Daycare, Durables, and Credit Constraints:

Evidence from Rio de Janeiro

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1. Introduction

There is some empirical evidence that access to daycare increases the incomes of households with young children, particularly through the expansion of female labor force participation in the extensive and intensive margins (e.g., Berger and Black (1992) and Lokshin (1999)). Whether this boost persists even as children grow and enroll in school, however, is less clear. From a theoretical standpoint, one would expect that if parents or primary caretakers who increase their labor provision while their child is in daycare work in areas where experience or seniority matters, the impact of daycare on household income may be long-lasting. But for households whose members work in fields where remuneration is less dependent on experience or previous earnings (e.g., street vendors or beauty salon workers), the additional few years of employment afforded by access to daycare may not have an effect on long-term income. That is, for the latter set of households, their short-term income may increase in response to access to daycare, but their long-term income would be the same whether they increased labor force participation as they gained access to daycare or only some years later, as their children became school aged.

Using data from a municipal daycare program in Rio de Janeiro, we calculate that the short-term impact of the program on household income was around U$45, as already found by Paes de Barros *et al.* (2010). We then show that this difference in income, however, disappears by the time all applicant children are pre-school or school-aged (four years later), indicating that the majority of households benefiting from the public daycare program fall into the second group, where the earnings of those whose children did not participate in daycare quickly catch up with those whose children did.

On their own, these findings would seem to indicate the absence of a medium-term effect of daycare on household living conditions. This is especially true when considering the permanent income hypothesis (PIH), which posits that, assuming access to credit based on future earnings, changes in current income can only affect consumption through their influence on permanent income. But instead, we find that enrollment in daycare not only increases the ownership, and hence consumption, of durable goods, but also that this effect persists even once the focal children are no longer age-eligible for daycare. In fact, the effect of daycare on durable good ownership is higher in the medium-run compared to the short-run. This increasing wedge in the ownership of durable goods

between households that benefited from daycare and those that did not *despite* the lack of a long-lasting effect on income points to a violation of the access to credit assumption within the PIH.

Enrollment in daycare can therefore have an additional impact on beneficiary households in contexts of limited access to credit, as observed in Rio de Janeiro. For credit-constrained households, even a small boost in income afforded by increased labor force participation (in the intensive or extensive margin) can have a large effect on the ownership of durable goods, extending the impact of the program beyond income and into the medium-term. In this case, access to daycare can not only improve living standards by compensating for credit constraints, but also further support beneficiary children's wellbeing, as certain durable goods such as water filters and computers can have positive repercussions for child development.

2. Literature Review: How does daycare fit into the PIH?

The current paper is grounded on two very distinct strands of literature. First, we study the theoretical work on the permanent income hypothesis (PIH), which provides a framework for understanding the impact that access to daycare can have on permanent income and, consequently, consumption. The hypothesis assumes access to credit, and we argue that, through the PIH, if changes in current income are short-lived and not large, big differences in the ownership of durable goods may be evidence of constrained credit.

Second, we consider existing empirical results on the impact of access to daycare as it pertains to income and living standards. This area has concentrated on short-run female labor force participation, and has ambiguous findings. Together, these two strands of research are the building blocks for interpreting the results in this paper – understanding the PIH and implications of its violation enable us to interpret the observed impact of access to daycare on income and consumption in the short- and medium-run as an indicator of the existence of credit constraints.

Permanent Income Hypothesis and Credit Constraints

The PIH was proposed by Milton Friedman in 1957 to explain the observation that shocks to current income are not coupled by equally large shocks to current consumption. By the PIH, if individuals are able to borrow according to their future income, "only differences in permanent income are regarded as affecting consumption systematically" (Friedman, 1957b (p.32)). Specifically,

$$c_p = f(i, u, w)y_p \, ,$$

where c_p is "permanent consumption", or the consumption level expected in a given period – in contrast to temporary, unexpected consumption (c_t) such as those due to a sudden illness or death.[1] Permanent consumption is a function of permanent income (y_p); interest rates (i); individual preferences (u); and, in the presence of uncertainty, the proportion of physical capital to permanent income (w), a measurement of liquidity or a household's ability to use capital to respond to emergencies.

Further, income shocks only change permanent income if they were previously unknown. If a household knows that it will experience a temporary drop in income in a future period t, for instance, this fact is already incorporated into its permanent income and, all other things equal, consumption in period t should be the same as in the periods before and after it. In contrast, an unexpected income shock may affect current and future consumption, but only to the extent that it changes permanent income, as could be the case if a household member received an unanticipated promotion or was selected for a free childcare program that enabled her to work.

The ability to borrow against future income, however, is a key assumption in the PIH, and research by Zeldes (1989) and Ludvigson (1998) among others shows that a mismatch between the hypothesis and empirics may be due to credit constraints. The former develops a test based on Euler equations and uses panel data on food expenditures from the PSID to show that non-poor households with lower levels of financial assets (i.e., more likely to be credit constrained) are less able to smooth consumption. Pointing out that, in practice, banks tend to lend according to current rather than future or permanent income (e.g., by requiring recent paystubs), Ludvigson (1999) shows that constrained credit may be an important driver in violations of the PIH.

There is nonetheless a slight difference in how the PIH applies for measurement purposes to durable goods versus non-durable goods. Specifically, because the PIH pertains to consumption-smoothing rather than expenditure-smoothing, in its purest form it argues that only the value of the *services* provided by a durable good should be taken into account as consumption in each period (Friedman, 1957). This is less of an issue when applying the theory to non-durable goods because expenditures on these items are likely to be highly correlated with the consumption of them. But this nuance is also mitigated in the case of households that switch from not having to having a certain durable good, such as a refrigerator, since both their expenditure on and consumption of the services provided by the good increase from zero, all other things equal.

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[1] Total consumption is equal to the sum of these two consumption categories: $c = c_p + c_t$.

An extension of the PIH to expenditures on durable goods by Bar-Ilan and Blinder (1988) also shows that, while these expenditures may be lumpy, their envelope curve is proportional to and follows the PIH. Using a (S, s) model, under which consumers replenish their durable good to level S whenever the current stock falls to s, the authors argue that small changes in permanent income can lead to large changes in aggregate expenditures on the durable good in the short run but not in the long run. This model, however, pertains to the *replenishment* of durable goods rather than the first acquisition; it also uses car purchases as a primary example but may not be relevant to cheaper durable goods such as water filters and cellphones.

Access to Daycare as an Income Shock

The driving model of this paper is the standard PIH introduced above, and the provision of childcare to a household that did not expect it can theoretically result in an observable increase in permanent consumption, c_p, if changes in household income are large enough or long enough to affect permanent income, y_p. Under this mechanism, if we observe a large change in c_p, we would expect to also see a substantial change in y_p (assuming i and u are constant); a violation of this may be a reflection of credit constraints.

From a theoretical standpoint, however, it is not immediately clear that access to daycare increases household income even in the short-run, as it depends on the balance between substitution and income effects. On one hand, free public childcare lowers the returns to the child's primary caretaker's (often the mother) time spent at home, so she may be more inclined to work as a result of selection into a free childcare program. On the other hand, however, a decrease in childcare costs may remove some of the pressure to work. This is especially pertinent to those paying for alternative childcare services and/or when public childcare covers other costs, including children's meals throughout the day, thereby relaxing beneficiary households' budget constraints.

A joint World Bank and IPEA (*Instituto de Pesquisa Econômica Aplicada*) evaluation of the public daycare program in Rio de Janeiro using the same baseline data as the current paper finds a positive impact of the program on female labor force participation and employment. Importantly, they find that enrollment in daycare increases maternal employment from 36 to 46 percent, with the greatest difference coming from women who did not work prior to the program's inception (Paes de Barros *et al.* 2011).

Results are similar for studies conducted in other regions of the world. Using longitudinal data from Russia in the 1990s, for instance, Lokshin (1999) finds that increases in the cost of childcare decrease female labor force participation, and predicts through simulation that if public childcare were offered for free, female labor force participation would increase by 11%. Chase (1995) compares the changes in labor force participation in Slovakia and the Czech Republic after the end of communism and proposes that women in the Czech Republic actually faced *more* constraints (as reflected by their earnings elasticities) as the country transitioned towards a market economy. The author argues that the more drastic elimination of childcare subsidies in the Czech Republic as compared to Slovakia is a likely explanation for this difference.

Notably, a study treating childcare use and female labor force participation as joint decisions concludes that, in Guatemala, while the use of childcare is associated with higher female labor force participation, it is not associated with higher earnings *conditional* on labor force participation (Hallman *et al.* 2003). Similarly, in the United Kingdom, 18 months after gaining access to daycare, beneficiary mothers were more likely to be employed than those who were not randomly selected for daycare, but "no more likely to have a weekly household income of above £200" (Toroyan *et al.* 2003).

Finally, Medrano (2009) uses the gradual roll-out of public daycare in Chile for identification and observes that once controls are included for individual and family characteristics, it had no impact on female labor force participation. This, the author speculates, could be because the program mainly attracted women who were already working and paying for childcare, or because of the income effects of childcare.

The impact of daycare on household income in the medium-run (i.e., while the children are still of school age) is even more ambiguous, as it depends not only on the short-run labor force participation results, but also on the quality of jobs undertaken. That is, access to daycare may have a path-dependent effect on household income if parents are employed in fields where compensation is tied to experience or to previous earnings, for example. In this case, the fact that by the time their child reaches school age, parents may have logged in a few more years of work or reached a higher base salary than in the counterfactual scenario translates into higher household earnings in the medium- and perhaps even long-term. This may not be true if parents work in areas

without a growth trajectory or for which earnings are less dependent on experience, such as certain low-skill jobs and self-employment.[2]

If access to daycare does not have a medium- or long-run effect on household earnings, according to the PIH, it can only meaningfully impact permanent consumption if its short-run effect is very large to the extent that it substantially changes permanent income on its own.

3. Context and Methodology: Modeling Daycare in Rio de Janeiro

This paper uses panel data from two survey rounds carried out by the World Bank, IPEA, and the IDB around the expansion of a free daycare program by the municipal government of Rio de Janeiro in 2007. Though its goal was to provide daycare to children 0 to 4 years of age, it was clear from the outset that demand would nonetheless exceed supply, and a lottery was instituted to assign daycare spots. Applications were accepted at daycare centers in the second half of 2007, and of the 25,000 applicants, 24,000 were deemed eligible for the lottery. A random draw assigned eligible children into selected and waitlist groups soon after the application period closed, and participation for enrolled children started in early 2008. Due to a miscalculation on the number of available spots, however, a significant fraction of children originally waitlisted were able to enroll before the end of the 2008. Once children enrolled in the public daycare program, they were guaranteed a spot in that center until they became age-eligible for pre-school, which is universally available for five-year-olds in Rio de Janeiro.

The relevant survey rounds were carried out on a random subsample of the eligible applicant cohort in 2008 and 2012. The first survey covered 3,600 households – 1,750 originally selected and 1,750 waitlisted – and was implemented in October 2008, about nine months after daycare services under the new program began. The follow-up was applied four years later to a subsample of 1,400 households from the first round, with selection randomized at the daycare level. By then, all children in the 2007 applicant cohort were age-eligible for pre-school or school.

Given the timing of the surveys, we can study both the effect of *selection* into daycare (intent-to-treat) and of *enrollment* in daycare, or the effect of daycare on households that were participating in

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[2] While we find that, on average, access to daycare does not translate into higher medium-term earnings, we acknowledge that there may be exceptions within the sample. The next paper in this dissertation will focus on this area, modeling and classifying households into those who have a reasonable likelihood that one of their members works in areas where higher labor force participation (at the extensive or intensive margins) has a medium-term effect on earnings and the vast majority, for whom additional years of experience or income do not appear to affect medium-term earnings.

the program by October 2008 – both those that enrolled because they were originally selected and those that managed to get off the waitlist. The latter effect is not only arguably more interesting, as it incorporates individual responses to selection, but it is also more relevant in this context, since several children originally placed on the waitlist were invited to enroll soon after, since the initial placement assigned by the lottery underestimated the number of available spots.

By design, the lottery assigned waitlisted children a number, so that they were technically removed from the waitlist and invited to enroll according to randomization. Actual enrollment, however, may be endogenous to treatment effects, as parents of waitlisted children who believed they were more likely to benefit from daycare (e.g., those who already had jobs lined up) may have followed waitlist progression more closely, while others may have been less motivated to enroll their children in daycare after the academic year already started. This potential endogeneity does not pose a particularly serious challenge in this context, however, as we have an obvious instrument for enrollment: selection, which is by design exogenous. In fact, because both selection and enrollment are binary variables, the Wald estimator gives us the IV estimate.

Table 1 presents some descriptive statistics on children who were enrolled in daycare by the time of the first survey and those who were not, as well as on children who were selected and not selected. As can be seen, there are some differences between enrolled and non-enrolled children and their households. Not surprisingly, there are also differences between selected and non-selected children, since over 90% of selected children were enrolled in daycare by October 2008, compared to around half of the children who were waitlisted. It is worth remembering that these differences do not challenge the validity of selection as an instrument since it was assigned randomly.

Summary statistics on the outcome variables are presented in Table 2. Household income values are given in 2008 Brazilian reais in both waves.[3] In 2008, average household income for the surveyed sample was R$637 per month (around U$319), but by 2012 it had increased to R$879 (U$440), reflecting general boom years for Brazil, which registered a 7.5% GDP growth in 2010[4]. In *per capita* terms, this translates into an increase from R$152 to R$206 over the same period. Based on these figures, applicant families are relatively through not extremely poor, with just under 1/3 of the sample technically eligible in 2012 for Bolsa Familia, a federal program providing conditional

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[3] Using data from the World Bank World Development Indicators, we calculate the GDP deflator for 2012, base year 2008, as 253/193=1.31.
[4] In both survey periods, the exchange rate was around U$1=R$2.

Table 1: Descriptive Statistics, by Selection and Enrollment Status, 2008

	Not Selected	Selected	Not Enrolled	Enrolled
Household size (2008)	4.642	4.579	4.711*	4.573*
	(1.791)	(1.743)	(1.851)	(1.732)
Daycare age cohort (shares)				
Bercario I	0.118	0.112	0.111	0.118
	(0.323)	(0.316)	(0.315)	(0.323)
Bercario II	0.211	0.212	0.201	0.215
	(0.408)	(0.409)	(0.401)	(0.411)
Maternal I	0.559	0.562	0.604***	0.543***
	(0.497)	(0.496)	(0.489)	(0.498)
Maternal II	0.111	0.114	0.0832***	0.124***
	(0.314)	(0.318)	(0.276)	(0.330)
Child female (share)	0.499	0.474	0.493	0.485
	(0.500)	(0.499)	(0.500)	(0.500)
Child's race (shares)				
White	0.327	0.345	0.326	0.340
	(0.469)	(0.475)	(0.469)	(0.474)
Black	0.118	0.106	0.109	0.113
	(0.323)	(0.308)	(0.312)	(0.317)
Yellow	0.0281	0.0222	0.0232	0.0261
	(0.165)	(0.147)	(0.151)	(0.159)
Pardo/Mixed	0.519	0.518	0.533	0.512
	(0.500)	(0.500)	(0.499)	(0.500)
Indigenous	0.00225	0.00325	0.00193	0.00312
	(0.0474)	(0.0569)	(0.0440)	(0.0557)
Other	0.00505	0.00650	0.00677	0.00506
	(0.0709)	(0.0804)	(0.0820)	(0.0710)
Child's guardian, relation to child (shares)				
Mother	0.843	0.860	0.840	0.856
	(0.364)	(0.347)	(0.366)	(0.351)
Father	0.0399	0.0466	0.0445	0.0429
	(0.196)	(0.211)	(0.206)	(0.203)
Grandparent(s)	0.0848**	0.0667**	0.0783	0.0748
	(0.279)	(0.250)	(0.269)	(0.263)
Other	0.0320	0.0271	0.0368	0.0265
	(0.176)	(0.162)	(0.188)	(0.161)
Guardian's Education Level (shares)				
Less than primary	0.0152***	0.00813***	0.0155	0.00974
	(0.122)	(0.0898)	(0.123)	(0.0982)
Primary	0.519	0.510	0.526	0.510
	(0.500)	(0.500)	(0.500)	(0.500)
Secondary	0.447	0.461	0.441	0.459
	(0.497)	(0.499)	(0.497)	(0.498)
More than secondary	0.0185	0.0211	0.0174	0.0210
	(0.135)	(0.144)	(0.131)	(0.144)
Obsevations	1829	1881	1068	2612

Standard deviations in parentheses

Asterisk denotes difference by selection or enrollment: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Summary Statistics of Outcomes, by Selection and Enrollment Status, 2008

	Not Selected	Selected	Not Enrolled	Enrolled
Income				
2008 Household income (2008 R$)	616.639***	657.047***	620.674	642.361
	(10.555)	(11.360)	(12.756)	(9.472)
2008 HH Income per capita (2008 R$)	145.407	157.582	144.300	154.206
	(2.681)	(2.783)	(3.319)	(2.327)
2012 Household income (2008 R$)	833.533	903.040	822.847	884.605
	(26.124)	(28.725)	(36.355)	(23.073)
2012 HH Income per capita (2008 R$)	197.711	209.357	195.010	206.931
	(6.637)	(6.886)	(8.996)	(5.684)
Principal Components Scores				
2008 Living standards PCS	-0.063*	0.060*	-0.040	0.010
	(0.045)	(0.044)	(0.058)	(0.038)
2008 Durables PCS	-0.056**	0.053**	-0.061	0.021
	(0.042)	(0.027)	(0.073)	(0.070)
2012 Living standards PCS	-0.062	0.066	-0.025	0.011
	(0.074)	(0.070)	(0.105)	(0.058)
2012 Durables PCS	-0.130***	0.120***	-0.137**	0.047**
	(0.051)	(0.048)	(0.074)	(0.040)
Obsevations	1829	1881	1068	2612

Standard deviations in parentheses

Asterisk denotes difference by selection or enrollment: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

cash transfers to families earning less than R$140 per capita (the new national definition of poverty). For reference, the mean *per capita* household earnings in the entire city of Rio de Janeiro was R$1784 according to the 2010 census, or around seven times the sample average.[5]

To measure the effect of daycare enrollment on household income, we consider the following reduced form model:

$$Y_{it} = \beta_0 + \beta_1 enrolled_{i2008} + \beta_2 X_{i2008} + \beta_3 X_{it} + \epsilon_{it},$$

where Y_{it} is the income of child i's household in periods $t = \{2008, 2012\}$; $enrolled$ is a binary indicator of whether the child was enrolled in daycare by October 2008; and X is a vector of control variables that can be split into two – some from 2008 data and some from year t data. As discussed above, enrollment may be endogenous, while selection is by design exogenous but correlated with enrollment, such that

$$enrolled_{i2008} = \alpha_0 + \alpha_1 selected_{i2008} + \mu_{i2008}.$$

It is worth noting that we use enrollment data from late 2008. According to the rules, once enrolled in daycare, children could continue attending the same center until they were no longer age-eligible, and we expect that most children would continue to do so. It is possible, however, that our results are downwardly biased, as children who did not get off the waitlist by October 2008, and are thus likely to not have attended daycare that year, may still have applied and been accepted the following year. This will only not be the case for the oldest applicant cohort, as they were only age-eligible for daycare in 2008, but the sample size of that cohort is too small to yield precise results when analyzed alone. Also, while the variable measured is enrollment, is it is likely very closely related to *participation*, as the vast majority of parents who go through the application and enrollment process would actually want their child to attend daycare. There are no conditional cash transfer benefits to attending daycare in Brazil.

By default, the errors are clustered at the daycare level, allowing for correlation in ϵ_{it} between households that applied to the same daycare center. In practice, this means that for households whose children enrolled in daycare, the correlation comes from deriving similar benefits from daycare in terms of childcare hours and meals provided (both of which vary by center), for example. For those whose children did not enroll in daycare, however, the daycare

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[5] http://cidades.ibge.gov.br/xtras/temas.php?lang=&codmun=330455&idtema=108&search=rio-de-janeiro|rio-de-janeiro|censo-demografico-2010:-resultados-da-amostra-rendimento--

center variable is effectively a proxy for the neighborhood or geographic area, since most applicants petition for spots close to their residence.

A significant and positive β_1 when $Y_{it} = Y_{i2008}$ indicates that enrollment in daycare has a short-term impact on household income. When $Y_{it} = Y_{i2012}$, a significant β_1 reveals a medium-term effect, whereby households in which the focal child enrolled in daycare continue experiencing higher incomes (on average) than those in which the child did not enroll, even once both groups of children are age-eligible and presumably enrolled in pre-school or school.[6] We would expect that to be the case, if, for example, parents work in fields where years of experience matters for wages or where raises are systematically given as percentages of previous salaries, so that an additional 1-4 years of increased labor force participation (at the intensive or extensive margin) translates into permanently higher earnings.

The same construct can be used to study the effect of daycare participation on "living conditions". To measure this, we replace Y_{it} with a principal components score using a combination of variables on housing quality and the ownership of certain durable goods in year t, as described in Appendix 1. The majority of indicators are collected in both years, though there are a few that are only used in the 2012 survey, generating at least two ways in which the "living conditions" principal components score can be calculated for 2012 – based on only the same variables as in 2008 or including the "extra" variables. We conduct the analysis both ways.

Finally, considering the role of access to credit, we separate living conditions variables into those that can be purchased (durables) and those related to housing quality. A significant $\beta_1 > 0$ when $Y_{it} = (pc\ score\ for\ durable\ goods)_{i2012}$, for example, indicates that enrollment in daycare in 2008 (and hence, likely participation in daycare from 2008 until no longer age-eligible) has a positive effect on the ownership of durables even once children are eligible for pre-school or school. This result may be obtained if households whose children enrolled in daycare experienced permanent (or at least large and long-lasting) increases in income, so that they were inclined and able to buy more durable goods than households that did not. In the absence of large or long-lasting increases in income, however, differences in the ownership of durable goods, and hence, differences in consumption, point to a violation of the PIH, and hence to limited access to credit.

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[6] Primary school is compulsory for all children during the study period. Pre-school is compulsory for five-year-olds as of 2013, but was already universally available in Rio de Janeiro before then.

To further investigate the role of credit constraints on the purchase of durable goods among beneficiary households, we run additional regressions splitting the sample into households that are more likely to be credit constrained and those that are not.

4. Results: the effect of daycare on income and durable ownership
Short- and Medium-Term Effects on Income and Living Conditions

The short-term effect of the daycare program on household income is evident, increasing earnings for enrolled households by an average of R$83 just eight months after the program started (Table 3, Column II). This value is slightly smaller but consistent with the results presented in Paes de Barros *et al.* (2010), which estimates the Local Average Treatment Effect (LATE) of daycare as increasing household income by R$91.50 (significant at the 5% level). The difference is due to the inclusion here of controls for household size; the focal child's age group/classroom; and the education level of the child's parent/guardian. Column IV in Table 3 limits the analysis to households with non-zero earnings, while Columns V-VII use the natural log of household earnings as the dependent variable, taking into account the highly skewed distribution of income. On average, enrollment in daycare increases household income by around 20% in the short-term, and these results are robust to specifications that allow for clustered errors at the daycare/neighborhood-level and for daycare/neighborhood fixed effects.

The impact of daycare enrollment on household income dissipates by the time all children are no longer age-eligible for daycare, however. Table 4 presents regression results when using household income in 2012 (adjusted for 2008 reais; Columns I-III) and its natural logarithm (Columns IV-VI) as the dependent variable. While the coefficients on enrollment are positive in all of the iterations, they are not statistically significant even at the 10% level.[7]

Together, these results for income indicate that the initial effect of enrollment in daycare on household income is generally not long lasting, and, on average, does not persist once all children in the sample can enroll in pre-school or school.[8] The average short-term effect of daycare is

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[7] The previous table (2008) does not include controls for mother's age and age squared because this information was only collected in 2012, and is therefore available just for the random subsample that was revisited in this second round. Including the two variables in the regression for 2008 lowers the sample size dramatically, as expected, but produces qualitatively similar results.

[8] Admittedly, the disappearance of significance after four years may be because children who were not enrolled in daycare in October 2008 may have nonetheless enrolled in subsequent years as long as they were age-eligible. Unfortunately, the current dataset does not allow us to consider and instrument for enrollment in 2009-2012, but it is worth noting that if we restrict our sample to children in the two oldest cohorts – those

Table 3: Dependent Variable: Household Earnings in 2008

	I Linear	II Linear, IV	III Linear, IV, nonzero earnings	IV Log	V Log, IV	VI Log, IV, FE
Enrolled	22.61	83.10**	61.74*	0.0611	0.197***	0.202***
	(17.25)	(32.71)	(31.70)	(0.0379)	(0.0623)	(0.0524)
Household size (2008)	40.39***	40.89***	36.73***	0.0749***	0.0760***	0.0750***
	(6.954)	(6.869)	(6.564)	(0.0119)	(0.0119)	(0.00777)
Daycare age cohort						
Bercario II	38.95	37.86	40.57	0.0326	0.0302	0.178**
	(39.75)	(39.99)	(40.77)	(0.0654)	(0.0667)	(0.0743)
Maternal I	31.80	32.78	35.33	0.0315	0.0338	0.110**
	(28.12)	(28.12)	(27.91)	(0.0555)	(0.0562)	(0.0535)
Maternal II	7.569	2.757	3.932	-0.0331	-0.0439	0.0439
	(38.60)	(39.20)	(38.90)	(0.0699)	(0.0716)	(0.0725)
Guardian's Education Level						
Primary	40.99	35.22	-7.062	0.219	0.206	0.225
	(51.44)	(52.32)	(59.63)	(0.171)	(0.171)	(0.168)
Secondary	166.4***	160.1***	107.0*	0.482***	0.468***	0.462***
	(50.36)	(51.42)	(58.19)	(0.175)	(0.175)	(0.168)
More than secondary	596.0***	587.5***	523.0***	0.982***	0.963***	0.909***
	(95.50)	(96.02)	(90.61)	(0.208)	(0.207)	(0.187)
Observations	3661	3659	3562	3661	3659	3659
R^2	0.058	0.054	0.048	0.063	0.057	0.055

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Dependent Variable: Household Earnings in 2012

	I	II	III	IV	V	VI
	Linear	Linear, IV	Linear, IV, nonzero earnings	Log	Log, IV	Log, IV, FE
Enrolled	31.38	101.5	129.5	0.0582	0.0497	0.142
	(42.68)	(75.62)	(87.19)	(0.0730)	(0.127)	(0.155)
Household size (2012)	59.53***	59.51***	57.63***	0.0684***	0.0684***	0.0819***
	(15.53)	(15.57)	(15.76)	(0.0208)	(0.0206)	(0.0198)
Daycare age cohort						
Bercario II	-89.98	-90.24	-85.57	-0.126	-0.125	-0.273
	(94.19)	(93.35)	(102.2)	(0.124)	(0.124)	(0.195)
Maternal I	-82.71	-82.72	-90.11	-0.0464	-0.0461	-0.000243
	(84.87)	(83.79)	(92.48)	(0.107)	(0.107)	(0.163)
Maternal II	-220.9**	-228.6**	-166.3	-0.395**	-0.394**	-0.561**
	(103.5)	(101.9)	(113.6)	(0.162)	(0.160)	(0.219)
Guardian's Education Level						
Primary	281.0***	278.0***	316.2**	0.334	0.334	0.430
	(105.4)	(105.9)	(123.7)	(0.262)	(0.259)	(0.320)
Secondary	400.7***	396.6***	423.4***	0.509*	0.509**	0.586*
	(109.0)	(108.5)	(120.9)	(0.262)	(0.259)	(0.321)
More than secondary	1084.9***	1075.8***	1081.3***	1.142***	1.143***	1.097***
	(277.6)	(272.3)	(240.3)	(0.396)	(0.392)	(0.418)
Mother's age	-17.10	-16.74	-34.30	0.0169	0.0168	0.00673
	(26.94)	(26.77)	(24.34)	(0.0500)	(0.0495)	(0.0468)
Mother's age squared	0.311	0.306	0.514	-0.0000928	-0.0000922	0.0000475
	(0.392)	(0.389)	(0.356)	(0.000720)	(0.000712)	(0.000683)
Observations	1241	1240	1085	1241	1240	1238
R^2	0.044	0.043	0.040	0.030	0.030	0.036

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

equivalent to 15-20% of household monthly income, which is certainly meaningful relative to current income. But if this impact lasts at most four years (the period in which the child can attend daycare), it represents a relatively very small effect on lifetime earnings and, consequently, permanent income. This is especially true if we consider that households with young children are likely in the earlier side of their life cycle.

As discussed above, by the PIH, if households have access to borrowing and saving mechanisms, current income can only change consumption via permanent income. So, as families seek to smooth their consumption across time, a very small change in permanent income should have a negligible effect on consumption (and, consequently, living standards) in the presence of perfect credit markets. Thus, because the impact of access to daycare on permanent income is small and not long-lasting, with access to credit, we would expect there to be virtually no difference in living conditions between households whose children enrolled in daycare and those that did not, both in the short- and in the long-run. Instead, as shown in Table 3, we find differences in living standards in both periods, particularly with respect to the ownership of durable goods. This may be an indicator that households face important credit constraints, and shift expenditures according to current income and regardless of permanent income.

To measure living conditions, we use a principal components score (PCS) based on standard indicators of housing quality (e.g., floor material and connection to sewage system) and the ownership of durable goods (e.g., refrigerator, stove, and television; all of these are listed in Appendix A1 along with their descriptive statistics). Replacing Y_{it} with this indicator of living conditions, we find that, in October 2008, households whose children were enrolled in daycare were on average better off than those whose children did not enroll (Table 5, Columns I and II). Under a more careful analysis, it is clear that these results are actually driven by differences in the ownership of durable goods rather than by housing quality, as shown by classifying the living standards variables into these two groups and using their separate PCSs as Y_{it}. Columns III and IV indicate that differences in housing quality are not significant between families whose children enrolled and those whose children did not enroll in daycare, while Columns V and VI show an important difference in the ownership of durable goods. Specifically, the PCS has a mean of 0 and a standard deviation of 1.86, so households whose children enrolled in daycare had a PCS for durable

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who had at most only one year to enroll if they were waitlisted in 2008 – the same pattern presented here holds. Furthermore, if one were to assume that every single child in the control group enrolled in daycare in 2009, the results continue to indicate that while an additional year of daycare has no impact on household income, it does affect ownership of durable goods.

Table 5: Dependent Variables: Principal Components Scores for Living Standards Indicators, 2008

	I	II	III	IV	V	VI
	All Variables	All Variables	Housing Quality	Housing Quality	Durables	Durables
	IV	IV, FE	IV	IV, FE	IV	IV, FE
Enrolled	0.245**	0.241**	0.152	0.145	0.208**	0.197**
	(0.122)	(0.122)	(0.117)	(0.113)	(0.0938)	(0.0920)
Household size (2008)	0.0555***	0.0756***	0.0362**	0.0504***	0.0193	0.0354**
	(0.0178)	(0.0176)	(0.0166)	(0.0156)	(0.0139)	(0.0143)
Daycare age cohort						
Bercario II	0.253	-0.00341	0.187	-0.146	0.171	0.227*
	(0.247)	(0.181)	(0.259)	(0.167)	(0.110)	(0.137)
Maternal I	0.440**	0.265*	0.369*	0.189	0.285***	0.238**
	(0.203)	(0.141)	(0.210)	(0.129)	(0.0970)	(0.109)
Maternal II	0.360	0.172	0.317	0.0946	0.191	0.225
	(0.276)	(0.183)	(0.280)	(0.167)	(0.151)	(0.140)
Guardian's Education Level						
Primary	0.541*	0.302	0.455	0.242	0.506**	0.447
	(0.327)	(0.383)	(0.279)	(0.340)	(0.230)	(0.273)
Secondary	1.144***	0.878**	0.875***	0.637*	1.001***	0.925***
	(0.322)	(0.384)	(0.278)	(0.341)	(0.222)	(0.274)
More than secondary	2.429***	1.867***	1.762***	1.292***	1.911***	1.639***
	(0.363)	(0.425)	(0.323)	(0.378)	(0.253)	(0.305)
Observations	3572	3572	3603	3603	3626	3626
R^2	0.044	0.038	0.026	0.022	0.051	0.043

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

goods that is on average just over one-tenth of a standard deviation higher than households whose children did not enroll in daycare 8 months after the program started.

In practice, because children were randomly selected by the daycare lottery, these figures imply that households whose children participated in the daycare program were more likely to buy durable goods within 8 months after the program started than those whose children did not participate. While on one hand this may seem unremarkable, since participant households also experienced average increases in incomes as shown above, on the other, it is worth remembering that this boost in income is short-lived and has a very small effect on permanent income.

It is reassuring to see that other coefficients are consistent with expectations, as living conditions and the ownership of durable goods increases with the education level of the person primarily responsible for the focal child.

Unlike differences in household income, however, differences in the ownership of durable goods not only continued to be present four years later, but actually increased. In 2012, when all children in the 2007 applicant cohort were age-eligible for pre-school or school, households whose children had been enrolled in daycare in October 2008 had a combination of durable goods with PCSs that were on average one-quarter of a standard deviation larger than that of households whose children were not enrolled in public daycare by October 2008. These results are stable to changes that allow for daycare-level fixed-effects and to the addition of two variables to the PCS that were only collected in 2012: internet access at home and the ownership of a car or motorcycle (Columns VII and VIII).

Together, the results on income and durable goods indicate a medium-term impact of daycare on beneficiary families: even once focal children were no longer attending daycare, families whose children enrolled in daycare in 2008 had living environments with more durable goods than families whose children were not enrolled at the initial observation point. This difference may be in part explained by the fact that we already observe a gap in 2008, and since durables are expected to last several years, those households that increased their spending on durables in 2008 continued to have the items in 2012. However, the fact that the gap between the two groups actually increased between 2008 and 2012 indicates that households whose children enrolled in daycare continued to accumulate durable goods at a higher average rate relative to those whose children were not initially enrolled.

Table 6: Dependent Variables: Principal Components Scores for Living Standards Indicators, 2012

	I All Variables IV	II All Variables IV, FE	III Housing Quality IV	IV Housing Quality IV, FE	V Durables IV	VI Durables IV, FE	VII Durables Extra IV	VIII Durables Extra IV, FE
Enrolled	0.279	0.444*	0.158	0.337	0.491***	0.474***	0.493***	0.488**
	(0.211)	(0.234)	(0.206)	(0.227)	(0.151)	(0.163)	(0.172)	(0.192)
Household size (2012)	0.0487	0.0494	0.0199	0.0135	0.0293	0.0411*	0.0131	0.0302
	(0.0345)	(0.0338)	(0.0315)	(0.0317)	(0.0272)	(0.0232)	(0.0312)	(0.0259)
Daycare age cohort								
Bercario II	0.0960	0.0480	0.0732	0.0139	0.0504	0.00224	0.164	0.186
	(0.239)	(0.283)	(0.226)	(0.280)	(0.157)	(0.203)	(0.188)	(0.246)
Maternal I	0.227	0.307	0.164	0.182	0.109	0.252	0.217	0.437**
	(0.192)	(0.230)	(0.174)	(0.234)	(0.133)	(0.154)	(0.161)	(0.188)
Maternal II	-0.169	-0.0198	-0.123	0.00151	-0.207	-0.0859	-0.110	0.0433
	(0.328)	(0.312)	(0.297)	(0.310)	(0.205)	(0.218)	(0.216)	(0.267)
Guardian's Education Level								
Primary	0.0821	0.205	-0.0537	0.165	0.416*	0.273	0.459	0.344
	(0.369)	(0.428)	(0.343)	(0.378)	(0.215)	(0.258)	(0.286)	(0.319)
Secondary	0.674*	0.674	0.419	0.500	0.785***	0.641**	0.869***	0.745**
	(0.369)	(0.427)	(0.349)	(0.376)	(0.213)	(0.259)	(0.291)	(0.321)
More than secondary	2.158***	1.959***	1.629***	1.472***	1.700***	1.594***	1.903***	1.858***
	(0.393)	(0.521)	(0.397)	(0.454)	(0.295)	(0.346)	(0.418)	(0.447)
Mother's age	0.0327	0.0112	-0.0153	-0.0333	0.150***	0.130**	0.195***	0.167***
	(0.0707)	(0.0691)	(0.0658)	(0.0664)	(0.0476)	(0.0528)	(0.0553)	(0.0575)
Mother's age squared	-0.0000732	0.000148	0.000496	0.000686	-0.00182***	-0.00158**	-0.00246***	-0.00213**
	(0.00103)	(0.00104)	(0.000964)	(0.000993)	(0.000702)	(0.000799)	(0.000796)	(0.000862)
Observations	1168	1166	1168	1166	1240	1238	1238	1236
R^2	0.049	0.032	0.031	0.015	0.053	0.053	0.047	0.048

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

As argued above, however, a negligible change in permanent income – even if due to a relatively large change in current income – should not affect expenditures, and, consequently, the ownership of durable goods, if households have access to credit. A persistent and increasing gap in the ownership of durable goods, however, points to potential credit constraints, whereby very small increases in permanent income can make a significant difference in living standards because households are unable to borrow against future income.[9] In this case, enrollment in daycare effectively compensates for credit constraints, enabling households with limited access to credit but a boost in short-term income due to access to daycare to purchase durable goods that, with access to credit, they would have acquired by borrowing against future income.

More Evidence of Credit Constraints

Further evidence of that enrollment in daycare and the temporary increase in income derived from it is used to make up for credit constraints can be found by considering two indicators that capture distinct facets of access to credit: credit card ownership and formal sector employment. The dataset does not have an explicit "access to credit" variable, but these two measurements are meaningful proxies, particularly in the Brazilian context. Although access to credit takes on many forms, credit cards are a common source of credit in Brazil, not only because they can be paid off in installments, but also because charges can be made in installments. That is, at the time of purchase, credit card holders are often given the option to allow the retailer to place a hold for the full amount but charge only a portion of it every month (*parcelado*).

Employment in the formal sector provides an alternative indicator of access to credit, also with unique features in this context. In general, individuals who are employed in the formal sector may be perceived as less risky and are more likely to be able to produce paystubs for credit qualification, but in Brazil, they may also benefit from *credito consignado*. Under this system, payments are deducted directly from one's paycheque, decreasing default risk by effectively transforming one's future income into collateral.[10]

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[9] These trends could also be observed if enrollment in daycare actually changed household preferences, so that households whose children participated in daycare began valuing durable goods more highly relative to other expenditures (i.e., a change in *u*). But this assumes that the change in preferences also takes place fairly quickly, since there are differences in the ownership of durable goods just 8 months after the program start date, and that the change would occur even though the majority of durables studied may have benefits to children but are certainly not child-centric.

[10] *Credito consignado* is designed to decrease default risk, presumably encouraging banks to offer larger loans and better rates, and has been available to public sector workers since 1990 and to social security recipients and formal sector workers since 2003. By 2006, it comprised around one-third of all consumer credit in terms of volume (Costa and Mello, 2006).

Unfortunately, data on both of these variables was only collected in 2012, so we are unable to tell whether members of certain households already had a credit card or were employed in the formal sector prior to the daycare lottery, or if these actions were undertaken since. Nevertheless, we would expect that households with credit cards or formal employment in 2012 were also more likely to fall in that category in the years prior than households that did not have a credit card or a member who was formally employed. It is also reassuring that we do not find indicators of an endogeneity problem, whereby household members respond to access to daycare by acquiring a credit card or entering formal employment. Rather, even controlling for income in 2008, households whose children enrolled in daycare were just as likely to have a credit card or have a member engaged in formal employment by 2012 as households in the sample whose children did not (Appendices B1 and B3).

Consistent with our assessment of the role of daycare in compensating for credit constraints, among households that did not have a credit card by 2012, enrollment in daycare appears to make a statistically significant positive effect on their PCS for durable goods in 2012. This is in stark contrast to households that have at least one credit card; this group does not shift its expenditures towards durables in response to temporary income increases from daycare (Appendix B2). Rather, these less credit-constrained households were probably able to use their credit cards (and other credit instruments) to purchase durable goods as needed and smooth consumption across time.

We find similar evidence of credit constraints when separating the sample into households in which at least one member worked in the formal sector in 2012 and those in which no one did. Again, the more credit-constrained group responded to enrollment in daycare by increasing their accumulation of durable goods while households in the formal sector did not (Appendix B4). The coefficients on enrollment for households who had credit cards or were employed in the formal sector are not statistically significant at the 5% level or less, and the fact that they were positive is not particularly surprising, since households with credit cards or formal employment are only *relatively* less constrained than other households. They may nevertheless experience some constraints, though the results here indicate that they are better able to smooth consumption, acquiring durable assets independently from temporary income responses to their child's enrollment in public daycare.

Further Implications

The evidence presented here shows that measuring the impact of daycare on income alone yields an incomplete assessment of the program's impact on living conditions, particularly in the medium-run. The more credit constrained, the more likely a household will translate a temporary increase in income afforded by enrollment in daycare by increasing its consumption of durable goods. In itself, the ownership of durable goods may be a more meaningful measurement than income alone, as it may be a better indicator of how people actually live and how their living standards change in response to daycare. And because durable goods are long-lasting, observing their ownership levels in two points in time is akin to noting the cumulative distribution of purchases; among households whose children were enrolled in daycare, the purchase of durable goods jumped dramatically in the first eight months of daycare participation but continued to be higher than for non-enrolled households while the focal children were age-eligible for daycare.

Moreover, durable goods are not only an indicator of living standards, but some may also have a positive impact on child development. Even though the boost in household income due to daycare is temporary, ownership rates of durable goods are higher among households whose children were enrolled in daycare in 2008 compared to households whose children were not – and these include water filters, computers, and telephones. While these goods are not child-centric and may benefit other members of the household as well, they have the potential for positive long-lasting contributions to the development of the focal child and other children in the household. A water filter may support child health, while a computer and internet access can contribute to a child's development and education, especially since by 2012 all of the children in the sample are pre-school- or school-aged, and thus arguably physically able to use them. A telephone can be useful for safety reasons or in an emergency, including situations that pertain to the focal child.

Finally, it is worth considering that durable goods serve as an indicator for broader household consumption patterns. While the dataset only allows us to observe living standards indicators over both periods, it is reasonable to assume that credit constrained households may increase they consumption of not only durable goods but also non-durables in response to a temporary income boost, such as that offered by their child's enrollment in daycare. In this case, as daycare compensates for credit constraints, enrolled households increase their ownership of durable goods (observed) *and* non-durables (unobserved), many of which could have important benefits for children as well, such as food, clothing, toys, and child-centric items.

Table 7: Dependent Variables: Select Durable Items, 2012 (IV, FE)

	Water Filter	Computer	Internet	Phone
Enrolled	0.117**	0.116**	0.0984*	0.0461**
	(2.05)	(2.19)	(1.84)	(2.19)
Household size (2012)	-0.00698	-0.00000317	-0.00117	0.00349
	(-0.78)	(-0.00)	(-0.16)	(1.54)
Daycare age cohort				
Bercario II	0.0345	0.0871	0.0795	-0.0188
	(0.67)	(1.53)	(1.59)	(-1.19)
Maternal I	0.0438	0.111**	0.0852**	-0.0114
	(1.01)	(2.22)	(2.11)	(-0.93)
Maternal II	-0.0297	0.0639	0.0476	-0.0267
	(-0.49)	(0.99)	(0.98)	(-1.51)
Guardian's Education Level				
Primary	0.104	0.139	0.0949	0.0105
	(0.87)	(1.15)	(0.91)	(0.16)
Secondary	0.171	0.226*	0.187*	0.0427
	(1.50)	(1.82)	(1.77)	(0.67)
More than secondary	0.511***	0.555***	0.349**	0.0566
	(4.36)	(3.57)	(2.28)	(0.90)
Observations	1342	1342	1340	1342
R^2	0.011	0.015	0.011	0.011

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5. Conclusion

This paper explores the impact of enrollment in daycare on household income and living standards, taking advantage of the design of a public daycare program in Rio de Janeiro, which offers an exogenous instrumental variable through its random selection of participants among eligible applicants. The first contribution of this paper is to the literature on the effect of daycare on household income, which is principally based on its effect on female labor force participation but has yielded mixed empirical results. Consistent with Paes de Barros *et al.* (2010), we find that household income increases by 15-20% in response to enrollment in daycare, just eight months after the program's inception. However, this effect dissipates quickly, and by the time all children are age-eligible for pre-school or school, there does not appear to be a medium-term impact of daycare on household earnings, at least on average. By the PIH, this would imply that there should not be meaningful differences in the distribution of consumption between households whose children are enrolled in daycare and those who are not, since a temporary boost earnings has minimal impact on permanent income.

The impact of daycare that we find on the ownership of durable goods, however, is in contrast to this prediction and points to important credit constraints. Enrollment in daycare enables households to accumulate more durable goods, such that in the short-run, enrollment is associated with a mix of assets that is one-tenth of standard deviation higher than for those not enrolled. Four years later, this gap due to enrollment reached one-quarter of a standard deviation, indicating that while for some households the purchase of durable goods happened soon after enrollment, further accumulation continued between the two survey periods.

We find further evidence of the role of enrollment in daycare as compensating for credit constraints when separately analyzing households that are more likely to be credit constrained (i.e., do not have a credit card or formal employment) and those who may be less credit constrained. The first group responds to enrollment in daycare by accumulating durable goods at a much higher rate than the latter group.

The results in this paper show that measuring the effect of daycare on income offers only an incomplete picture of the program's effect on the household's livelihood, particularly in the medium-run. Furthermore, it reveals that public daycare may have an unexpected positive impact on households, increasing the ownership of durable goods, some of which can be beneficial to children. And inasmuch as observations on the ownership of durable goods are indicators of general purchase patterns, this large change derived from a short-term boost in income may point to an increase in consumption more generally, including that of non-durable goods that carry

further benefits to children. Thus, in the context of limited access to credit, a small and temporary increase in household income translates into meaningful medium-term effects on living standards, with potential long-term effects related to child development.

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Table A1: Descriptive Statistics of Living Standards Indicators, by year

	2008	2012
Housing Quality Indicators		
Street identification	0.760	0.730
	(0.427)	(0.444)
Street lighting	0.916	0.909
	(0.278)	(0.287)
Street completely paved	0.679	0.811
	(0.467)	(0.392)
Street partially paved	0.197	0.142
	(0.397)	(0.349)
Street not paved	0.125	0.0476
	(0.331)	(0.213)
Roof material		
Shingles	0.317	0.138
	(0.465)	(0.345)
Slabs	0.677	0.852
	(0.468)	(0.356)
Other	0.00550	0.00994
	(0.0740)	(0.0992)
Number of rooms (mean)	4.244	4.606
	(1.303)	(1.251)
Number of bedrooms (mean)		1.749
		(0.691)
Number of bathrooms (mean)	1.081	1.099
	(0.293)	(0.354)
Have piped water	0.979	0.988
	(0.144)	(0.109)
Connected to sewage system	0.943	0.958
	(0.231)	(0.200)
Trash collection system		
Direct [1]	0.741	0.581
	(0.438)	(0.494)
From dumpster [2]	0.230	0.407
	(0.421)	(0.492)
Burned or buried	0.00247	0.00142
	(0.0497)	(0.0377)
Other	0.0258	0.0106
	(0.159)	(0.103)
Durable Goods Owned (share of households that have good)		
Water filter	0.687	0.614
	(0.464)	(0.487)
Stove	0.996	0.998
	(0.0597)	(0.0461)
Refrigerator	0.970	0.987
	(0.171)	(0.112)
Freezer	0.283	0.187
	(0.450)	(0.390)
Washing machine	0.467	0.616
	(0.499)	(0.487)
Television	0.978	0.991
	(0.148)	(0.0919)
Computer	0.188	0.465
	(0.391)	(0.499)
Internet access		0.351
		(0.478)
Cellphone or landline	0.860	0.966
	(0.347)	(0.181)
Car or motorcycle		0.146
		(0.353)

1 Difference in the wording of the answers between 2008 and
2012 may explain the large difference in numbers: "collected
by cleaning service" (2008) v. "collected directly" (2012).
2 "collected through dumpster by cleaning service" (2008) v.
"collected indirectly" (2012)

Table B1: Dependent Variable: Household Has a Credit Card, 2012 (IV, FE)

	I	II
Enrolled	0.0114	-0.00265
	(0.0629)	(0.0629)
Household Size (2012)	-0.0136	-0.0183**
	(0.00838)	(0.00801)
Daycare age cohort		
Bercario II	-0.0887	-0.0825
	(0.0560)	(0.0522)
Maternal I	-0.0638	-0.0606
	(0.0468)	(0.0443)
Maternal II	-0.0974*	-0.0627
	(0.0552)	(0.0518)
Guardian's Education Level		
Primary	-0.0724	-0.109
	(0.137)	(0.146)
Secondary	0.00640	-0.0527
	(0.134)	(0.144)
More than secondary	0.155	0.0411
	(0.135)	(0.144)
Mother's age	0.0219	0.0222
	(0.0207)	(0.0203)
Mother's age squared	-0.000269	-0.000290
	(0.000306)	(0.000303)
2008 HH Earnings (ln)		0.0461**
		(0.0196)
2012 HH Earnings (ln)		0.0788***
		(0.0109)
Observations	1236	1236
R^2	0.017	0.063

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B2: Dependent Variables: PCSs for Living Standards Indicators, by Credit Card Ownership 2012

| | Does Not Have a Credit Card | | Has Credit Card | |
	Durables	Durables Extra	Durables	Durables Extra
Enrolled	0.513**	0.565**	0.405*	0.322
	(0.205)	(0.227)	(0.222)	(0.269)
Household size (2012)	0.0478	0.0403	0.0283	0.0130
	(0.0352)	(0.0347)	(0.0319)	(0.0431)
Daycare age cohort				
Bercario II	-0.0825	0.0116	0.306	0.445*
	(0.156)	(0.189)	(0.200)	(0.245)
Maternal I	0.0417	0.0941	0.249	0.441**
	(0.127)	(0.151)	(0.188)	(0.225)
Maternal II	-0.278	-0.176	0.0104	0.124
	(0.205)	(0.204)	(0.233)	(0.280)
Guardian's Education Level				
Primary	0.0568	-0.0885	0.951***	1.271***
	(0.349)	(0.414)	(0.182)	(0.264)
Secondary	0.357	0.250	1.300***	1.638***
	(0.350)	(0.418)	(0.196)	(0.274)
More than secondary	1.626***	1.117**	1.860***	2.325***
	(0.445)	(0.610)	(0.321)	(0.460)
Mother's age	0.189***	0.257***	0.0468	0.0474
	(0.0597)	(0.0574)	(0.0655)	(0.0775)
Mother's age squared	-0.00254***	-0.00357***	-0.000193	-0.000115
	(0.000894)	(0.000834)	(0.000985)	(0.00115)
Observations	706	704	530	530
R^2	0.044	0.034	0.067	0.064

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B3: Dependent Variable: At Least One Member of the Household had Formal Employment, 2012

	Whole Sample		Given at least One Member is Employed	
Enrolled	-0.0276	-0.0427	-0.0291	-0.0421
	(0.0513)	(0.0468)	(0.0506)	(0.0499)
Household size (2012)	0.00512	-0.00858	-0.00535	-0.00987
	(0.00842)	(0.00772)	(0.00853)	(0.00809)
Daycare age cohort				
Bercario II	-0.0840	-0.0601	-0.0917*	-0.0683
	(0.0516)	(0.0395)	(0.0483)	(0.0416)
Maternal I	-0.0387	-0.0296	-0.0430	-0.0317
	(0.0471)	(0.0343)	(0.0447)	(0.0364)
Maternal II	-0.0782	0.00418	-0.0714	-0.00120
	(0.0629)	(0.0426)	(0.0654)	(0.0477)
Guardian's Education Level				
Primary	0.0809	0.00741	0.0911	0.0178
	(0.114)	(0.0955)	(0.114)	(0.102)
Secondary	0.137	0.0230	0.146	0.0392
	(0.122)	(0.101)	(0.122)	(0.108)
More than secondary	0.266**	0.0200	0.210*	0.0341
	(0.121)	(0.125)	(0.118)	(0.126)
Mother's age	0.0163	0.0135	0.0102	0.0126
	(0.0200)	(0.0170)	(0.0201)	(0.0186)
Mother's age squared	-0.000246	-0.000238	-0.000176	-0.000228
	(0.000297)	(0.000250)	(0.000299)	(0.000273)
2008 HH Earnings (ln)		0.0235		0.0276
		(0.0186)		(0.0206)
2012 HH Earnings (ln)		0.204***		0.175***
		(0.0109)		(0.0173)
Observations	1240	1240	1147	1147
R^2	0.009	0.276	0.009	0.152

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B4: Dependent Variables: PCSs for Living Standards Indicators, by Household Formal Employment 2012

| | No One Formally Employed | | At Least One Member is Formally Employed | |
	Durables	Durables Extra	Durables	Durables Extra
Enrolled	0.819***	0.833***	0.346*	0.340
	(0.279)	(0.280)	(0.184)	(0.237)
Household size (2012)	0.0348	0.0525	0.0257	-0.00495
	(0.0549)	(0.0509)	(0.0273)	(0.0344)
Daycare age cohort				
Bercario II	0.0684	0.167	0.142	0.272
	(0.177)	(0.244)	(0.183)	(0.222)
Maternal I	0.192	0.246	0.114	0.252
	(0.141)	(0.205)	(0.156)	(0.173)
Maternal II	-0.358	-0.311	-0.0216	0.116
	(0.250)	(0.259)	(0.217)	(0.215)
Guardian's Education Level				
Primary	-0.211	-0.259	0.672**	0.800*
	(0.318)	(0.384)	(0.321)	(0.430)
Secondary	0.0296	0.0539	1.067***	1.214***
	(0.328)	(0.402)	(0.320)	(0.431)
More than secondary	1.299***	1.310***	1.796***	2.078***
	(0.367)	(0.491)	(0.385)	(0.534)
Mother's age	0.211**	0.208**	0.108**	0.178**
	(0.0819)	(0.0818)	(0.0549)	(0.0705)
Mother's age squared	-0.00290**	-0.00284**	-0.00111	-0.00210**
	(0.00124)	(0.00118)	(0.000803)	(0.00103)
Observations	423	422	817	816
R^2	0.002	-0.002	0.074	0.062

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$