Fertility, Maternal Employment, and the Effect on a Child’s Cognitive Achievement

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October 14, 2010
Preliminary Work

Abstract

Here I present a model of the female life-cycle decision making process, focusing on fertility and maternal employment, and the pathways through which she affects her children’s cognitive outcomes. Previous analyses which model cognitive achievement are more limited in scope through modeling fewer endogenous decisions and/or use a limited sample to discover the effect of specific government policies. Here, I explicitly account for the relationship between a woman’s family-size and career preferences and how those preferences affect her child’s cognitive outcomes. NOTE TO STUDENT READERS: My main worries with the paper are the timing of the model (specifically how the focus of my paper relates to how the model is timed) and finding exclusion restrictions that would provide identification. Any help you could give me in those areas with your written comments will be welcome.
1 Introduction

The impact of parental investment in a child’s educational achievement and attainment saturates the literature. Beginning with the Coleman Report (1966), which determined that student socioeconomic characteristics affect student achievement much moreso than school quality effects, researchers have attempted to determine the effect of parental inputs into the educational production function. This literature, surveyed by Haveman and Wolfe (1995), provides widely varying estimates on the effect of parental investments. The struggle in distinguishing between the effects of various inputs lies in the inability of analysts to account for the related decision-making that occurs by parents regarding their investments into their children. While researchers are conclusive as to the positive and sustaining effect of parental resources and inputs throughout the growth of the child, further investigation into the mechanisms through which these investments augment academic achievement and cognitive growth is warranted.

I intend to estimate a model More recent studies regarding the woman’s life cycle decisions and child outcomes have focused on the relationship between child care and maternal employment, as the proliferation of child care usage has allowed for more females to enter the workforce. However these studies However children experience positive and adverse effects of these decisions depending upon the life stage. The positive impact of added resources from higher household income levels could augment child achievement, while not having the mother inputting important time investments during a child’s formative years could adversely affect child outcomes. However, any analysis disregarding the possible endogeneity of maternal work decisions and fertility in the child’s education production function could lead to biased estimates. For example, a mother (or potential mother) makes work decisions based on her offered wage, which is likely a result of work experience and educational attainment. Women with lower wages necessarily have lower opportunity costs of having a newborn, and hence, are more likely to reproduce. Any analysis which does not account for the correlation between maternal labor supply and fertility may result in biased estimates. As cursory evidence, according to the World Bank, fertility rates in the United States have dropped from an average of 3.65 births per woman in 1960 to 2.1 in 2007. Over the same time period labor market opportunities for women drastically improved, as data from the Current Population Survey reveal the median gender wage gap for full time, year round workers has improved from 60.7% to 77.8%.

It is important, therefore, when modelling child educational production to account for this correlation. Unfortunately, the majority of these studies are static analyses which can not account for changing
resource investment throughout the child’s upbringing. The utilization of a dynamic framework allows for the estimation of the effect of current maternal work and fertility decisions on subsequent child outcomes. In essence, a dynamic framework allows for fertility decisions to effect all children in the household across the various child life spans. This is necessary, as the literature addressing the tradeoff between the quality and quantity of children is myriad, and researchers have long been intrigued by the effect of family size on child outcomes.

Becker’s seminal theory (1991) suggests that because of the household’s desire for equality in achievement throughout all of their children, an increase in the number of offspring increases the shadow price of quality for each child. The majority of empirical tests confirm Becker’s theory. However recently, most notably in studies on developed countries, research suggests this tradeoff may no longer exist. Research also reveals significant effects of maternal employment choices during the child’s formative years on a child’s cognizant growth and outcomes well past stages of infancy. Both economic and sociological studies find that maternal employment in a child’s infancy adversely affects later child outcomes, while positive effects of maternal employment exist as the child ages through the increasing availability of resources in the home.

In summary, I introduce an economic model of how a mother’s work choice and fertility decision dynamically affect children’s cognitive outcomes to provide a more complete understanding of the relationship between income, time investments, and achievement. I plan to estimate this model using paired mother-child data from the 1979 National Longitudinal Study of Youth (NLSY). The main goal of this research is twofold. First, I hope to provide further insight into the tradeoff between the quality and quantity of children, specifically the timing of fertility decisions and their effect on other children in the home. Second, I hope to analyze how a mother’s work decision affects cognitive growth of her children across different ages while accounting for the endogeneity of the per-period work decision. Through the utilization of a dynamic framework, I can analyze how fertility, maternal labor market decisions, and parental investments into the educational production function work to affect child quality throughout the entire household.
2 Background

2.1 Fertility

Beginning with Becker’s (1991) seminal theoretical work and expanded by Becker and Lewis (1973) and Becker and Tomes (1976), researchers have long theorized the substitutability between fertility and child quality. Rosenzweig and Wolpin (1980), in the first empirical analysis of Becker’s theory, exploit the incidence of twins as a natural experiment to find significant adverse effects of fertility on the schooling attainment of Indian children. Rosenzweig and Schultz (1985) create a "reproduction function" in order to account for both the demand and supply of births. Using the National Fertility Survey, they account for potentially endogenous inputs such as the number of previous children, frequency of intercourse and maternal smoking habits. Instrumenting with religious affiliation and education of each parent, they estimate both a fixed and time-varying exogenous components at the individual level. They find that exogenous fertility has a negative affect on actual fertility. However in a different analysis (1987), the authors apply the same model applied to the Malaysian Family Life Survey, they find opposite results on actual fertility. Hanushek (1992) uses fixed effects models to demonstrate that children from a two-child family score 3.5 percentage points less in reading scores by the time they reach the sixth grade. He also finds significant birth order effects, as children born early in the family have significant effects on academic performance, but he concludes this is entirely due to family size effects, as the first born has a higher probability of being in a smaller family. In a more recent study, Lee (2008) finds similar results. Due to the preference for sons in Asian culture, Lee uses gender of the first-born child as an instrument to account for the endogeneity of fertility as households with first-born girls have larger families. Results reveal downward bias of up to ten percent significant of OLS estimates of the negative effect of family size on childhood education expenditures.

Other recent research disputes results from these previous analyses across a variety of measures. Guo and Van Wey (1999) use sibling fixed effects models to reduce endogeneity bias, and find that the effect of sibship size on family education is not significantly different from zero. However, it is possible that these results are downward biased as the authors fail to account for changes in fertility due to the quality of earlier children. Black, Devereux, and Salvanes (2005) use an exhaustive Norwegian dataset for further exploration of the outcomes of children born prior to exogenous family increases. As in previous studies, the researchers find a negative correlation between family size and children’s educational attainment when utilizing OLS analyses. Utilizing the incidence of twins and implementing birth order
into their analysis, Black, et al. find the effects of family size on educational outcomes, while remaining statistically significant, become close to negligible. Specifically, they find the effect of an additional child on sibling’s total years of educational attainment is -0.01. The authors augment their analysis to include outcomes such as adult earnings, employment, and teenage childbearing with similar results. Conley and Glauber (2006) also use sibling-sex composition in an analysis of 1990 U.S. Census data. They find that increased sibship size reduces the likelihood of private school attendance by six percentage points and increases grade retention by one percentage point for second-born boys, and find no effect on first-born boys, indicating that parents are either "poor planners" and do not properly prepare for future children or that first-born children benefit from being the sole beneficiary of child investments during their formative years. Angrist, Lavy, and Schlosser (2006) use Israeli census data to analyze the effect of third and higher-order births on first- and second-born children’s outcomes, particularly completed schooling and adult earnings. They find most effects become negligible and insignificant after utilizing both the incidence of twins and same-sex siblings as instruments. Caceres-Delpiano (2006) uses 1980 Census Public Use Micro Sample to look at the impact of family size on specific inputs into child quality, finding that multiple births reduce the likelihood that older children attend private school, reduces the mother’s labor force participation, and increases the likelihood that parents divorce. However no effect is found on children’s educational attainment. The varying results on the tradeoff between family size and child outcomes, especially in more recent analyses of developed countries, suggest further research is needed in this subject.

2.2 Maternal Employment

The link between maternal employment and child outcomes via greater resource investment is well-documented throughout the literature. Much of the research has focused on the child’s first three years of life due to motivation deriving from the developmental psychology literature. Much of the research concludes that maternal employment in the child’s first year of life have a negative effect on later child outcomes, while working in the second and third years have positive impact. James-Burdumy (2005) uses the NLSY-Child Supplement to analyze maternal employment on child test scores. Using fixed-effects combined with GMM, the author finds negative effects of working in the child’s first year on Peabody Individual Achievement Test (PIAT) scores, no effect of working in the second year, and positive effect on PIAT Math scores in the third year. Waldfogel, et al. (2002), using the same data, find similar results through the utilization of a random effects and family fixed effects model
while controlling for familial environment measures. Liu, Mroz, and Van der Klaauw (2009) utilize a structural, dynamic framework to analyze the effect of maternal employment and migration on child development also using the NLSY-CS. They also find negative effects of maternal employment in the first year and positive effects in the second and third. In another structural model, Bernal (2008) accounts for the endogenous relationship between maternal employment and child care to find that mothers who both work and take advantage of non-maternal care effectively reduce a child’s baseline cognitive ability by almost two percentage points. Conversely, Ruhm (2008) uses NLSY data to find negative effects of maternal employment in all of the child’s first three years. Using a fixed effects model with a richer set of controls (such as detailed family background variables), Ruhm concludes a negative effect of first-three-years maternal employment on PIAT Math and Reading scores for five- and six-year olds.

It is also important to note the link between maternal employment and fertility. Within the United States and other developed countries, the number of maternal working hours is negatively related to fertility. Angrist and Evans (1998) utilize the parents’ desire for a mixed-gender sibling composition to instrument for endogenous fertility while exploiting Census PUMS. They find that 2SLS estimates of fertility are smaller in magnitude, yet still significant factors of a variety of labor supply outcomes. Cramer (1980) recursively models the relationship between fertility and maternal employment with PSID data. He finds that fertility dominates employment outcomes in the short run, while work decisions predominately affect fertility in the long term.

### 3 Theoretical Model

Here I present a model which extends the standard neoclassical framework originally presented by Becker (1991) of fertility and female labor supply decisions as a function of maternal decisions about desired family size and marital status. The dynamic approach presented here allows for the mother’s fertility and work decisions (and child care decisions, should she choose to have a child) in the current period affect both contemporaneous and future utility through her child’s cognitive achievements. The timeline is as follows:

1. The mother observes child achievement (if children present), family size, and hourly wages based on her educational attainment and ability, job tenure, job experience, and time-varying maternal characteristics and community-specific labor market characteristics. She also observes the price of child care.
2. The woman makes her marital choice. If she chooses to be married, she observes her spouses’s earnings (which I assume to be exogenous, similar to Hotz and Miller, 1988 and Arrufat and Zibalza, 1986) and any other unearned income. She optimally allocates her time between working, school, and leisure. (Leisure time includes home child care and home production.) She observes her earnings and any unearned income (husband’s earnings and/or transfer payments). If she has a newborn in any of the previous five periods, she also makes a simultaneous decision to utilize formal child care. She also makes the fertility decision.

3. The woman observes the value of the income shock and sees her child(ren)’s achievement. She then moves to the next period and begins the process again.

It is unclear in what direction the woman’s labor supply decision affects a child’s cognitive growth and achievement. An increased time in the workplace would allow for more resources in the home which could catalyze the child’s growth. However the mother choosing to “stay at home” when birth spacing is small could result in economies of scale in the cognitive production function. Children’s development could also be affected by the mother’s fertility decision. Regarding fertility, according to Becker (1991), assuming parents desire to have children of equal quality, a larger sibship size necessarily takes away from resources devoted to an individual child due to a larger number of children.

In the model, the mother derives utility from household per-period consumption of numeraire aggregate good \( X_t \), personal leisure \( l_t \), marital status \( M_t \), the number and of children in the home \( N_t \) and the presence of a newborn \( n_{t-1} \). (The current number of children in the home is specified as \( N_{it} = \sum_{t=0}^{t-1} n_{it-1} \).) At \( t = t' \), the mother becomes infecund and in successive periods no longer gains utility from the presence of a newborn. The mother also derives utility from the quality of her children \( Q_t \) represented by \( Q = (q_1, ..., q_N) \), a vector of her children’s cognitive development. I assume the mother knows each child’s cognitive development at each stage of the child’s life. In each period the mother maximizes a lifetime utility function represented by:

\[
U(X_t, l_t, M_t, N_t, n_{t-1} * 1(t \leq t'), Q_t).
\]

The mother spends her hours working \( H_t \) or in leisure

\[
\Omega = H_t + l_t + T_s * 1(s_t = 1)
\]

\footnote{While I do not observe actual time investments into the child production, research has shown it is negatively correlated with maternal employment. Mroz, et al. (2009) cite PSID data tabulations which show that working mothers of children 12 years and younger spend 30% less time reading with their children than mothers who choose not to work. They also find that working mothers spend 20% less time helping their children do their homework. While these results are not necessarily causal, they do reveal that time investments into a child’s investment are hindered by the decision to work.}
The consumption of aggregate good $X_t$ is defined by full household income (sum of wages brought in by the mother, spousal earnings ($I_t$) if married, unearned income ($y_t$) such as transfer payments and child support less child care expenditure if children aged three or younger are present and the mother chooses formal child care. (Let $c_t = 1$ represent the choice of using formal child care for an individual child, $c_t = 0$ otherwise.) The cost of child care for each child in the period ($p_c^t$) and the cost of schooling ($p_s^t$) is drawn from a distribution of child care prices and tuition prices, resulting in aggregate good consumption represented by:

$$X_t = w_t h_t + I_t(M_t) + y_t - C_t - p_s^t \cdot 1(s_t = 1)$$

(For ease in notation, I allow $C_t \equiv p_c^t \sum_{t-3}^{t-1} [n_t \cdot 1(c_t = 1)]$, the total household expenditure on child care.)

The outcome of interest is the child’s achievement which measure both endowed cognizant ability and academic progress. I assume that only the mother can actively contribute inputs into the child’s cognitive achievement function ($q$) through her time investment in the home and full household income. The current period’s development is a function of the last period’s socioeconomic resources (represented here by $(X_{t-1})$ and decisions made by the mother regarding her marital status, as well as time working, schooling, or in leisure. I also include the vector of maternal characteristics ($K_{t-1}$) such as her educational attainment and AFQT score. A time-invariant error term captures the child’s ability, and a time-varying error term serves as a random stochastic component, both of which are unobserved to the econometrician. I treat the child’s achievement as a continuous measure.

$$q_t = f[X_{t-1}, \Omega - h_{t-1} - T_s * s_{t-1}, Age_{it}, M_{t-1}, N_{t-1}, D_{t-1}, K_{t-1}, \epsilon_t]$$

The mother’s marital status enters the woman’s contemporaneous utility function and influences available funds for child rearing, child care, and aggregate household consumption through her husband’s earnings in the budget constraint. The woman bases her marital choice in each period on her previous period marital status ($M_{t-1}$), the number of children in the home ($N_t$) the presence of a newborn ($n_{t-1}$), the mother’s earning opportunities ($w_t$), community-level characteristics ($D_t$) such as the local ratio of women-to-men, and a vector of maternal characteristics ($K_t$). The woman also realizes family-size and career preference parameter ($\theta$) and vector of time-varying taste shifters ($\mu_t^{M,H,c}$), both of which are unobserved to the econometrician.
\[ M_t = M(M_{it-1}, N_{it}, n_{it-1}, w_{it}, D_t, K_{it}, \theta_i, \mu_{it}) \]

The mother makes her working and child-care decision in each period dependent upon her wage \( w_t \) as well as current household characteristics including both the number of children in the home \( N_t \) and resources brought into the household outside of the mother. The wage is drawn from a distribution conditional on job experience \( E_t \), tenure \( \tau_t \), maternal characteristics \( K_t \) such as age, AFQT score and educational attainment \( S_t \), and community level characteristics \( D_t \) such as the local unemployment rate.

\[ w_t = w_t[E_{it}, \tau_{it}, S_{it}, D_t, K_{it}] \]

She also bases her working, child care, and per-period schooling decision on the community-average per-child cost of child care \( p_{ct} \) and unobserved family-career preferences, as well as exogenous future income from a husband if she chooses to be married. (I allow \( s=1 \) if the woman decides to attend school in period \( t \), 0 otherwise.)

\[ H_t = H[w_t, N_{it}, I_{it}(M_{it}), y_{it}, p_{ct}^c, K_{it}, \theta_i, \mu_{it}] \]

\[ c_t = c[w_t, N_{it}, I_{it}(M_{it}), y_{it}, p_{ct}^c, K_{it}, \theta_i, \mu_{it}] \]

\[ s_t = s[w_t, N_{it}, I_{it}(M_{it}), y_{it}, p_{ct}^c, K_{it}, \theta_i, \mu_{it}] \]

The woman, if she chooses to do so, makes the decision to go to school to increase her educational attainment and enjoy a higher wage in successive periods. The woman’s educational attainment \( S_t \) proceeds as follows:

\[ S_{t+1} = S_t \text{ if } s_t = 0 \]

\[ S_{t+1} = S_{t+1} \text{ if } s_t = 1 \]

At the beginning of the period the woman knows the information summarized by the following vector:

\[ Z_{it} = (Q_{it}, H_{it-1}, N_{it}, n_{it-1}, M_{it-1}, S_t, \tau_{it}, E_{it}, D_{it}, K_{it}, \theta_i, \mu_{it}^{M,H,c,s}) \]

Given this, the woman then chooses to allocate her time between working \( (H_t) \), leisure \( (l_t) \), which
may include spending time at home performing informal child care. She also simultaneously makes choices regarding marriage ($M_t$), utilizing formal child care for each child age three or younger, the fertility choice and the schooling decision. The woman makes these decisions such that she maximizes the expected value of present discounted utility subject to her time and budget constraints. After period $t'$, she no longer makes the fertility decision, however she continues to make decisions regarding marriage, employment at the extensive and intensive margin, and child care. Thus, after substituting these constraints into the utility function, the value function of the period $t < t'$ maternal choice of fertility and employment, as well as child care choice can be described as:

$$V^n_{it}(Z_{it}, M_{it}, H_{it}, S_{it}, c_{it}, \gamma_{it}) = U(w_{it}H_{it} + I_{it} + \gamma_{it} - C_{it}, \Omega - H_{it} - I_{it}, M_{it}, N_{it}, n_{it-1}, \theta_{it}, \mu_{it}, D_{it}, q_{it} * n_{it}) + \beta E_t(\max(Z_{it+1}, \gamma_{it+1}))$$

Solving this will result in a demand function for each of the modeled decisions.

4 Empirical Implementation

4.1 Empirical Specification

If there are unobservable characteristics which influence a child’s cognitive achievement that are also correlated with the mother’s life-cycle decisions, then analyses which do not take into account this correlation will provide biased estimates. Here, I present a maximum-likelihood specification which simultaneously estimates the determinants of a woman’s fertility, the extent of her employment, utilization of child care, marital status, schooling decision, and her child(ren)’s cognitive achievement on a variety of test scores. In doing so, I can account for direct and indirect impacts of all modeled choices as described in the theoretical model. Through this joint-estimation, I can account for the endogeneity problem which arises from the unobserved family-size and career preference parameter and its effect on an individual’s choices. In order to empirically estimate the theoretical model and take into account the possible endogeneity issues, I plan to utilize both discrete-time hazard models and initial-condition equations to account for the endogeneity of inputs into a child’s academic achievement.
4.2 Cognitive Achievement

The mother derives utility from both her child’s endowed ability and the achievement throughout the child’s life. I assume the child’s ability is a function of both observable and unobservable variables, and that the child’s ability endowment is unknown to both the mother and the econometrician until the revelation of the first test score at age three. Similar to Bernal (2008), the kth child born to mother i is endowed with ability (qik), a function of fixed observables (gender, maternal educational attainment, race, mother’s AFQT score) and parameter (εi) unobserved to the econometrician and household, such that:

\[ q_{ik} = \eta_1 \text{gender}_{ik} + \eta_2 \text{maeduc}_{i} + \eta_3 \text{paeduc}_{ik} + \eta_4 \text{race}_{ik} + \eta_5 \text{AFQT}_i + \epsilon_{ik} \]

The cognitive production function incorporates the child’s endowed ability with subsequent cumulative home inputs maternal leisure \( \left( L_t = \sum_{t=0}^{k} \Omega_t - h_t \right) \), formal child care \( \left( I^c_t = \sum_{t=0}^{k} c_t \right) \), number of siblings \( N_t \) and cumulative full household income \( X_t \) (net child care expenditures) to solve for the child’s test score, given by:

\[ q_{ikt} = q_{ik} + \eta_6 L_{kt-1} + \eta_7 I^c_{kt-1} + \eta_8 N_{kt-1} + \eta_9 X_{kt-1} + \epsilon_{ikt} \]

I assume that only the mother can actively make inputs into her child’s production function, and that the child’s endowed ability does not affect her learning ability in subsequent periods. By specifying the Test Score” equation as such, the author can find unbiased estimates of the “value-added” to the academic achievement production function by the parental unit.

4.3 Life Cycle Decisions

Following the theoretical model, the woman makes simultaneous choices regarding her current and future expected utility. The annual marriage choice is modeled as an binary logit:

\[ \ln \left[ \frac{Pr(M_{it} = 1)}{Pr(M_{it} = 0)} \right] = Z_{it-1} \alpha_M + X^M_{it} \beta_M + R^M_{it} \gamma_M + P^M \psi_M + \lambda^M_i \]

where \( Z_{ikt} \) is the state space including \( N_{it}, w_{it}, H_{it}, S_{it}, I_{it}, M_{it}, \) and \( K_{it} \). Vectors X and R represent time time-varying and time-invariant individual characteristics, respectively, along with time-varying community observables P. If the woman has any children aged three or younger, she must also make
the decision on using child care for the \( k \)th child born into the household.

\[
\ln \left( \frac{Pr(C_{ikt} = 1)}{Pr(C_{ikt} = 0)} \right) = Z_{it-1} \alpha_C + X_{ikt}^C \beta_C + R_{ikt}^C \gamma_C + P_{kt}^C \psi_C + \lambda_C
\]

The woman also makes the decision in each period as to her Hours Worked.\(^2\)

\[
H_{it} = Z_{it} \alpha_H + X_{it}^H \beta_H + R_{it}^H \gamma_H + P_{it}^H \psi_H + \lambda_H
\]

The woman also makes the decision to have her \( k \)th child in time period \( t \) during her fecundity period and is specified by a discrete time hazard model:

\[
\ln \left( \frac{Pr(n_{ikt} = 1|n_{ikt-1} = 0)}{Pr(n_{ikt} = 0|n_{ikt-1} = 0)} \right) = Z_{it} \alpha_k + X_{ikt}^N \beta_k + R_{ikt}^N \gamma_k + P_{kt}^N \psi_k + \lambda_k
\]

The probability of conceiving a child in each period is also a function of unobserved personal characteristics \( \lambda_{ik} \).

### 4.4 Exclusion Restrictions

Below, I list possible exclusion restrictions for the five decisions in my model. Please feel free to add any suggestions in your written comments.

<table>
<thead>
<tr>
<th>Fertility</th>
<th>Employment/Hours</th>
</tr>
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<tbody>
<tr>
<td>Religious Affiliation</td>
<td>Reg Real GDP</td>
</tr>
<tr>
<td>Incidence of Twins</td>
<td>Real Income Growth</td>
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<tr>
<td>Prev generation’s fertility</td>
<td>Regional Unemployment</td>
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<td>Sex comp of prev children</td>
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<tr>
<td>Local Fertility Rate</td>
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<table>
<thead>
<tr>
<th>Child Care</th>
<th>Marriage</th>
<th>Schooling</th>
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<td>Maternal Residence</td>
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<td>Compulsory Attendance Laws</td>
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<td>Child Care Subsidies</td>
<td>Divorce Rate</td>
<td>2-year College Cost</td>
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<tr>
<td>Child Care Regulations</td>
<td>Men/Women Ratio</td>
<td>4-year College Cost</td>
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<td>Median Fem Marital Age</td>
<td>State Testing/Reforms</td>
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<td>Birth Quarter</td>
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<tr>
<td></td>
<td>Unilateral Divorce Law</td>
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</table>

\(^2\)Unfortunately due to data constraints, I cannot account for the mother’s Labor Force Participation and hence do not account for selection into the work force.
5 Data

The 1979 National Longitudinal Study of Youth and its accompanying child supplement provide rich information as to the pathways through which parental decisions can affect their children across a variety of measures. Beginning with youths ranging from ages 14-22, one can utilize the data to analyze how The longitudinal data allows for the construction of a female's complete fertility, employment, schooling, and marital history to years before 1979. The NLSY Child Supplement, begun in 1986 and completed biannually since, contains detailed information on the student’s academic outcomes most notably standardized test scores (such as the Peabody Individual Achievement Test for math and reading comprehension) which allow for the comparison across subjects. Here, I provide sample statistics and OLS estimates of the effect of the one-period lagged maternal inputs on PIAT test scores. The test scores are age-adjusted.

Table 1: Summary statistics

<table>
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<th>Max.</th>
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<tr>
<td>YRSCHILDRCAR</td>
<td>-0.595**</td>
<td>(0.277)</td>
<td></td>
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<tr>
<td>AFQT</td>
<td>0.000***</td>
<td>(0.000)</td>
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<tr>
<td>MALE</td>
<td>-0.262</td>
<td>(0.660)</td>
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<tr>
<td>HIGHEDUC</td>
<td>-0.180</td>
<td>(0.110)</td>
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<tr>
<td>LEISURE</td>
<td>-0.145***</td>
<td>(0.021)</td>
<td></td>
<td></td>
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<tr>
<td>Constant</td>
<td>19.645***</td>
<td>(3.633)</td>
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</tbody>
</table>

Observations 14737
Number of CPUBID 8216

*** p<0.01, ** p<0.05,  * p<0.1
6 References


Rosenzweig M, Schultz TP. *The demand and supply of births: Fertility and its life cycle*...

