type of labor force participation is based upon the mother's characteristics, household characteristics, and the characteristics of child care alternatives available within the community. Earnings functions are estimated using reduced form and selectivity-corrected specifications. On this basis it is possible to derive a range of estimates for the different model specifications of the increase in earnings attributable to the fact that the family utilizes child care services outside the home.

The study represents a contribution to the empirical literature on female labor supply by explicitly addressing the effect on earnings which is attributable to the decisions made by mothers in choosing their work and child care arrangements. In contrast to previous studies, it allows for a variety of forms of labor force participation (work at home, full-time outside work, and part-time outside work), as well as several child care alternatives. By estimating earnings functions, as opposed to subsuming earnings estimates as has been done in previous work, it yields the net impact on working mothers' wages of having access to child care services, which in turn informs policies regarding cost recovery in formal child care.

Study results indicate that increasing the supply of low-cost child care in the favelas of Rio de Janeiro would increase mothers' labor force participation and their probability of utilizing public care. When they work, women who avail themselves of external child care services are also likely to

earn more. Estimates for earnings elasticities for public child care usage range from negligible negative effects up to a twenty percent increase in earnings, dependent upon model specification and sample definition. The positive effect on earnings is least for women who work more than 40 hours per week.

Study results also indicate that women who pay more for child care in the private sector are also compensated by greater returns in the labor market– the elasticity of earnings with respect to the use of higher-cost market care ranges from 12% to 29%. Higher returns to market care are most likely due to its greater flexibility in operating hours. Limited hours of service available in the public centers reduces their utility and net impact on earnings for women who work longer hours and/or have long hours of commuting to their places of employment.

Despite the difficulties of interpreting the results due to the many endogeneities involved in the joint decision process, increased earnings are consistently associated with use of child care outside the home, independent of model specification and sample definition. This finding has clear policy implications. Increased access to high quality child care services not only offers developmental benefits for the children receiving care, as has been documented by previous studies, but also expanded economic opportunities for their mothers.

The range of earnings estimates indicate some limited scope for additional cost recovery at the public centers, contingent upon hours worked by the mother. However, these estimates represent a lower bound for cost recovery potential– if the probability of working outside the home as a result of greater access to public child care is factored in, and the expected value of the total increase in earnings calculated, the scope for cost recovery increases. Furthermore, expanding the hours of operation of the public centers may well lead to increased earnings opportunities for participating mothers.

While the potential for recovering a larger share of operating costs of the public network thus exists, differences observed in the returns to market versus public care suggest that the provision of demand subsidies that allow women to choose their preferred mode of child care may offer greater private returns in terms of increased earnings opportunities than further financing of direct provision by the public sector. This policy finding is further reinforced when the high social costs of the public child care centers is considered.

The fact that returns to market-provided care are much higher in all cases than returns to the more expensive publicly provided care raises a series of questions regarding policies for future expansion of coverage. It perhaps behooves the city government to dedicate its scarce resources to

raising the quality of market care (through regulation, supervision, licensing, etc.), combined with the use of targeted subsidies for poor households in the form of vouchers to help defray the costs of market care. Even if the government funded the entire cost of the highest-priced market care option, it would only amount to half of what is currently being spent per child for the direct provision of child care services in the public centers. And, the private sector care options offer greater flexibility and higher labor market returns than do the public centers.

In conclusion, public financing (but not necessarily direct provision) of child care services offers not only long-run hopes for poverty reduction, through improving the welfare and school-readiness of children in poverty, but also offers a more immediate pay-off in the form of increased employment and earnings opportunities for the mothers who are able to utilize such services.

I. Background and Rationale

This paper attempts to answer a very simple question: Does child care pay? The question is posed from the perspective of a cost-conscious public policy-maker with a relatively narrow economic perspective. The question can be more precisely stated as follows: do poor women benefit from having access to publicly subsidized child care through increased, and better (e.g. higher paying, formal sector jobs), participation in the labor force? While the economic benefits of publicly funded child care — such as increased opportunities for labor force participation and higher earnings — are commonly asserted by governments as justifications for funding of such programs. However, little concrete corroboration of these assertions can be found in the literature either in the U.S. or in the developing country context. Arriving at a clear answer to this relatively simple and narrowly defined question requires some surprisingly torturous econometric analysis in order to disentangle the web of joint causality and endogeneities embodied in the very basic work-life decisions that all households must confront.

With an aim towards estimating the magnitude of these potential economic benefits for poor women of having access to publicly-funded child care services, the Inter-American Development Bank[2], in partnership with the Social Development Secretariat of the Municipality of Rio de Janeiro, undertook a survey of households in 15 favelas, or urban slums, in Rio de Janeiero, Brazil, during 1995. Access to these communities was facilitated by the fact that they were home to the first phase of the IDB-financed Slum Upgrading Program, and as such, community members were accustomed to receiving visitors from the municipality and responding to questions about their quality of life and household decisions. A representative sample of 1720 households, each of which was home to at least one child under the age of six, was surveyed.

The city government was eager to participate in the study, as increased funding for public day care centers comprised part of the Slum Upgrading Program. Each community in the sample was slotted to receive a new public center, with space for 100 children. These centers, or *creches* offer high quality services which do not come cheaply. Unit operating costs per month average more than US$100 per child. At the same time, cost recovery is so low as to be practically non-existent, with the monthly fee charged per child about US$6.00, and often waived. An open

[2] Specifically, the Social Programs Division of the Social Programs and Sustainable Development Department (SDS/SOC).

question which we hoped to answer with this study is whether cost recovery could increase with no net loss to household income. In other words, it was hypothesized (and had been observed in earlier descriptive analyses) that mothers with access to public day care centers would have increased earnings opportunities. Additionally, the widespread use of higher-cost, yet lower-quality, private sector child care services within the favelas suggested a supply constraint in the market. Our hypothesis was that if positive earnings effects were sufficient, it would be possible to increase monthly charges at the public centers, while still maintaining a net positive income effect for the participating household. This would offer a win-win opportunity, where greater funds would be available to expand the rationed network of full-service public care centers. This would improve access to care within these severely impoverished communities, as well as raise the quality of the level of available care.

Early Childhood Care and Development Programs: A High Growth Area for Social Investments in the LAC region

These questions are relevant beyond the slums of Rio de Janeiro. Early childhood care and development programs are receiving a resurgence of interest and public funding the world over. Child care programs offer both immediate and longer-term benefits which have drawn the attention of social policy makers. Custodial care allows the ever growing percentage of mothers in the labor force alternatives for taking care of their children while working. Integrated early childhood development programs have empirically demonstrated positive longitudinal effects on the subsequent social and economic development of participating children. Thus, child care programs are promoted as offering double benefits, wherein not only is the family's income increased, but the children themselves are provided critical extra support and attention that improves their school-readiness and offers them a better chance of breaking the cycle of poverty.

The Inter-American Development Bank has joined the ranks of institutions who provide financing for early childhood development programs, with roughly US$1.9 billion of its current portfolio of loans in execution supporting early childhood development programs — either free-standing day care programs, or pre-primary education.[3] Independent operations in support of early childhood programs are increasingly common, but for the most part the IDB's support to

[3] An estimate as of May 1997.

these programs has been contained as sub-components or activities within projects in education, urban development and housing, integrated rural development, and social investment funds. The current pipeline continues this trend, with an increasing importance for independent early child care programs grounded in national strategies or policies in this area, reflecting the growing status of these programs within both the Bank and the borrowing countries.

The newest generation of loans has begun the groundwork to measure the longitudinal developmental effects for children receiving care in programs financed by the Bank by putting into place more comprehensive monitoring and evaluation components. However, such components do not usually address the economic benefits of having access to child care services, as there is a problem of selectivity— e.g. monitoring and evaluation components can, at their best, track labor force effects for participating mothers, but in the absence of a previously defined random control group (a design feature of monitoring and evaluation components which has yet to be incorporated into IDB loans), it is difficult to determine the pure effects which specific investments in child care services have on labor force participation and household income.

The IDB has done relatively more analytical work on the cost side of the cost-benefit equation for such services. Individual projects regularly perform cost-effectiveness analyses, and offer cost comparators with alternative options for care provision. Guidelines have been prepared to aid project managers in the standardization of such analyses.[4] Although it is difficult, the Bank is well on the way towards understanding how to estimate costs of the various components of integrated child care and development programs, and has begun building an institutional knowledge base of comparative costs for such programs throughout the region.

Quantitative estimates of the economic benefits of such programs, on the other hand, are much harder to find. In the following section, a brief review of the relevant empirical literature sheds light on the complexities involved in deriving such estimates, and clarifies the value-added of the current study. The discussion focusses on the methodological issues involved in quantifying the economic returns to households in terms of increased opportunities for labor force participation of the mother or principal care provider.[5] This paper does not attempt to address the more

[4] See Moran, et. al., 1997.

[5] For ease of exposition, the principal care provider will be referred to as the mother in the rest of this paper, although in a limited number of cases in the study sample, that figure may be a grandmother, aunt, or foster parent.

complicated issue of quantifying in financial terms the longitudinal developmental benefits for children at risk which result from having access to high quality early childhood development programs.[6]

Unraveling Causalities: Child Care and Labor Force Participation

Initial attention to the interrelationships between child care usage and female labor force participation can be found in Heckman's (1974) pathbreaking article which analyzed the effect of government child-care programs on women's employment decisions. Initiating a series of research efforts in the U.S. which focussed on the demand for and costs of child care, the essential insight of the paper was that the implicit costs that families face for child care depend on the availability of alternative care options, including the presence of relatives or friends willing to provide low-cost care. Later attempts included explicit estimates of the costs of child care based on household characteristics, and modeling of the simultaneous labor market participation decision of both the mother and the potential alternative care giver.

Due to the complex nature of the household decisions involved, the existing empirical literature on child care usage and labor force participation reflects the need to focus on partial aspects of the choices involved. The literature to date can be divided into three camps. First, some studies focus on the demand for child care, paying close attention to the effects of price and quality on a household's choice of child care. These studies take the mother's labor force participation and other household income as a given, and pay more detailed attention to definition of the range of child care options or modes, and measures of the price and quality of these modes. A second group of studies examines the labor force participation decision of the mother, taking child care usage as given and have as a primary focus the examination of how usage of different modes of child care results in varying degrees of labor force participation. Finally, a third body of literature models the simultaneous nature of the mother's choice to participate in the labor force and to utilize non-maternal child care.

Empirical work on *demand for child care* focuses on the determinants of the family's choice of

[6] See Zigler and Styfco (1993), and Young (1995), for summaries of studies which demonstrate the longitudinal benefits of investing in young children through child care and development programs, such as the U.S. Head Start program.

child care arrangement.[7] This branch of the literature emphasizes the need to distinguish correctly among the different modes of child care; examines issues of selection which impede the correct estimation of the price of paid child care (households that use paid care are more likely to be able to negotiate better rates); documents the difficulties involved in measuring quality of care; and demonstrates the importance of household composition in determining what types of child care arrangements are utilized.[8] In all of these studies, the decision of the principal care provider to participate in the market, and the value of her earned income, is taken as exogenous to the choice of child care mode.

Labor force participation studies examine the other side of the behavioral equation. Taking the use of (or access to) child care as given, they examine the elasticity of the labor supply response of women (married and single) to changes in the availability of child care outside the home.[9] These models follow the traditional literature on labor force participation, arguing that lack of child care serves as a barrier to entry for mothers to participate in the labor force, and that the mother's reservation wage increases with the costs of child care (not to mention the desire to be with her children). In these studies, the child care decision is taken as an exogenous input to the decision of whether or not to participate in the labor force.

Finally, *joint decision models* provide estimates of the choices households make regarding child care and labor force participation of the mother, allowing both variables to be endogenously determined.[10] Researchers differ in their approach to modelling the joint decision process, with some offering a staged process, wherein first one decision is made which then influences the other; others present a fully structural joint decision model. Attempts have also been made to include

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[7] Studies examining the determinants of household demand for child care include works by Robins and Spiegelmen, 1978; Lehrer, 1988; Robins, 1988; Leibowitz et. al, 1988; and Hofferth and Wissoker, 1992.

[8] Household composition factors include the availability of surrogate child care providers within the household and the age structure and number of children. They affect the work/child care decision in a variety of ways. For example, nursing mothers of infants are less likely to use outside care. Or, in the case of determining demand for center-based care, there are little or no economies of scale in center-based care (for the purchasers' of care), whereas babysitters in one's own home or their own residence do achieve economies of scale.

[9] Analyses of female labor force participation which explicitly take account of the availability or actual use of child care as an exogenous factor in the participation decision include Gustaffson and Jacobson, 1985 ; Berger and Black, 1992; Engle, 1991; and Blau and Robins, 1988.

[10] Joint decision models of child care usage and labor force participation can be found in Connelly, 1992; Connelly, et.al., 1996a and b; Gustaffson and Stafford, 1992; Michalopoulous, et.al, 1992; and Ribar, 1992 and 1995.

household fertility as another endogenous choice variable in the overall nexus of household decisions regarding labor force participation and child care. [11]

These studies have explicitly addressed differences in cost and availability of modes of child care as important qualitative choice variables. The choice to use child care services is not a simple, binomial, yes or no choice, but it is recognized that important differences exist in the types of child care utilized, which reflect differences in household and individual characteristics. While labor force participation is jointly determined with the decision to utilize different modes of child care, the participation decision is modeled as a simple binomial choice variable— either a mother participates in the labor force or not. In other words, these studies fail to distinguish among types or sectors of labor force participation. Given that the mother's choices regarding full or part-time work, and working from home or outside the home, seem intimately linked with decisions regarding child-care needs and usage, the previous lack of attention to type or sector of labor force participation appears to be a gap in the existing literature— a gap which this study hopes to fill.[12] Attention to this issue is of particular importance in the developing country context when analyzing the survival strategies of poor households where participation in the formal sector labor market is the exception rather than the rule.[13]

Without exception, the literature to date has focussed on estimating elasticities of labor market supply and child care demand responses to changes in individual characteristics, household characteristics, or the supply of child care. Joint decision models usually follow a traditional approach to modelling the labor force participation decision, first correcting for selectivity by estimating the reservation wage of all women in the sample, and then modeling the labor force participation decision using the predicted reservation wage as an independent variable. Under this

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[11] Connelly, et. al., "Tackling Endogeneity...", 1996. Findings indicate that endogenizing the fertility decision does not significantly change results from those found where fertility is taken as exogenous.

[12] Some studies do include the number of hours worked by the mother as an explanatory variable, and Gustafsson and Stafford, 1992,follow a similar approach to that undertaken in this paper where the mother's type of labor force participation decision is a three way choice between zero hours worked, full-time work, and part-time work. Here again, however, they do not distinguish between paid work outside the home versus paid work done inside the home, a factor which has clear implications for the joint child care decision.

[13] With a few exceptions (see work by Connelly et.al. 1996; Wong and Levine, 1992; and Engle, 1991), the vast majority of the literature to date has focused on the developed country context, with the policy relevant question concerning the ways in which government tax and child care subsidy policies could induce changes in female labor force participation and/or the demand for different modes of non-maternal child care. See also Moser, 1996 for a discussion of household survival strategies in urban areas of developing countries.

approach, predicted earnings become an independent variable in the labor force participation and child care use equations. The question as to whether or not there is an earnings "premium" for women from having access to certain types of child care is thus not addressed.

To sum up, the literature reviewed shows a wide variety in the ambitiousness of authors in tackling the various types of endogeneity which arise when addressing questions of female labor force participation and choice of child care mode. Trade-offs arise and as the complexity of the empirical modelling increases, the level of detail of results regarding specific aspects declines. Nonetheless, some results are surprisingly robust on several counts: Studies agree that child care and labor force participation are competing uses of the time of mothers. Lowering the cost of child care, either through increased supply or forms of price subsidization, is shown to increase the usage of "market care" (as opposed to care by the mother or a near relative), and, by lowering the reservation wage of women, also leads to an increase in female labor force participation. Individual characteristics of the mother, household composition, and supply-side characteristics of the child care market in which the household takes part are all shown to influence the jointly determined outcomes of mode of child care usage and labor force participation. A gap remains in the literature as to how mothers jointly decide not only among modes of child care, but among the types or sectors of labor force participation. This paper attempts to explore this issue in more detail. Furthermore, explicit estimation of selectivity-corrected earnings functions allows for the derivation of policy relevant results regarding the increase in earnings, or "earnings premium" attributable to the use and availability of different types of child care, offering an answer to the question raised in the paper's title.

The Child Care Situation in the Favelas of Rio de Janeiro

The fifteen neighborhoods which form the universe for the current study were also surveyed in 1994 as part of the preparation for the Rio de Janeiro Slum Upgrading Program. This first survey in 1994 had as its objective the identification of the existing child care and pre-school education alternatives available in these communities, as well as information on users' perceptions of the quality of these alternatives.

The original 1994 survey was not designed with the intention of providing data for rigorous economic analysis. Through interviews with a sample of roughly 900 families, however, it did provide rapid and cost-effective data on child placement options and household characteristics.

Also during 1994, a second phase of research was carried out consisting of site visits to the various providers of child-care services identified in the initial survey, which yielded quality indicators for the various modes of care available in the favelas.

The principal findings of this initial fieldwork helped to motivate the current study, and allowed for a more careful definition of the survey instrument used. More than eighty percent of children in the target age group were found to stay at home during the day, the majority cared for by their mothers. The limited information regarding labor force participation found that nearly two-thirds of mothers worked exclusively within the household with no market source of earnings; some 10% performed paid work within their own homes; under ten percent worked part-time; and 18% worked full-time outside the home. When asked about their likelihood of changing employment if child care services were made available (either through seeking outside employment or increasing the numbers of hours working outside the home), nearly two-thirds of the mothers who were not already working full-time responded positively. Strong positive correlations were found between usage of full-time child care outside the home and formal sector occupation.

The 1994 field work also yielded interesting findings regarding the range of child care alternatives available within Rio's slums. Services range from the public day care centers to informal baby-sitting services known as *mãe-crecheiras*. While informal services did offer greater flexibility regarding operating times, this seemed to be their only comparative advantage. Site visits showed the municipal centers, as well as the centers run by the network of philanthropic organizations supported by the municipality, to be of higher quality than the informal providers, as measured by staff-children ratios, the range of developmental activities pursued, the availability of supervisory resources, nutritional inputs, and the quality of the physical facilities.[14] This formal care, available in public or quasi-public centers, cost significantly less than the higher-priced informal baby-sitting services, suggesting excess demand for child-care services and a highly rationed public supply, with the public and philanthropically run centers then charging R$4 per month, as compared to an average of R$30 per month, nearly one third of the monthly minimum wage, charged at the lower quality home-run babysitting services.

[14] Responses to questions regarding the users' perceptions of quality also rated the formal care as higher quality, with the majority of survey respondents indicating a preference to switch from informal to formal care. Contrary to many other examples in the social services, in the case of child care in the favelas of Rio de Janeiro, the publicly provided care is not an inferior good.

In general, the 1994 findings suggested the need for a more detailed study and rigorous analytical work regarding the capacity and willingness to pay for child care services in the favelas of Rio de Janeiro. Towards that end, data for this study were collected in a random household survey carried out in the same 15 favelas of Rio de Janeiro during the last quarter of 1995.

II. Data, Theoretical Framework and Methodology

The Sample

The data for the current paper come from a random sample of 1731 households with children under the age of six surveyed in fifteen favelas in Rio de Janeiro during November and December of 1995.[15] The final sample utilized for the quantitative analysis, subsequent to cleaning the data and deleting missing or contradictory observations, was 1720 households. In a subsequent round of interviews, an oversampling was done of 81 households who utilized publicly funded day care centers, in order to provide sufficient observations for this group with which to carry out the econometric analysis. In the following analysis, these observations are appropriately weighted in accordance with their occurrence in the random sample.

The survey instrument, designed specifically for this study, elicited information on individual characteristics of the mother or principal child care provider[16] and other household members (age, education, income earned); child care arrangements utilized; and labor force participation of all household members. The survey also contained questions regarding length of residence in the community and the number of relatives residing near by to measure the household's ability to receive financial or child care support from family members or other social networks in the community.

Table 1 provides a summary description of the 1995 sample, organized into a series of

[15] Each favela surveyed was considered a geographic strata of the sample, with clusters defined of ten households, based upon maps provided by IPLAN-Rio, the municipal planning agency. Sample size was determined based upon the percentage of households with the target population of children under six years of age (30%) and in order to guarantee a representative random sample. Of a total of 2,290 clusters defined, the sample surveyed was comprised of 753 clusters, divided proportionately by community. In each cluster, all households with children in the target group were interviewed, for a total of 1731 households surveyed. A detailed description of sampling methodology can be found in PRODEMAN, 1996, Annex One: *Considerações sobre o Plano de Amostragem.*

[16] Of the 1731 principle care providers interviewed in the original random sample, all were women and 1659 were birth mothers.

twelve diads based on mututally exclusive and exhaustive child care modes and labor force participation options which were chosen for purposes of analyses.[17] The guiding principle in defining the categories was to distinguish factors of both cost of child care, ability to pay, time working, and location of work and child care which would jointly affect the labor force/child care decision. Child care options are broken down into three modes: High-cost child care options (all of which were provided outside the home), costing more than 10 reais per month, low-cost child care outside the home, consisting mainly of publicly- or philanthropically-funded day care centers as well as care provided by relatives or other babysitters outside the home for minimal charge, [18] and low-cost child care within the home. In this last category, we did not distinguish between care provided by the mother herself versus care provided by other family members for little or no charge.[19] Two-thirds of children under the age of six are cared for in their own homes (66%), with the remaining third of children split between low-cost and high-cost child care options outside their homes.

Labor force participation options are broken down into four categories: zero earnings, home employment (including unearned income from pension or disability payments), earnings from part-time employment outside the home, and earnings from full-time employment outside the home. More than half of the survey respondents did not receive any earnings whatsoever, with roughly one-quarter working full-time outside the home, and the remaining quarter split fairly evenly between home earnings and part-time earnings.

Definitions of full-time and part-time earnings are perhaps distinct to this sample of low-income slum residents. Women who work less than 40 hours a week are deemed part-time; while those who work 40 hours or more per week are classified as full-time workers.

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[17] Respondents were classified according to the childcare arrangements used for their oldest child younger than six. In 41% of the cases, there was only one child in the household within the target age group, 31% of survey respondents had two children under six years of age, 17% three, and the remaining 11 percent had four or more children under the age of six.

[18] For ease of subsequent exposition, this group is often referred to as public childcare throughout the rest of this paper, as public and quasi-public day care centers provide the majority of supply in this cell.

[19] Due to poor wording of the questionnaire, the ability to make this distinction was not readily available. The mother, or principal caregiver, was asked the question: "Where does your child stay during the day?" Respondents were given a choice of options including at home with someone taking care of the child, and at home with no one taking care of the child, but the nature of the relationship of the home caretaker to the child was not specified (less than one percent of the sample responded that the child was at home with no responsible party).

Table 1: Sample Distribution by Participation/Child Care Diad and Selected Mean Values
Women with Children Under Six Years of Age, Favelas of Rio de Janeiro, 1995
(Mean values in current reais per month)

Entire Sample n = 1720 Fam Inc. Per. Cap: 64.4 Cost of Child Care: 8.0 Mother's Earnings: 82.4	Low-Cost Child Care Modes (Less than 10 *reais* per month)		High-Cost Child Care Options (17%)
	In-Home (66%)	Away from Home (17%)	
Zero earnings (52%)	n = 763	n = 69	n = 67
Family Income Per Capita	70.4	64.3	85.4
Cost of Child Care	0.0	2.1	29.4
Mother's Earnings	0.0	0.0	0.0
Home employment or unearned income (12%)	n = 152	n = 34	n = 22
Family Income Per Capita	56.2	53.2	84.2
Cost of Child Care	0.0	1.3	49.2
Mother's Earnings	134.3	139.0	205.0
Earnings from part-time employment outside the home (12%)	n = 89	n = 65	n = 47
Family Income Per Capita	52.1	61.2	83.9
Cost of Child Care	0.0	1.7	41.6
Mother's Earnings	150.7	185.7	201.0
Earnings from full-time employment outside the home (24%)	n = 132	n = 116	n = 164
Family Income Per Capita	52.0	49.5	57.7
Cost of Child Care	0.0	1.8	50.2
Mother's Earnings	171.7	176.7	207.5

Note: Estimates of the poverty line in Brazil for 1995 vary, including: R$64 per month (World Bank poverty assessment); R$108 per month (Psacharopoulos, et. al.); R$102 per month (GDP PPP, $60 per month); and R$92 per month (Consumption PPP, $60 per month). Sixty percent of the sample reported family income per capita below the low-end poverty line of R$64 per month used in the World Bank poverty assessment.

The sample mean of hours worked per week was 42 hours, with 17% of survey respondents working more than 60 hours per week. The wide variability in weekly hours worked reflects the large participation of survey respondents in the informal labor market. Thirty-seven percent of respondents

classified themselves as domestic workers, and one-quarter were self-employed. Forty hour work weeks and nine to five jobs are the exception rather than the rule, and there seems to be willingness to accept low hourly wages in order to achieve monthly earnings targets.

Also provided in Table 1 are summary data on family income per capita, mother's earnings, and the cost of child care, for each of the twelve labor force participation/child care diads. As would be expected, higher family income per capita is positively correlated with the use of high-cost child care outside the home, as are higher earnings of the mother. The sample is relatively clustered at the extremes– the two diads with the largest numbers of observations are mothers with zero earnings who care for their children at home, and mothers with earnings from full-time employment who utilize high-cost child care options outside the home.

Without exception, the families surveyed reported incomes per capita of less than one minimum salary (R$100 at the time) per month.[20] Per capita family incomes were, on average, lower for families where the mothers worked from the home or received unearned income (pension or disability payments) than for families where the mothers did not work at all, suggesting that mothers with zero earnings may be "buying" leisure time and the option to stay home with their children due to higher family income. Lowest per capita family incomes, (despite the strength of the mother's earnings) were observed for households where the mother worked full-time outside the home, suggesting a prevalence of female-headed households in this category.[21] The survey shows that families with higher income spend a greater share of it on child care. This could indicate that child care is a luxury good, with an income elasticity greater than 1. It could also result from women with higher earning capacity choosing to enter the labor force given the greater opportunity cost for the household of lost earnings.

Theoretical Framework and Empirical Methodology

This paper estimates a series of partial equilibrium approximations of the complex child care/labor force participation decision rather than estimating a fully endogenous structural model of the joint decision process. This is done in order to facilitate interpretation of each set of results and to yield

[20] Estimates of the poverty line in Brazil for 1995 vary, including: R$64 per month (World Bank poverty assessment); R$108 per month (Psacharopoulos, et. al.); R$102 per month (GDP PPP, $60 per month); and R$92 per month (Consumption PPP, $60 per month). Sixty percent of the sample reported family income per capita below the lowest poverty line of R$64 per month used in the World Bank poverty assessment.

[21] Roughly one-quarter of the survey respondents overall resided in female-headed households with eight percent of mothers residing in households with no other adults. Need to verify distribution of female headed households by cell.

clear estimates of final earnings outcomes. The decision to participate in the child care market, and the decision to participate in the labor market are each estimated separately, and the results from these estimates then used to control for selection in subsequent estimations of the final effect on earnings.[22] Borrowing from the literature on discrimination, the decision process is modelled in such a way that earnings functions are an output rather than an input, enabling an explicit estimation of the impact on final earnings of the two decisions regarding type of work and type of child care.

The methodology used thus arrives at a range of estimates for the elasticity of earnings with respect to utilization of low-cost care and higher cost informal services with corrections for varying degrees of endogeneities. While no one result is conclusive, taken together the two participation estimates and the series of earnings equations offer a picture of the factors at play which influence household decisions regarding labor force participation and child care usage, as well as some clear indications that use of child care services outside the home, all else being equal, tends to result in increased earnings.

The estimates presented below model the participation and child care decisions as choices in which family members make this decision taking the decisons of other family members as given. The weakness of this approach is obvious, if we believe that household members enter into jointly bargained decisions regarding labor force participation and the allocation of domestic tasks and negotiate amongst themselves regarding how total household resources are allocated. [23] [24] However, the principal motivation driving this research was the goal of obtaining decent estimates of the final earnings outcomes resulting from the labor force participation/child care decision that could be used to define future cost recovery strategies. Thus, the individual choice framework was maintained, despite its limitations with respect to capturing the full complexity of the household's decision making process. The approach followed allowed for the disentangling of the issues regarding the distribution of types of employment and child care usage and self-selection into the labor force, while at the same time retaining the ability to then

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[22] An initial attempt was made to explicitly model the joint decision process, using the multinomial logit technique to estimate the effects of individual, household, and child care supply characteristics on the probability of households being in each of the twelve diads mapped in Table 1, followed by an estimation of earnings function for each of the labor force participant cells. Specific findings of this model were generally consistent with the results presented below, although the complexity of the model prevented straight-forward interpretation of overall results.

[23] We also take previous fertility decisions as exogenous variables, although decisions about the number of children to have may also be related to choices made regarding labor force participation and the type of child care options. Recent research by Connelly, et.al. (1997) suggests that endogenizing the fertility decision does not significantly change results regarding child care choice and labor force participation decisions.

[24] There are a range of models for how the household maximization decision occurs which can be broken down into three strands: family utility models, bargaining, or game theoretic models, and notions of market exchange within the household. See Apps and Rees (1994) for a discussion of the latter two and Ransom (1987) for a discussion of the former.

systematically compare the earnings equations of individuals who opted for different participation or child care strategies.

To estimate earnings functions (and subsequently analyze the sources of differences in pay due to differences in the type of child care used), taking some account of family factors and the bias introduced by having a censored sample (earnings are only observed for workers, child care is only used by those who can afford it or have access to it), a selectivity model in the Heckman tradition is utilized. The sample includes all primary care givers in the survey, whether they are working or not, and whether or not they are paying for child care. The series of earnings estimates presented thus first allows for simultaneous control of selection in the decision to participate in the labor market and for selection in the type of participation chosen (e.g. full-time, part-time, work from home). The second set of estimates controls for selection into the type of child care used. Use of multinomial logit estimation allows for a decomposition into human capital, household, child care availability, and unexplained factors of the probability that individuals make different participation or child care decisions. Two sets of selectivity controls, or weights, can be calculated from the estimates of the logit equations, and then included in the earnings functions as a control for sample self-selection bias.[25]

III. Estimation of Choice Models

In this section, estimation results are presented for two separate choice models. The first models the mother's decision of whether or not to participate in the labor force, and in what way (working from home, working part-time outside the home, and working full-time outside the home), using a multinomial logit estimation technique in which the probability of each of the three choice options (relative to the base option of not working for pay) is estimated, based upon a series of individual, household, and child care supply characteristics. The second choice model considers the mother's decision of whether or not to use paid child care services. Following a similar methodology, a multinomial logit estimation is done to determine the probability of using low cost public care, or high cost market care (versus using no paid child care services outside the home). Given the hypothesis that the child care usage and labor force participation decisions are in fact determined jointly, although the models provide separate estimates for each decision, each estimate uses the full set of independent variables. The estimates can thus be loosely interpretated as reduced forms of the fully endogenous choice model.

[25] The derivation of an estimator for the sample selection model when the selection is based on the multinomial logit model is described in Lee, 1983. The specific estimation procedure utilized is outlined in Greene, 1992, pp. 618-622.

Descriptive Data for Participation Decisions

Table 2 presents the variables used in the labor force participation and child care decisions together with their descriptive statistics. The first two columns present the information for on variable mean and standard deviation for the entire sample, while the third and fourth columns present the information for the subset of individuals who work outside the home. This subsample was used to estimate the child care choice model which takes labor force participation as given. *Individual characteristics* include potential experience in the labor force (age minus years of schooling minus 6); experience squared, years of schooling, and years residing in the community. The latter was used as a measure of the individual's ability to draw upon neighborhood resources, both in locating employment and in accessing informal childcare (or getting to the front of the line in the queue for rationed public rationed care).

For *household characteristics*, we use the sum total of household income from sources other than the primary care giver, the number of children less than six years old (the target group for child care), the number of children between the ages of 7 and 15, and the number of other adults, defined as those older than fifteen years. Children older than six years of age and other adults are included as potential substitute child care providers. We also include a variable measuring the number of relatives living nearby in the same community, who also represent potential care providers.

Finally, the last grouping of independent variables measures characteristics of the *supply of child care* confronted by the household. The average neighborhood cost of child care is the price charged per child in *paid care*, averaged for each of the 15 communities surveyed. The final variable measures the availability of low cost publically provided care in the community, and specifically calculates the percentage of children in the target group who are enrolled in publicly funded day care centers for each of the 15 localities surveyed.

Table 2: Variable Classification and Descriptive Statistics Women with Children Under Six Years of Age, Favelas of Rio de Janeiro, 1995				
	Sample for Labor Force Participation Choice Model n = 1799		Sample for Child Care Choice Model n = 676	
	Mean	Std. Dev.	Mean	Std. Dev
Individual Characteristics				
Experience	17.18	7.92	17.74	7.72
Schooling	5.46	2.91	5.58	3.11
Years residing in community	13.51	10.82	14.34	11.20
Household Characteristics				
Other household income	289.38	293.28	261.89	301.48
# of children under age 6	1.34	0.60	1.28	0.55
# of children aged 7 - 15	0.73	0.98	0.83	1.05
# of other adults	1.55	1.17	1.54	1.25
# of relatives in the community	7.62	11.09	7.93	11.43
Child Care Supply Characteristics				
Average neighborhood cost of child care	30.19	8.83	30.01	9.33
Percentage of children using public care	0.06	0.06	0.07	0.07

Multinomial Logit Results for the Labor Force Participation Decision

Results of the labor force participation model are presented in Table 3. In general, the results are consistent with previous findings in the literature. Highly significant negative constants reflect the low likelihood of labor force participation. Human capital variables of experience and schooling take on the expected signs. The "social capital" variables, of years residing in the community and the number of relatives in the community are in most cases not significant, although the number of years in the community does increase the likelihood of having a full-time job outside the home.

An implicit division of labor seems to exist within the household, as increased income from other members of the household has a uniformly negative effect on the probability of the mother taking on work for pay. Furthermore, young children and labor force participation are shown to make conflicting demands on the time of mothers, with the presence of children under the age of six consistently lowering

the probability of paid work. This effect is greatest and most significant in reducing the likelihood of the mother working full-time outside the home. Older children, however, have the opposite effect, showing a strongly positive influence on the likelihood of the mother to take on paid work in all three categories. This may be attributed both to the increased household demand for income as there are more mouths to feed, and to the capacity of the older children to take on increasing responsibilities in the household (this latter aspect is confirmed by the results of the child care choice estimates, presented below). The number of other adults in the household, another measure of potential substitute care providers, has a strong and significant effect on increasing the likelihood of the mother taking on a full-time job outside the home.

Increases in the supply of publicly provided child care are seen to be the single most important factors in increasing the likelihood of women in the sample to work outside the home, either part-time or full-time. While, as expected, the child care supply effect shows little significance in influencing the probability of women taking on paid work within the home, it is strongly significant and positive in the other two cells. This finding has clear policy implications in terms of the income generation effects of providing greater access to child care.

Multinomial Logit Results for the Decision to Participate the Child Care Market

Table 4 presents the results for the multinomial logit model of decision to participate in the child care market. The default option is not to use child care outside the home, with the two observed choices being the use of low-cost (mainly publicly provided) care, and the use of high- cost care outside the home. The estimated model has low predictive power. The only included variables which appear to have a significant impact on the choice of child care mode are the presence of substitute care providers (either older children or other adults), and the child care supply variables (but only for the users of public care). In other words, individual human capital characteristics, the "social capital" characteristics, and the household income effect do not help to predict whether or not mothers will choose to use childcare outside the home, either publicly provided, or market-based. The major factors influencing such a decision appear to be the presence of substitute care providers within the household (which has troubling policy implications in terms of keeping older siblings, particularly girls, from completing their schooling). For users of public care, availability and relative affordability are the chief explanatory factors. In brief, increasing the supply of public care will lead to an increase in its use, and, as a collateral benefit, will most likely allow older siblings to dedicate more time to their own schooling rather than to provide substitute child care services.

Table 3 : Multinomial Logit Results for Labor Force Participation Decision
Women with children under six years of age
Favelas of Rio de Janeiro, 1995
Full Information Maximum Likelihood Estimates, n = 1799, Chi-Squared = (150.45)
(t-statistics in parentheses)

Joint Decision Outcome	Home Earnings	Part-Time Earnings	Full-Time Earnings
Constant	-2.917**	-2.926**	-2.223**
	(-4.925)	(-4.797)	(-4.833)
Experience	0.0795**	0.0821**	0.081**
	(2.158)	(2.052)	(2.685)
Experience Squared	-0.0007	-0.121	-0.002**
	(-0.866)	(-1.301)	(-2.181)
Schooling	0.132**	0.090 **	0.083**
	(4.410)	(2.934)	3.492
# of Relatives in Community	-0.001	0.002	0.002
	(-0.178)	(0.358)	(0.400)
Years Residing in Community	0.009	0.011	0.111*
	(1.196)	(1.338)	(1.797)
Other Household Income	-0.0005*	-0.0003	-0.001**
	(-1.687)	(-0.958)	(-4.361)
No. of Children Under 6	-0.241*	-0.273**	-0.419**
	(-1.799)	(-1.998)	(-3.848)
No. Of Children Aged 6 - 15	0.219**	0.244**	0.159**
	(2.745)	(3.030)	2.448
No. of Other Adults	0.014	-0.076	0.170 **
	(0.181)	(-0.922)	(2.973)
Average Neighborhood Cost of Child Care	-0.010	-0.245	0.007
	(-1.024)	(-0.258)	(0.997)
Percentage of Children in Publicly Funded Care	1.051	4.065 **	4.582**
	(0.772)	(3.061)	(4.382)

* significant at 10% level
** significant at 5% level

Table 4: Multinomial Logit Results for Child Care Choice Decision
Women with children under six years of age who work and use child care outside the home
Favelas of Rio de Janeiro, 1995
Full Information Maximum Likelihood Estimates, n = 676, Chi-Squared = (116.40)
(t-statistics in parentheses)

Joint Decision Outcome	User of Low Cost Care	User of High Cost Care
Constant	0.209	1.445*
	(0.252)	(1.893)
Experience	0.0293	-0.006
	(0.538)	(-0.120)
Experience Squared	0.0000	0.0004
	(0.018)	(0.339)
Schooling	0.014	0.046
	(0.367)	(1.277)
# of Relatives in Community	-0.0000	-0.0037
	(0.009)	(-0.410)
Years Residing in Community	-0.001	-0.002
	(-0.122	(-0.213)
Other Household Income	0.0004	0.0004
	(1.026)	(1.072)
No. of Children Under 6	-0.002	-0.260
	(-0.013)	(-1.392)
No. Of Children Aged 6 - 15	-0.330**	-0.544**
	(-3.207)	(-5.086)
No. of Other Adults	-0.398**	-0.247**
	(-3.960)	(-2.801)
Average Neighborhood Cost of Child Care	-0.024*	-0.005
	(-1.898)	(-0.534)
Percentage of Children in Publicly Funded Care	7.211**	0.742
	(4.165)	(0.502)

* significant at 10% level
** significant at 5% level

IV. Determination of Earnings Outcomes

This section presents a range of estimates for earnings equations, with varying degrees of disaggregation of the sample and correcting for endogenity of the various participation decisions. Given that the completely endogenous structural model is not estimated, none of the earnings estimates presented are completely free from some type of bias. Accordingly, a range of possible estimates for the elasticity of earnings with respect to child care utilization will be presented based on these findings which are robust to changes in specification and sample size.

Descriptive Data for Earnings Functions

Table 5 presents the list of variables and their descriptive statistics used for the estimation of earnings functions. Descriptive statistics are presented for the various sub-samples for which earnings functions were estimated, including the entire sample of women with earned income (892 observations), only women who work for pay outside the home (676 observations), and separate sub-samples for home-workers, part-time workers, and full-time workers (216, 226, and 450 observations respectively). These last three sub-samples conform to the choice options in the labor force participation model, while the sub-sample excluding women who work for pay within the home conforms to the sample used in the child care decision model.

Rather than using the natural log of hourly earnings as the dependent variable, which constrains the elasticity of earnings with respect to hours worked to be equal to unity, a more flexible functional form is used, wherein the natural log of monthly earnings is the dependent variable, and the natural log of hours worked per month is entered into the right hand side of the equation as an exogenous variable. This specification is particularly apt for this sample of favela residents, as there is great variability in hours worked with many women working much more than a "full-time" week of 40 hours, suggesting that the returns to each additional hour worked are not uniform.[26]

[26] See Cox and Psacharopoulos (1992) for another example of this specification of the earnings function.

Table 5: Variable Classification and Descriptive Statistics for Earnings Estimates
Women with Children Under Six Years of Age, Favelas of Rio de Janeiro, 1995

Data for Mincerian Earnings Functions	All Earnings		Exclude Home Earnings		Home Earnings		Part-time Earnings		Full-time Earnings	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
	n=892		n=676		n = 216		n = 226		n = 450	
Ln of Monthly Earnings	4.97	0.61	5.06	0.52	4.67	0.74	4.97	0.59	5.11	0.48
Schooling	5.62	3.03	5.58	3.11	5.75	2.77	5.50	3.21	5.62	3.01
Experience	18.01	7.93	17.74	7.72	19.11	8.47	18.34	7.78	17.42	7.68
Experience Squared	389.21	343.61	374.05	321.73	436.64	401.68	396.95	324.03	362.54	320.31
Int: Exp & # of Children	40.51	32.75	40.08	34.05	41.84	28.33	42.67	34.55	38.79	33.77
Ln of Monthly Hours	3.61	0.63	3.66	0.48	3.33	1.08	3.15	0.49	3.91	0.18
Uses Market Childcare	0.28	0.45	0.34	0.47	0.12	0.32	0.22	0.41	0.40	0.49
Uses Public Childcare	0.30	0.46	0.33	0.47	0.18	0.39	0.39	0.49	0.31	0.46

Earnings estimates are based on the traditional Mincerian approach, wherein returns in the labor market are hypothesized to be a result of investment in human capital, measured by years of schooling and experience. An interaction term for the proxy experience variable and the number of children is also introduced, in order to better capture the women's actual experience rather than potential experience. Locality control variables were introduced in earlier estimates of the earnings functions, measuring average family income per capita in each community as a proxy for local economic opportunities, but showed no explanatory power. The earnings functions also include two dummy variables, the first of which takes on the value of one if the individual uses public (low cost outside home) child care and zero otherwise, and the second which does the same for the utilization of market care. These variables should capture the effect of utilization of child care services on earnings, *ceterus paribus*.

Overview of Earnings Determinants

Table 6 presents an overview of the estimation results from the various specifications of Mincerian functions. Reduced form estimates provide no correction for selection into the labor force or selection into the child care market. The second set of estimates corrects for selection into the labor force, while the last row of the table provides earnings estimates corrected for selection to the child care market. Of first note is that the results are relatively robust to the selection corrections– for any given

sub-sample, there is little variation in the signs and significance of the determinants of earnings with or without selection controls. In fact, selection controls themselves are only significant in the case of home earners, when correcting for self-selection into the labor market. A strong positive sign on the selection control can be attributed to high productivity in unobservables in home production, relative to productivity in unobservables in other sectors, as well as a lower dispersion of returns to hours worked in home for pay as opposed to work outside the home.[27] Based on the model used for the child care and labor force participation decisions we cannot show conclusively that selection is an issue. This could be explained by either of two possibilities. First, the choice models may not be adequately specified, and it might be possible to include other explanatory variables which would raise their predictive power and increase the final impact of selection. Or, selection might not be much of an issue in this sample— the population is relatively homogeneous, with low-income households having limited choice about whether or not mothers participate in the labor force. And, given the rationed nature of the supply of public child care, again, choice is limited— ramdomness and luck are perhaps better determinants of whether or not public care is utilized than individual choice.

A more important factor leading to differences in the determinants of earnings seems to be the definition of the sample itself. In particular, the sub-sample of women who work less than 40 hours a week outside the home face negative (but insignificant) returns to experience, with higher earnings positively related to experience squared and the interaction term of experience and children, in contrast to other sample differences. These differences remain independent of correction for self-selection into the various types of labor force participation. Unobservable factors which might explain this reversal of the expected signs on these coefficients in the sample of part-time workers include a high preference to spend more time with their children, despite of the opportunity cost of potential returns to their human capital in the labor market and or higher average age of this sub-sample.

Years of schooling is a strong explanatory variable across the board, independent of model specification and sample definition. Significant returns to education are consistent with other estimates of earnings functions in Brazil. The importance of education in increasing the earnings potential of labor force participants and as a strategy for poverty reduction is thus once again reinforced by the results of this study.

Turning now to the variables of particular interest for this study, usage of child care outside the

[27] See Cox and Psacharopoulos, 1992, for more on interpreting the coefficient on the selection control, and Dolton and Makepeace, 1987.

home, we observe a strong and significant positive effect on earnings across the board for women who use market child care (with the one exception of women who work for pay from home with selection controls for labor force participation choice). In contrast, public child care use is only sometimes positively related to an increase in earnings, and when this effect is significant, it is always less than that for use of market care. Table 7 summarizes the estimates of the predicted changes in earnings observed for the use of market or low-cost public care. When they work, women who avail themselves of external child care services are for the most part likely to earn more. Estimates for earnings elasticities for public child care usage range from negligible negative effects up to a twenty percent increase in earnings, depending upon model specification and sample definition. The positive effect on earnings of utilization of this relatively low cost child care outside the home is least for women who work more than 40 hours per week.

Study results also indicate that women who pay more for child care in the private sector are also compensated by greater returns in the labor market– the elasticity of earnings with respect to the use of higher cost market care ranges from 12% to 29%. This difference cannot be attributed to women with higher earnings switching their children from public to market care since public care was shown in previous studies to be of higher quality. Rather, higher returns to market care are most likely due to its greater flexibility in operating hours. Limited hours of service available in the public centers reduces their utility and net impact on earnings for women who work longer hours and/or have long hours of commuting to their places of employment despite their higher quality in terms of achieving child development goals.[28]

The scope for additional cost recovery from users of public child care centers is limited by the relatively low earnings elasticities. Absolute increases in earnings attributable to use of public centers range from small negative values of R$1 per month to the substantial positive increase of R$28 per month estimated for women who work less than 40 hours a week, corrected for labor force participation selection. The current user fees of R$6 per month, even under the most optimistic scenario, represent more than 20 percent of the increase in earnings attributable to the use of the child care centers. However, the estimates of earnings increases presented in Table 7 represent a lower bound for cost recovery potential– if the probability of working outside the home as a result of greater access to public child care is factored in, and the expected value of the total increase in earnings calculated, the scope for

[28] Even though the public day care centers already operate, on average, 10 hours per day, more than one-third of the survey respondents said that they would prefer longer operating hours. Also, the public centers have fixed hours, whereas some types of market care have more flexibility.

cost recovery increases. Furthermore, expanding the hours of operation of the public centers may well lead to increased earnings opportunities for participating mothers. For example, if publicly funded care had the same flexibility, or other desired features, as private-sector care, women's earnings could increase by as much as 29%.

Table 6: Summary of Earnings Functions Estimates
Women with Children Under Six Years of Age, Favelas of Rio de Janeiro, 1995

Sample Definition	# of Obs. (n)	Adjusted R^2	Constant	Schooling	Experience	Experiencesquared	Experience*Children	Ln.of Monthly Hours	Uses Market Childcare	Uses Public Childcare	Selection Controls (?s)
Reduced Form Estimates											
All Earners	892	.126	4.46 **	.048 **	+	-	-	.0004 **	.257 **	.111 **	
Exclude Home Earners	676	.135	3.63 **	.051 **	+	+	-.001 *	.184 **	.154 **	+	
Home Earners	216	.032	3.89 **	.048 **	.046 **	-	-	+	+	+	
Part-time Earners	226	.130	3.84	.052	-	+	+	.027 **	.232 **	.173 **	
Full-time Earners	450	.139	4.50 **	.052 **	.022 **	-	-.003 **	+	.117 **	-	
Selection Controls for Labor Force Participation Decision											
Home Earners	216	.044	+	.099 **	.07 **	-	+	+	.214 **	+	1.24 *
Part-time Earners (1- 39 hours)	226	.127	3.565 **	.055 **	-	+	+	.27 **	.229 **	.180 **	+
Full-time Earners (40 + hours)	450	.142	4.23 **	.055 **	.025 **	-	-.003 **	.011 **	.11 **	-	+
Selection Controls for Choice of Child Care Mode											
Full and Part-time Earners	676	.134	3.66 **	.052 **	+	-	-	.19 **	.175 **	.086 **	-

V. Conclusions and Policy Implications

A general conclusion of the study is that public financing of child care services (through direct supply of services, or inducing demand through subsidies) offers not only long-run hopes for poverty reduction, through improving the welfare and school-readiness of children in poverty, but also yields a more immediate pay-off in the form of increased employment and earnings opportunities for the mothers who are able to utilize such services. Social returns of these long-term developmental benefits justify public investment in child care services. Short-term private returns in the labor market for mothers who benefit from child care services indicate potential for increased cost recovery, which is always welcome in this age of fiscal restraint.

The differences observed in the returns to market versus public care suggest that the provision of demand subsidies which would allow households to choose among alternative child care arrangements may offer greater private returns in terms of increased earnings opportunities than further financing of direct provision by the public sector. This has clear policy implications in terms of intended expansion of the public network. In choosing among alternatives to expand coverage of child care, policy-makers must therefore weigh possible trade-offs between quality of care versus utility for households. The evidence presented in this paper suggests that the quality of developmental care for the child may not enter as heavily into the households 'utility function as does flexibility of hours and ability to pursue full time work. One option for the public sector to ensure adequate quality care is by providing it directly. However, this is a high cost option, that would become even more expensive if the public sector were to expand hours so as to meet the demands of households for custodial care. Instead, a more cost-effective option for expanding coverage would be to improve the quality of private sector care through implementing policies such as increased regulation and licensing requirements. The two options– expanding coverage through increasing the public network of child care centers and expanding coverage through the provision of demand subsidies– can be assessed by considering their relative costs. A subsidy of R$50 per month would cover the most expensive private sector alternative, and still lead to a fifty percent savings in unit cost per child as compared to the operating costs of the existing public centers. Furthermore, the mother who uses this subsidy to avail herself of private care is likely to earn more than she would if utilizing a public center.

The current results offer a strong argument in favor of allowing women this choice between the private and public sectors. However, more research needs to be done on the relative quality of public

versus private care, and the development of methods to guarantee that longitudinal developmental benefits for children would be preserved.

Table 7: Predicted Changes in Earnings attributable to Child Care Usage --Range of Estimates Women with Children Under Six Years of Age, Favelas of Rio de Janeiro, 1995

	Predicted Monthly Earnings			Percentage Changes	
	Base Monthly Earnings	With Public Care	With Market Care	Public Care	Market Care
Reduced Form Estimates					
All	141.4	158	182.8	11.7	29.3
Full & Part-time	158.3	168.2	184.7	6.3	16.6
Home	106.9	109.4	134.1	2.3	2.5
Part-time	144	171.3	181.6	18.9	26.1
Full-time	166.3	165.2	186.9	-0.1	12.4
Correct for Labor Force Participation					
Home	145.3	151.7	179.9	4.4	23.8
Part-time	144	172.4	181.2	19.7	25.8
Full-time	166	164.6	185.7	-0.1	11.9
Correct for Child Care Mode Selection					
Full & Part-time	158.3	172.6	188.6	0.1	19.1

Note: Market care ranges in price from R$19 to R$52 per month, per child. Public care, or low-cost care outside the home, ranges in price from R$6 per month to R$10 per month.

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