INEQUALITY IN CHILD ACADEMIC ACHIEVEMENT IN SINGLE PARENT HOUSEHOLDS: EVIDENCE FROM BRAZIL

by

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Abstract:

In this paper we compare the intra-household *dispersion* of children's education achievement in single female-parent households with two-parent households. We find significantly more dispersion across children in households' headed by females after controlling for household per-capita permanent income and other anticipated correlates. These results are robust and suggest that single-female parents are forced to alter the *distribution* as well as the *level* of household investment in children. Our empirical analysis is preceded by development of a theoretical model that suggests the correlation between the intra-household dispersion of academic achievement and single-parenthood may be general; i.e., not specific to Brazil. These results may have important policy implications for the interventions and incentives that target single parent households.

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I. INTRODUCTION

The seminal works of Schultz (1971) on human capital and Becker (1960) have inspired a vast literature on household-level human-capital investment decisions. However, the *distribution* of human capital across children within the household has received relatively little attention. This paper compares the *dispersion* of educational attainment within households headed by single females with those in which two-parents are resident. Our analysis includes development of a theoretical model and an empirical analysis of the model's implications using Brazilian data. We will argue that Brazil represents an excellent venue for analysis of this phenomenon since there is a high baseline dispersion of intra-household education, and data well suited to our framework. Our empirical analysis reveals significantly greater dispersion in household's headed by single females after controlling for per-capita permanent income and a host of other factors. We perform a large battery of robustness checks to support our contention that this "single mother effect" exists over and above permanent-income effects.

Our theoretical framework focuses on differences in the total discretionary time endowment of single-parent and two-parent households. If parental time-input has an important influence on children's academic performance, all else equal, a *level effect* of single-parenthood on academic performance is not surprising. What is not so obvious but is implied by our theoretical model is that there is also, in general, a *dispersion effect* of single-parenthood on children's academic performance. Relatively little structure and few assumptions are required to generate this theoretical correlation and it appears powerfully in the Brazilian data we employ. Moreover, this effect is extremely stable across the income distribution. The generality of our theoretical exercise suggests this phenomenon

may be widespread, though as noted, the Brazilian data and environment provide a near ideal testing ground. We believe these results may have important policy implications for the type of interventions and incentives that target households headed by single females.

The remainder of the paper is organized as follows: Section II provides a literature review and frames our context. Section III develops our theoretical model. Section IV provides a data description and outlines the subsequent empirical strategy. Section V presents and interprets empirical results. Section VI summarizes and concludes.

II. Literature Review

Lifetime academic achievement is strongly influenced by direct and indirect parental investment. Haveman and Wolfe (1995) argue forcefully that parental time input (and mothers in particular) is a critical and often underestimated determinant of children's attainment. They also provide an extensive literature review of the empirical evidence of the role of parental time input on child academic outcomes and the fact that growing up in a single-parent household has a negative impact on child education attainment. Datcher-Loury (1988) presents some direct evidence of the importance of mother's time-input on children's education attainment. Behrman and King (2001) discuss the endogenous nature of household inputs into children's education, and the interaction of household behavior and education policy.

There is a large body of evidence from a wide variety of settings suggesting that the *level* of educational attainment of children in single-parent households is lower, all else equal, than in two-parent households (see for example, Datcher-Loury 1989; Huang 2000; Ermisch and Francesconi 2001; Ginther and Pollack, 2003; Page and Huff, 2004).

This lower achievement of children in single-parent households is consistent with single-parents' smaller discretionary time endowment.

Though the *level-effect* of single-parenthood on child attainment has been extensively explored, the consequences for the distribution of final education attainment have received relatively little attention.[1] A broad menu of intra-household distribution issues are covered in the collection by Behrman, Pollak, and Taubman (1995). Their analyses range from the distributional consequences of genetic endowments, to gender and birth order effects. They also consider intergenerational distribution issues, mobility, and tradeoffs between equity and efficiency intra-household distribution. A seminal work on the efficiency properties of intra-household allocation in a strategic context is provided by Browning and Chiappori (1998). In contrast to the literature discussed above this manuscript focuses on how single-parent versus two-parent household structure affects the *dispersion* of final academic performance within the household. We now turn to construction of a theoretical model to guide our empirical analysis.

III. Model

As developed above, a clear difference between one and two parent households is the total parental time endowment. In turn, there is strong evidence that parental time-input is critical to academic attainment. In the model which follows, a child's academic performance will depend on innate talent and parental time devoted to their educational

[1] Duraisamy (2001) finds unequal intra-household resource allocation to the schooling of boys and girls in India in the context of a parental bargaining model. Similarly Ono (2004) links gender inequality in educational attainment to unequal intra-household resource allocation by parents. Horowitz and Wang (2004) develop a theoretical model of parental decisions to allocate their heterogeneous *children's time* between education and labor activities. Horowitz and Souza (2004) provide an empirical investigation of how the distribution of intra-household capital varies across the income distribution

pursuit. It is easy to imagine this as time devoted to helping a child with homework, although there are many other parental activities that could also enhance a child's academic performance. The theoretical framework is therefore one of time-allocation and we specify the following household-level time constraint:

$$(1) \qquad T^j = \Sigma\, t_i + \ell + L, \qquad j = 1, 2; \qquad i = 1,2, \ldots, n$$

where the j indexes whether the household has one or two parents, i indexes the number of children, ℓ is parental leisure consumption, and L the parental labor hours.

We assume unitary parental decision-making in the case of a two-parent household[2] so that the single and two parent households' face a time allocation problem with similar structure, but with $T^1 < T^2$. Looking ahead to the empirical work, the time endowment will be an indicator of a single-mother household, or not. Labor supply (L) will be reflected in household income.

As our focus is on the dispersion of education performance across children, it is important to consider child heterogeneity. To this end we assign each child (i) a unique "talent parameter," which we denote as a_i. Though we use the term "talent" throughout, the key implication of this heterogeneity is that it is associated with differential academic performance for a given parental time input. Let $e^i(t_i, a_i)$ be a measure of academic performance of child i. We assume e^i is increasing in a_i and t_i and is concave in t_i:

[2] Some may question the unitary model in this context (see Thomas 1992 and Thomas and Strauss 1995). Following their approach we regress income shares of head and spouse (plus controls) on our measures of dispersion. We do not reject the null hypothesis of equality of the head and spouse coefficients, which supports our inclusion of single parent and married couples in the same regression and theoretical frameworks. We note that rejection of the equality hypothesis in the works cited above was in the context of household level variables while our analysis focuses exclusively on household dispersion variables. These regression results are available for the authors upon request.

$$(2) \qquad e_t^i(t_i, a_i) \equiv \frac{\partial e}{\partial t_i} > 0, \qquad e_a^i(t_i, a_i) \equiv \frac{\partial e}{\partial a_i} > 0; \quad e_{tt}^i(t_i, a_i) \equiv \frac{\partial^2 e}{\partial t_i^2} < 0 \qquad i = 1,\ 2$$

We will assume children's academic performance matters to parents – an assumption we believe should not be viewed as controversial by most. Naturally, this concern with children's academic performance may reflect altruistic as well as self-interest motives on the part of parents. In order to gain insight into how the smaller total time endowment of single versus two-parent households may affect the *dispersion* of academic performance across children within a household, we assume the following parental objective function:

$$(3) \qquad \max_{t_i, l, L} \ V(e^1(t_1, a_1),\ e^2(t_2, a_2),\ l,\ C(L)) \ , \text{ subject to } (1)$$

where *C(L)* is household consumption. For simplicity we will normalize the price of the consumption good to 1 and denote the wage by w so that *C(L) = wL.* Our interpretation of (3) is as a reduced form utility function that incorporates the dynamic implications of the time allocation decisions into a present-value objective function.[3]

Our principal question is how the *dispersion* of academic achievement varies with household structure. In this simple model the indicator of household structure is the total time endowment T^i. To answer our question we must first characterize how the parents time-allocation problem varies with this parameter T^i. In particular, our interest is with the properties of the solution $t_i^*(T^i)$.[4] The most general approach for characterizing the

[3] The function *V* therefore embodies the solution to all subsequent decisions – such as any later period bequests or transfers. The structure reflects the fact that parental utility is increasing the human capital of their children due to its affect on the future welfare of both the children, and the parents themselves.

[4] The complete solution would of course depend on all parameters of the system: $t_i^*(T^i, \underline{a}, w, \underline{z})$, where $\underline{z}$ is a vector of parameters associated with the utility function. However, as we will perturb only family structure *T,* we can suppress the other parameters for notational economy. The "talent parameter" is often proxied in the labor literature by parent's education – which we include in our regressions.

comparative static properties of these solutions employs the monotone-comparative static techniques developed by Topkis (1998) and Milgrom and Roberts (1994). Employing this technique requires that the optimized function exhibit both *increasing differences* and *supermodularity*. Loosely speaking, supermodularity requires that the cross-partials of the objective function are increasing in all the choice variables. This ensures that any feedback between endogenous variables associated with a parameter perturbation has monotonic effects. Increasing differences requires that the cross-partial of the choice variables and parameters are non-decreasing, so that the parameter perturbation has a non-decreasing affect on the marginal return to endogenous variables. In our context, the optimized function is the Lagrangian ($\mathcal{L}$) associated with (3) so that increasing differences and supermodularity require respectively: $\mathcal{L}_{xT} = \partial\mathcal{L}/\partial x\partial T \geq 0$ *for* $x = t_1, t_2, l, L$; $\mathcal{L}_{xy} = \partial\mathcal{L}/\partial x\partial y \geq 0$ *for* $x, y = t_1, t_2, l, L$ where $x \neq y$.[5] Increasing differences is trivially satisfied in this context, and supermodularity would be at least be weakly satisfied for virtually all standard utility functions.[6] Together, supermodularity and increasing differences imply that $\partial t_i^*(T)/\partial T \geq 0$, where recall that $t_i^*(T)$ is the optimal time allocation to children. That is, the level of parental time input increases to all children with the total parental time endowment. We can use this result to explore the effect of a change in T on the *dispersion* of academic performance by defining a generic dispersion function of the form:

[5] In employing calculus we are technically only analyzing limitingly small perturbations to time endowment. However, this exercise yields qualitative insights into the discrete problem if the V function is well-behaved.

[6] We note that if labor generates direct disutility in addition to its opportunity cost in other time-uses, supermodularity would not be trivially satisfied.

(4) $D(T) = f([(e^{1*}(t^{1*}(T)) - e^{2*}(t^{2*}(T))]^2)$, *where* $f' > 0$.

The interpretation of this dispersion function is that, in the two-child household, all measures of dispersion we employ are increasing in the squared difference of the academic performance of the children. Our principal empirical question therefore reduces to whether $D'(T)$ is significantly different from zero, and if so its sign. Differentiating (4) yields:

(5) $D'(T) = f' * 2[(e^{1*}(t^{1*}(T)) - e^{2*}(t^{2*}(T))]) * (e^1_{t^1} t^1_T - e^2_{t^2} t^2_T)$

where $e^{i*}_{t^i} = \partial e^{i*} / \partial t^i$ and $t^{i*}_T = \partial t^{i*}(T) / \partial T$.

First note that given the assumptions on the *e* function in *(2)*, if parents value both children's academic performance equally (i.e., e_i enters the V function symmetrically) and the children have identical talent ($a_1 = a_2$), then $t^{1*} = t^{2*}$ and from (5), $D'(T) = 0$ since all the arguments of the *e* functions would then be identical. Therefore, with identical children the *dispersion* of parental time across children is independent of the total time endowment. In our context this implies that single and two-parent household's with identical twins should exhibit the same (zero) *dispersion* in the academic performance of their children. The model also implies that, all else equal, the *levels* of academic achievement will differ with family structure. This is, in principle, a testable implication with a sample of identical twins. Of course, identical twins are the exception rather than the rule and with heterogonous talent we have $a_1 \neq a_2$, which given the

analysis above implies $t^{1*} \neq t^{2*}$. Additional insight can be gained by examining the interior first-order conditions of the Lagrangian associated with (3):

(6) i. $\mathcal{L}_{t^i} = V_{e^i} e_{t^i}^{i*} - \lambda = 0 \qquad for \quad i = 1,\ 2$.

ii. $\mathcal{L}_{t_i} = V_l - \lambda = 0$

iii. $\mathcal{L}_L = w\, V_C - \lambda = 0$.

From (6i) we know that $V_{e^1} e_{t^{1i}}^{1*} = V_{e^i} e_{t^2}^{2*}$, which implies that parents allocate their time to equate the marginal *utility* returns to a unit of time investment across children. Thus, in general, it will not be the case that the academic performance of the children or the slopes of the *e* functions across children will be the same. Consequently, *D'(T)* will in general be non-zero with heterogeneous children. In summary, this simple optimizing model demonstrates that, in general, the *dispersion* as well as the levels of education achievement will vary in single-parent and two-parent households. We now turn to empirical analysis to test this prediction.

IV. Data Description and Empirical Methodology

Measuring Final Academic Achievement

Final education achievement across siblings within a family is only observable when the accumulation process is complete. Therefore, the academic profile of siblings could typically only be observed in reconstructed families, or in the atypical families that do not disperse. Though data that allows the reconstruction of households after dispersal could reveal the dispersion of siblings' initial academic achievement, there is also the

problem of interrupted education – where some siblings return to school fairly late in life. However, if intra-household patterns of final academic achievement appear early, it may be possible to avoid the problems noted above by use of a proxy measure. In this paper we will present evidence that patterns of intra-household academic achievement do typically emerge early and that the *rate* of educational progress is an excellent proxy for the final dispersion of siblings' academic achievement in many low-income countries. The power of this proxy is typically far greater in low-income countries than in high-income countries because of the prevalence of delay due to grade repetition, late matriculation, and school withdrawal.

The Rate of Education Progress and Final Education Attainment

There exists a well established (inverse) correlation between delayed educational progress and final academic achievement. Indeed, this link is accepted as foundational in the education literature (for discussion and survey of this relationship in the U.S. see Meisels and Liaw 1993 and Byrnes and Yamamoto 1989). Evidence of the inverse correlation between the rate of education progress and final achievement also exists for low-income countries – see, for example, Bedi and Marshall (2002) and Barro and Lee (1999, 2001), and Lee and Barro (2001). There is also direct evidence linking grade repetition to the innate distribution of human capital within the household. For example, Currie and Thomas (1995) find that within families, higher child IQ scores are powerfully correlated (inversely) with grade repetition.[7] This strengthens the case for our proxy since the intra-household distribution of innate ability is almost certainly strongly

7 The precise test administered to children was the Peabody Picture Vocabulary Test (PPVT).

correlated with the final distribution of academic achievement within the household (after controlling for demographic structure, including gender and birth-order effects).

Our use of the intra-household dispersion of education delay as a proxy for the final intra-household education dispersion requires an environment where the rate of progress through the education system is highly sensitive to academic performance. In the Brazilian PNAD data we employ (introduced in detail subsequently) more than 95% of seven year-old children attend school and over 90% are still attending at age 13. Though withdrawal accelerates after age 13, the decline is modest for a low-income country with 85% still attending at age 16. On the other hand, around 30% of eight-year-old children have experienced some delay and this percentage increases monotonically -- reaching nearly 80% for 16 year-old children. The implication for our analysis is that repetition (delay) is pervasive in Brazil while withdrawal and late matriculation are only relative small contributors to our measure of delay.[8]

Data Description – The Brazilian PNAD

The data used in this study come from the 2001 Brazilian Household Surveys, called Pesquisa Nacional por Amostragem a Domicílio (PNAD), which are administered by Instituto Brasileiro de Geografia e Estatística (IBGE), the Brazilian Census Bureau. The PNAD is an annual labor force survey (similar to the Current Population Survey in the United States) that covers all urban areas and the majority of the rural areas in Brazil.[9]

[8] Late matriculation and early withdrawal was common in Brazil until the school expansion of the mid 1900's allowed near universal access to school. We also verify that throughout our cohort, whose oldest children first matriculated in 1992, school attendance among the seven year-old children has been at least 90%. Menezes-Filho (2003) provide additional evidence that by the beginning of the 1990's the vast majority of the Brazilian young children were attending school.

[9] The principal excluded area is the rural Amazon.

The sample is based on a three-stage sampling design. With the exception of the first stage, the sampling scheme is self-weighted, and the sampling varies across regions and over time. Each PNAD surveys approximately 85,000 households.

Measures of Progress/Delay and Measures of Dispersion

One of the most natural measures of the rate of educational progress is the ratio of current educational attainment and the idealized level of attainment. For example at a given time let $education_{ih}$ be the completed years of schooling for child i in household h, age_{ih} the age of child i in household h, and let $entry$ denote the expected age of initial school attendance in the particular environment. Then the measure of education progress is: $P_{ih} = \frac{education_{ih}}{age_{ih} - entry}$, where the denominator represents the "idealized" education attainment. With this measure $P_{ih} = 1$ indicates idealized progress, $P_{ih} < 1$ indicates some delay, and $P_{ih} > 1$ indicates accelerated progress. Thus, this measure indicates actual progress relative to idealized progress in percentage terms.

As our ultimate concern is the intra-household dispersion of educational progress across children it is important to consider the dispersion properties of a measure of delay. Many measures of dispersion (e.g., Coefficient of variation, Theil, Gini) of the P_{ih} above exhibit scale independence in that they are insensitive to proportional scaling of all children's education level within a household. As a simple example consider two demographically identical households – each with two fifteen year old children. Suppose that in the first household the children have completed the first and second grades while in the second household they have completed the fourth and eighth grades. A scale-independent inequality index would assign the same delay dispersion (for the P_{ih} above)

to both households. However, one may prefer a measure which reflects the fact that absolute inequality is greater in the second household. A generalized measure of delay that allows both scale independence and scale dependence in dispersion can be obtained by simply adding a constant to the measure above. That is, now define the measure of progress as:

$$P_{ih} = K + \frac{education_{ih}}{age_{ih} - entry}, \qquad K \geq 0 \quad . \tag{7}$$

Note that when $K = 0$ the dispersion of educational progress in the two households described above would be identical for scale independent measures such as Theil, Gini, and Coefficient of Variation. However, when $K \geq 1$, inequality would be greater in the second household and if $0 < K < 1$ inequality is lower in the second household. For the measure where $K = 1$ perfect delay (zero progress) implies $P_{ih} = 1$, some delay implies $1 < P_{ih} < 2$, and adequate or fast progression implies $P_{ih} > 2$. In the context of intra-household education dispersion we believe that households such as those described on the previous page should be distinguished (i.e., assigned different dispersion values). Therefore, we present results in this paper for the case where $K = 1$. However, we have also estimated regressions for the cases of $K = 0$ and $K = 5$ and the results are similar.

Regarding the other specific parameters in equation (7), Brazilian law requires that children attend school from age seven to fourteen. If a child progresses without delay, they will have completed the upper primary education by the age of 15. Given

these specific institutional features our measure of school progress (the inverse of delay) is $P_{ih} = 1 + \frac{education_{ih}}{age_{ih} - 6}$.[10]

Empirical Methodology

As discussed above, we want to compare the dispersion of the children's school-progress between a single mother household and a two parent household, holding all else equal. To this end define

$$D_h = f(T_k; Y_h, E_{HH}, X_h, \varepsilon_h) \tag{8}$$

where D_h is a measure of school-progression dispersion in household h, T_k is the single mother household indicator variable,[11] Y_h is household income, X_h is a vector of other observable variables that affect dispersion, and ε_h represents unobservable factors (such as preferences). Following our theory model, our interest is with the sign of $\frac{\partial D(.)}{\partial T_h}$. Empirically, we specify *f(.)* as a linear function of the single mother household indicator variable, the household income (or our instruments for household permanent income), and a vector of other observable household characteristics. We estimate OLS regressions of the form:

$$D_h = \alpha + \beta_1 T + \beta_2 E_{HH} + \delta' X_h + \varepsilon_h, \tag{9}$$

[10] For children not attending school we assign the highest completed years of schooling. For children attending school we assign the corresponding years of schooling for the grade the child is currently attending.

[11] We know only current parenthood status. However, prior transitions between states (single to 2-parent or vice versa) work against our results (of different behaviors) by attenuating the single-mother effect. In that sense our results are a lower bound of the pure single mother dispersion effect.

where the instruments of household income are the father's and mother's education.[12] We construct indicator variables for household heads educational attainment (HE_h), which correspond to the following categories: illiterate (zero years of schooling); some lower primary or completed primary education (one to four years of schooling); some upper primary or completed upper primary education (five to eight years of schooling); some high school or completed high school education (nine to eleven years of schooling); and some college or completed college education (twelve or more years of schooling). The vector X_h consists of the number of sons and daughters by each age level, a rural area indicator variable, a metropolitan area indicator, and state indicators. By including the number of sons and daughters for each child's age by gender, we control for the complete demographic structure of the household. The parameters to be estimated are α, β*'s*, and δ. We assume the error term, ε_h, is i.i.d. normally distributed.

Measures of Progress/Delay and Measures of Dispersion

As discussed above, our measure of progress of child i in household h is $P_{ih} = 1 + \frac{educa_{ih}}{age_{ih} - 6}$, where $P_{ih} = 1$ indicates zero progress, some delay implies $1 < P_{ih} < 2$, and adequate or fast progress implies $P_{ih} \geq 2$.

We utilize four measures of dispersion of P_{ih} within households. The Theil Entropy Measure $\left({}^{1}\!\!\diagup\!\!{}_{N_h} \sum_{i=1}^{N_h} \frac{P_{ih}}{P_h} \log\left(\frac{P_{ih}}{P_h}\right)\right)$, Gini coefficient $\frac{1}{N_h(N_h-1)P_h} \sum_{i>j} \sum_{j} |P_{ih} - P_{jh}|$,

[12] We also use per-capita household income jointly and alternatively with parents' education. Parents education may also proxy unobserved heterogeneity.

the coefficient of variation $\left({}^{1}\!/\!_{N_h} \sum_{i=1}^{N_h} (P_{ih} - P_h)^2 \right)^{\frac{1}{2}} / P_h$, and the proportion of children with some delay in a household (pdelay) is $N_{P<2}/N_h$ where N_h is the number of children in household *h*, and $N_{P<2}$ is the number of the household's children with some delay.

V. Empirical results

Sample Selection

Our unit of analysis is a household and the sample selection consists of all households with at least two children aged seven to sixteen years inclusive. Our sample restriction to households' containing at least two children reflects our focus on the intra-household distribution of education progress across children. The children's age restriction follows from the school entry age of seven in Brazil and the fact that, in principle, children are expected to have completed their fundamental education by age sixteen.[13] Finally, single-father households (only 2 per cent of the sample) and all observations where the age difference between the head of the household or spouse and the oldest child is 14 years or less are excluded since these are almost certainly not birth-children. The final sample consists of 16,659 households and the summary statistics are presented in Table A.1 of the appendix.

Table 1 below presents the basic statistics of our four delay dispersion measures for two-parent households and single mother households, separately. There are 14,209 two-parent household observations, and 2,450 single mother household observations. That is, seventeen percent of all households in our sample are single mother households.

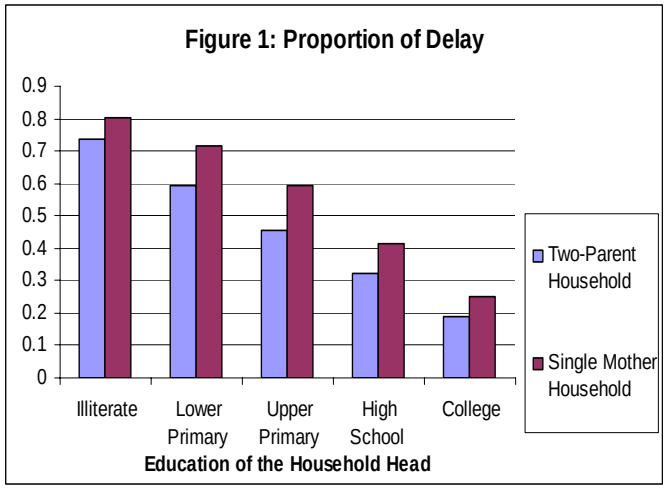
13 Our results are not sensitive for the choice of upper-bound age. We replicate our estimations using fifteen and seventeen years old as alternative upper-bounds and the results are similar.

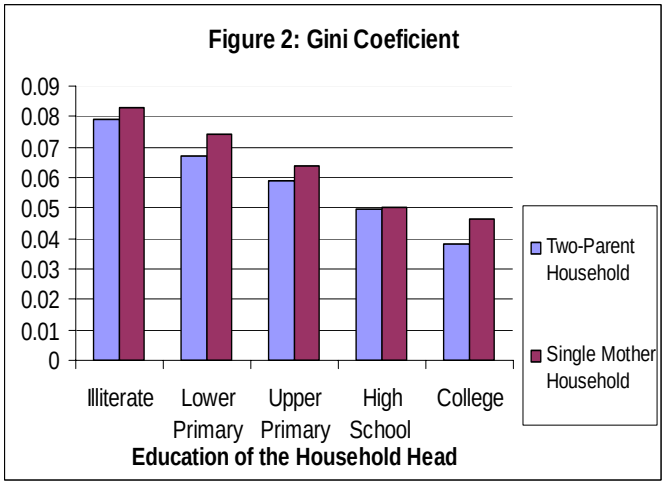
Table 1: Statistics of The Delay Dispersion Measures

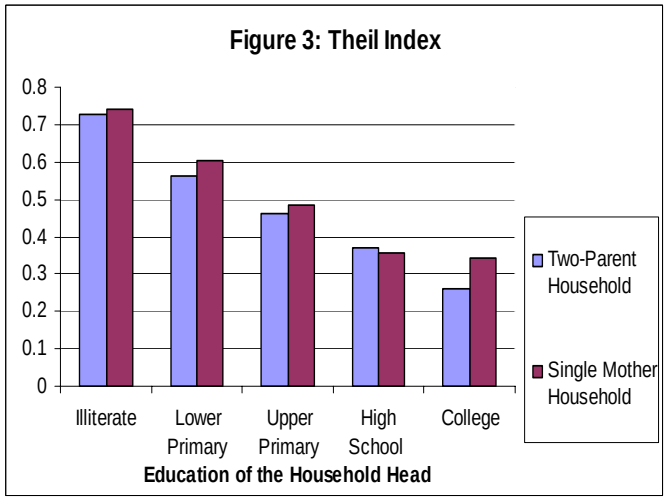
Variables	N	Mean	Std Dev	Minimum	Maximum
	Two-Parent Households				
Gini Coefficient of Age-Grade Distortion	14,209	0.063	0.065	0.000	0.561
Theil Index of Age-Grade Distortion	14,209	0.518	1.028	0.000	16.686
Coefficient of Variation of Age-Grade Distortion	14,209	9.351	9.626	0.000	79.334
Proportional Delay	14,209	0.516	0.390	0.000	1.000
	Single Mother Households				
Gini Coefficient of Age-Grade Distortion	2,450	0.067	0.065	0.000	0.463
Theil Index of Age-Grade Distortion	2,450	0.541	0.989	0.000	11.159
Coefficient of Variation of Age-Grade Distortion	2,450	9.968	9.548	0.000	65.537
Proportional Delay	2,450	0.621	0.372	0.000	1.000

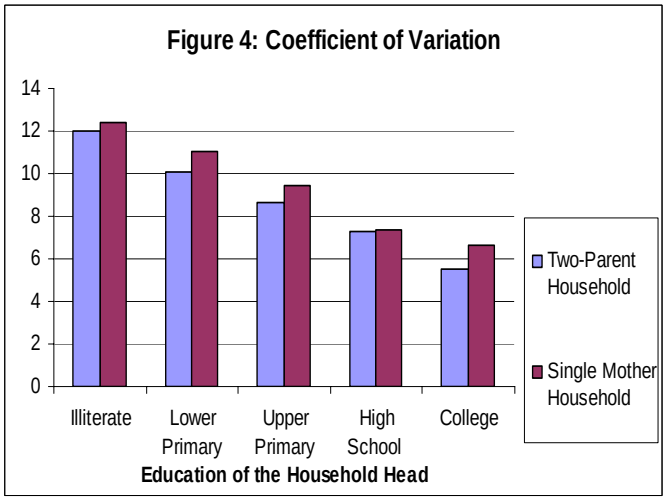
As shown in Table 1, single mother households present a greater dispersion of school progress across children compared to two-parent households. This finding holds to all four of our measures and is consistent to our model. Figures 1 to 4 below show the delay dispersion, separately for single mother and two-parent households, measured by Pdelay, the Gini coefficient, the Theil index, and the Coefficient of Variation, respectively, across the head's education distribution. The proportion of delay is greater among single mother households for any education level of the head. Moreover, the dispersion measured by Gini, Theil, and CV is also greater among single mothers across the education distribution except for high school levels.

However, these are unconditional means and there are other factors correlated to single mother households that also affect the delay dispersion. The most important of these other affects are likely, household permanent income, household composition, and educational policy. In order to control for these factors, we first run OLS regression where the dependent variables are the four delay dispersion measures and the independent variables are the single mother indicator variable, years of schooling of the









head, household demographic variables, and the location controls. Table 2.a below presents the results of these four regressions. The full set of results can be found in Table A.2.a of the appendix. Next we run the same regressions but use the education indicator variables (e.g., primary, secondary, etc.) of the head to measure educational attainment in order to control for possible non-linear effects of schooling.

Table 2.a: OLS Regression of Delay Dispersion Measures on Education of the Head

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Intercept	0.458 ***	0.019	0.045 ***	0.004	-0.086 ***	0.059	4.343 ***	0.545
Single Mother	0.078 ***	0.007	0.007 ***	0.001	0.068 ***	0.022	1.012 ***	0.201
Education of the Head								
Years of Schooling	-0.029 ***	0.001	-0.002 ***	0.000	-0.017 ***	0.002	-0.279 ***	0.018
R_Squared	0.365		0.118		0.121		0.137	
# of Obs	16,657		16,657		16,657		16,657	

Notes: (i) *** Significant at 1% level; ** at 5% level; * at 10% level.
(ii) Additional controls are: age of the head, family composition, and locality controls.

Table 2.b below presents the results of these four regressions. The full set of results can be found in the appendix Table A.2.b.[14] Tables 2.a and 2.b shows that for all measures there is a greater dispersion of school progression across children in single mother households compared to two-parent households, holding education of the household head constant (plus the other controls).

Table 2.b: OLS Regression of Delay Dispersion Measures on Education of the Head

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Intercept	0.430 ***	0.020	0.046 ***	0.004	-0.038	0.063	4.524 ***	0.585
Single Mother	0.080 ***	0.007	0.007 ***	0.001	0.068 ***	0.022	1.028 ***	0.201
Education of the Head								
Illiterate	Ommitted Category		Ommitted Category		Ommitted Category		Ommitted Category	
Lower Primary	-0.079 ***	0.007	-0.007 ***	0.001	-0.093 ***	0.022	-1.015 ***	0.207
Upper Primary	-0.161 ***	0.008	-0.014 ***	0.002	-0.157 ***	0.026	-2.045 ***	0.240
High School	-0.312 ***	0.009	-0.021 ***	0.002	-0.206 ***	0.028	-3.061 ***	0.262
College	-0.420 ***	0.012	-0.029 ***	0.002	-0.268 ***	0.036	-4.199 ***	0.336
R_Squared	0.360		0.118		0.121		0.136	
# of Obs	16,657		16,657		16,657		16,657	

Notes: (i) *** Significant at 1% level; ** at 5% level; * at 10% level.
(ii) Additional controls are: age of the head, family composition, and locality controls.

[14] One interesting regularity in the demographic controls is the uniform negative and significant signs of the coefficients of the 7 and 8 year old controls. These signs are not surprising as these children are likely to belong to "younger" households whose children have had less opportunity to accumulate delay. Recall however that with our demographic controls we are comparing household of like demographic structure with respect to the single-mother effect.

One may argue that education of the head is not an ideal proxy for household permanent income in this environment since two-parent households have, in principle, more income providers than a single mother household. In order to check the robustness of the previous results, we include a household per capita income variable (the sum of the income of all household members divided by the number of people living in the household) and assign each household to its corresponding decile in the household per capita income distribution. Table 3 below presents the results for the OLS regression where we use the deciles indicator variables instead of the education variables (and the full set of other controls), and Table 4 shows the results obtained by the full set of covariates (education and income deciles indicator variables and the other controls).[15]

Table A.3: OLS Regression of Delay Dispersion Measures on Per-Capita Family Income Deciles and Other Controls

	Pdelay		**Gini**		**Theil**		**CV**	
	Coeff.	**Est. Error**	**Coeff.**	**Est. Error**	**Coeff.**	**Est. Error**	**Coeff.**	**Est. Error**
Intercept	0.433 ***	0.021	0.043 ***	0.004	-0.120 *	0.065	4.132 ***	0.602
Single Mother	0.043 ***	0.007	0.005 ***	0.001	0.047 **	0.022	0.651 ***	0.204
Income Decile Indicator Variables								
Decile One	Ommitted Category		Ommitted Category		Ommitted Category		Ommitted Category	
Decile Two	-0.004	0.011	0.003	0.002	0.074 **	0.033	0.418	0.309
Decile Three	-0.034 ***	0.011	-0.002	0.002	0.012	0.034	-0.257	0.319
Decile Four	-0.056 ***	0.011	-0.003	0.002	-0.012	0.035	-0.444	0.327
Decile Five	-0.065 ***	0.011	-0.004 *	0.002	-0.029	0.035	-0.554 *	0.327
Decile Six	-0.111 ***	0.012	-0.010 ***	0.002	-0.074 **	0.036	-1.418 ***	0.334
Decile Seven	-0.164 ***	0.012	-0.009 ***	0.002	-0.050	0.036	-1.317 ***	0.334
Decile Eight	-0.220 ***	0.012	-0.013 ***	0.002	-0.076 **	0.037	-1.870 ***	0.342
Decile Nine	-0.300 ***	0.012	-0.021 ***	0.002	-0.188 ***	0.037	-3.095 ***	0.345
Decile Ten	-0.398 ***	0.012	-0.026 ***	0.002	-0.190 ***	0.037	-3.788 ***	0.349
R_Squared	0.359		0.119		0.121		0.138	
# of Obs	16,657		16,657		16,657		16,657	

Notes: (i) *** Significant at 1% level; ** at 5% level; * at 10% level.
(ii) Additional controls are: age of the head, family composition, and locality controls.

[15] Complete results with the full set of controls are found in Tables A.3 and A.4, respectively.

Table 4: OLS Regression of Delay Dispersion Measures on Education of the Head, Per-Capita Family Income Deciles and Other Controls

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Intercept	0.546 ***	0.022	0.053 ***	0.004	0.003	0.069	5.593 ***	0.644
Single Mother	0.052 ***	0.007	0.005 ***	0.001	0.052 ***	0.022	0.740 ***	0.204
Education of the Head								
Illiterate	Ommitted Category		Ommitted Category		Ommitted Category		Ommitted Category	
Lower Primary	-0.064 ***	0.007	-0.006 ***	0.001	-0.083 ***	0.022	-0.850 ***	0.208
Upper Primary	-0.121 ***	0.008	-0.011 ***	0.002	-0.130 ***	0.026	-1.617 ***	0.245
High School	-0.219 ***	0.010	-0.014 ***	0.002	-0.145 ***	0.031	-2.046 ***	0.284
College	-0.268 ***	0.014	-0.017 ***	0.003	-0.173 ***	0.043	-2.520 ***	0.397
Income Decile Indicator Variables								
Decile One	Ommitted Category		Ommitted Category		Ommitted Category		Ommitted Category	
Decile Two	-0.004	0.011	0.001 *	0.002	0.062	0.034	0.259 ***	0.319
Decile Three	-0.031	0.011	0.000	0.002	0.031	0.034	-0.017	0.320
Decile Four	-0.043	0.011	-0.002	0.002	-0.005	0.034	-0.346 ***	0.317
Decile Five	-0.049	0.011	-0.003	0.002	-0.023	0.035	-0.497 ***	0.329
Decile Six	-0.083 ***	0.011	-0.007	0.002	-0.043 ***	0.036	-0.986 ***	0.333
Decile Seven	-0.119 ***	0.012	-0.006	0.002	-0.022 ***	0.037	-0.901 ***	0.340
Decile Eight	-0.162 ***	0.012	-0.009	0.002	-0.038 ***	0.037	-1.302 ***	0.348
Decile Nine	-0.211 ***	0.012	-0.016 ***	0.002	-0.139 ***	0.039	-2.307 ***	0.361
Decile Ten	-0.253 ***	0.014	-0.018 ***	0.003	-0.119 ***	0.043	-2.587 ***	0.400
R_Squared	0.383		0.122		0.123		0.141	
# of Obs	16,657		16,657		16,657		16,657	

Notes: (i) *** Significant at 1% level; ** at 5% level; * at 10% level.
(ii) Additional controls are: age of the head, family composition, and locality controls.

Tables 3 and 4 show that, controlling for per-capita household income, single mother households exhibit significantly greater delay dispersion among their children than two-parent households. These results are robust for different dispersion measures and different permanent income proxies.

In order to explore non-linearities across the household income distribution we also performed a specification where we interact the single mother indicator variables with either the education variables or with the income deciles indicator variables. Table 5.a below presents the OLS results when the single mother indicator variable is interacted with the years of schooling of the head. The interaction coefficients are not statistically significant at any reasonable confidence level for all delay dispersion measures.

Table 5.a: OLS Regression of Delay Dispersion on Education of the Head, Interactions, and Other Controls

	Pdelay		**Gini**		**Theil**		**CV**	
	Coeff.	**Est. Error**	**Coeff.**	**Est. Error**	**Coeff.**	**Est. Error**	**Coeff.**	**Est. Error**
Intercept	0.456 ***	0.019	0.044 ***	0.004	-0.089	0.059	4.296 ***	0.548
Single Mother	0.085 ***	0.011	0.009 ***	0.002	0.084 ***	0.034	1.223 ***	0.316
Education of the Head								
Years of Schooling	-0.029 ***	0.001	-0.002 ***	0.0001	-0.016 ***	0.002	-0.273 ***	0.019
Interactions of Single Mother and Education of the Head Indicator Variables								
Years of Schooling	-0.001	0.002	0.000	0.0003	-0.003	0.005	-0.039	0.045
R_Squared	0.365		0.118		0.121		0.137	
# of Obs	16,657		16,657		16,657		16,657	

Notes: (i) *** Significant at 1% level; ** at 5% level; * at 10% level.
(ii) Additional controls are: age of the head, family composition, and locality controls.

Alternatively, Table 5.b (and Appendixes A5.a and A5.b) shows the results when the single mother indicator variable is interacted with the education categories indicator variables. In order to check if the "marginal" effect of single mothers differs across the education distribution, we perform an F-test of the joint equality of the effects $\beta_1 + \beta_3^j * HE^j$ in (3'), where j refers to education categories. Except for Pdelay, we do not reject the null hypothesis of the joint equality the single mother effect across the education distribution.

Table 5.b: OLS Regression of Delay Dispersion on Education of the Head, Interactions, and Other Controls

	Pdelay		Gini		Theil		CV	
	Coeff.	**Est. Error**	**Coeff.**	**Est. Error**	**Coeff.**	**Est. Error**	**Coeff.**	**Est. Error**
Intercept	0.432 ***	0.021	0.045 ***	0.004	-0.040	0.063	4.505 ***	0.590
Single Mother	0.057 ***	0.016	0.007 **	0.003	0.066	0.050	0.955 **	0.470
Education of the Head								
Illiterate	Ommitted Category		Ommitted Category		Ommitted Category		Ommitted Category	
Lower Primary	-0.085 ***	0.008	-0.007 ***	0.002	-0.098 ***	0.024	-1.086 ***	0.223
Upper Primary	-0.168 ***	0.009	-0.014 ***	0.002	-0.153 ***	0.028	-2.033 ***	0.259
High School	-0.312 ***	0.010	-0.020 ***	0.002	-0.194 ***	0.030	-2.913 ***	0.282
College	-0.414 ***	0.013	-0.029 ***	0.002	-0.280 ***	0.039	-4.300 ***	0.361
Interactions of Single Mother and Education of the Head Indicator Variables								
Illiterate	Ommitted Category		Ommitted Category		Ommitted Category		Ommitted Category	
Lower Primary	0.042 **	0.020	0.003	0.004	0.040	0.062	0.533	0.574
Upper Primary	0.045 **	0.021	-0.001	0.004	-0.020	0.065	-0.026	0.609
High School	0.000	0.024	-0.007	0.005	-0.077	0.073	-0.940	0.678
College	-0.042	0.031	0.005	0.006	0.086	0.096	0.737	0.893
F-Test (4,16709)	3.78		1.75		1.16		1.74	
R_Squared	0.361		0.118		0.121		0.137	
# of Obs	16,657		16,657		16,657		16,657	

Notes: (i) *** Significant at 1% level; ** at 5% level; * at 10% level.
(ii) Additional controls are: age of the head, family composition, and locality controls.

Finally, we perform the same interaction tests for the case where the single mother indicator variable interacts with the per capita income deciles indicator variables. Table 6 presents these results.[16] Again, there is no discernible effect of single motherhood across the income distribution, even for the case of Pdelay.

[16] Their full set of results are in Table A.6.

Table 6: OLS Regression of Delay Dispersion on Family Per-Capita Income Decile Indicator Variables, Interactions, and Other Controls

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Intercept	0.426 ***	0.021	0.043 ***	0.004	-0.110 *	0.066	4.146 ***	0.615
Single Mother	0.068 ***	0.020	0.003	0.004	-0.020	0.060	0.385	0.562
Income Decile Indicator Variables								
Decile One	Ommitted Category		Ommitted Category		Ommitted Category		Ommitted Category	
Decile Two	0.001	0.012	0.001	0.002	0.039	0.037	0.177	0.345
Decile Three	-0.029 **	0.012	-0.002	0.002	0.001	0.038	-0.278	0.355
Decile Four	-0.051 ***	0.013	-0.003	0.002	-0.014	0.039	-0.397	0.362
Decile Five	-0.059 ***	0.013	-0.004 *	0.002	-0.044	0.039	-0.662 *	0.362
Decile Six	-0.103 ***	0.013	-0.010 ***	0.003	-0.095 **	0.039	-1.527 ***	0.365
Decile Seven	-0.159 ***	0.013	-0.009 ***	0.003	-0.065 *	0.039	-1.368 ***	0.364
Decile Eight	-0.215 ***	0.013	-0.013 ***	0.003	-0.086 **	0.040	-1.873 ***	0.369
Decile Nine	-0.290 ***	0.013	-0.021 ***	0.003	-0.198 ***	0.040	-3.065 ***	0.373
Decile Ten	-0.390 ***	0.013	-0.026 ***	0.003	-0.203 ***	0.040	-3.838 ***	0.376
Interactions of Single Mother and Family Per-Capita Income DecileIndicator Variables								
Decile One	Ommitted Category		Ommitted Category		Ommitted Category		Ommitted Category	
Decile Two	-0.022	0.027	0.007	0.005	0.181 **	0.083	1.234	0.769
Decile Three	-0.022	0.028	0.000	0.005	0.056	0.085	0.096	0.796
Decile Four	-0.022	0.029	-0.003	0.006	0.001	0.089	-0.333	0.827
Decile Five	-0.028	0.028	0.003	0.006	0.078	0.087	0.598	0.808
Decile Six	-0.042	0.030	0.004	0.006	0.124	0.093	0.718	0.871
Decile Seven	-0.014	0.030	0.001	0.006	0.084	0.092	0.272	0.857
Decile Eight	-0.011	0.032	-0.003	0.006	0.028	0.100	-0.206	0.929
Decile Nine	-0.070 **	0.032	-0.005	0.006	0.025	0.100	-0.549	0.930
Decile Ten	-0.049	0.032	0.001	0.006	0.056	0.099	0.255	0.925
F-Test(9,16699)	0.730		0.730		0.840		0.780	
R_Squared	0.359		0.119		0.122		0.138	
# of Obs	16,657		16,657		16,657		16,657	

Notes: (i) *** Significant at 1% level; ** at 5% level; * at 10% level.
(ii) Additional controls are: age of the head, family composition, and locality controls.

Taken together, the robustness checks of Tables 4-6 provide strong evidence that there is a single mother effect *above and beyond* the income effect, and that this effect is similar across the income distribution.

VI. Conclusions

There is strong evidence in both high and low-income countries that parental time-input is critical to child human capital accumulation and is significantly correlated with the level of academic attainment. Since an important distinguishing feature of single-parent households is their reduced endowment of parental discretionary time, it is not surprising to find their children have lower levels of academic attainment, all else equal. This paper moves beyond the issue of *levels* of academic attainment to compare the intra-household *dispersion* of academic attainment in single-parent and two-parent households.

We first construct a theoretical model that reveals that differing time endowments of single and two-parent households will, in general, have a *dispersion* effect as well as the anticipated level effect on children's academic achievement. We next present evidence that education delay is a powerful proxy (inverse) for final academic attainment in Brazil. Our empirical analysis then follows the theoretical framework and we address two empirical questions. First, do children in single mother households have, ceteris paribus, greater or less *dispersion* in education attainment than children in two-parent households? Second, if yes, does this pattern of dispersion differ across the income distribution? We find extremely robust evidence that children in single mother households have *greater* dispersion than two-parent households after controlling for household permanent income and other factors. Moreover, our results suggest that the greater dispersion of academic achievement in children of single-mothers *does not* vary across the income distribution. In other words, there is a single mother dispersion effect *over and above* the income effect as suggested by our theoretical model.

We perform numerous robustness checks of the single-mother effect. All the robustness checks are consistent with the presence of a strong dispersion effect *specific* to the single-mother household over and above any permanent income effect. Of course, income and time allocation (to its various uses) are simultaneously determined. However, given our extremely robust parameter estimates it is unlikely that any simultaneity bias is generating our principal results.

How does one interpret this single-mother dispersion effect? Perhaps the obvious explanation stems from evidence that males and females often have markedly different attitudes towards the time allocation of their children. In the economics literature cited in the Section II there is significant evidence that mothers and fathers have different gender and birth-order biases. These attitudinal differences are also well documented in the sociology literature for both high income and low income countries (see for example Thorton et al. 1983, and Buchman. 2000). We conjecture that differing attitudes by males and females regarding the roles of children by gender and birth-order are moderated in two-parent household due to offsetting "biases." In the single-mother household, on the other hand, the offsetting influence is absent and the pattern of specialization associated with female specific attitudes is undiluted.

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Appendix

Table A.1: Descriptive Statistics

	Two-Parent Households					Single Mother Households				
Variable	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
Gini Coefficient of Age-Grade Distortion	14,209	0.063	0.065	0.000	0.561	2,450	0.067	0.065	0.000	0.463
Theil Index of Age-Grade Distortion	14,209	0.518	1.028	0.000	16.686	2,450	0.541	0.989	0.000	11.159
Coefficient of Variation of Age-Grade Distortion	14,209	9.351	9.626	0.000	79.334	2,450	9.968	9.548	0.000	65.537
Proportional Delay	14,209	0.516	0.390	0.000	1.000	2,450	0.621	0.372	0.000	1.000
Family Caracteristics										
Age of the Head	14,208	41.687	8.012	23.000	98.000	2,450	39.309	6.997	24.000	72.000
Number of Males										
Zero-year Old	14,209	0.015	0.122	0.000	1.000	2,450	0.019	0.143	0.000	2.000
One_year old	14,209	0.020	0.141	0.000	2.000	2,450	0.017	0.131	0.000	2.000
Two-year old	14,209	0.024	0.155	0.000	2.000	2,450	0.018	0.136	0.000	2.000
Three-year old	14,209	0.031	0.175	0.000	2.000	2,450	0.018	0.134	0.000	1.000
Four-year old	14,209	0.036	0.189	0.000	2.000	2,450	0.027	0.163	0.000	2.000
Five-year old	14,209	0.044	0.206	0.000	2.000	2,450	0.032	0.178	0.000	2.000
Six-year old	14,209	0.048	0.215	0.000	2.000	2,450	0.041	0.199	0.000	1.000
Seven-year old	14,209	0.108	0.315	0.000	2.000	2,450	0.086	0.291	0.000	2.000
Eight-year old	14,209	0.113	0.321	0.000	2.000	2,450	0.098	0.302	0.000	2.000
Nine-year old	14,209	0.115	0.323	0.000	2.000	2,450	0.091	0.294	0.000	2.000
Ten-year old	14,209	0.130	0.341	0.000	2.000	2,450	0.113	0.319	0.000	2.000
Eleven-year old	14,209	0.128	0.339	0.000	2.000	2,450	0.122	0.331	0.000	2.000
Twelve-year old	14,209	0.134	0.344	0.000	2.000	2,450	0.146	0.362	0.000	2.000
Therteen-year old	14,209	0.140	0.353	0.000	2.000	2,450	0.143	0.355	0.000	2.000
Fourteen-year old	14,209	0.136	0.347	0.000	2.000	2,450	0.132	0.342	0.000	2.000
Fifteen-year old	14,209	0.121	0.331	0.000	2.000	2,450	0.143	0.362	0.000	2.000
Sixteen-year old	14,209	0.118	0.328	0.000	2.000	2,450	0.148	0.366	0.000	2.000
Seventeen-year old	14,209	0.053	0.225	0.000	2.000	2,450	0.058	0.236	0.000	2.000
Eighteen-year old	14,209	0.051	0.222	0.000	2.000	2,450	0.058	0.234	0.000	1.000
Nineteen-year old or more	14,209	0.144	0.457	0.000	5.000	2,450	0.198	0.502	0.000	4.000
Number of Females										
Zero-year Old	14,209	0.018	0.133	0.000	2.000	2,450	0.011	0.106	0.000	1.000
One_year old	14,209	0.020	0.142	0.000	2.000	2,450	0.012	0.110	0.000	1.000
Two-year old	14,209	0.024	0.155	0.000	2.000	2,450	0.022	0.147	0.000	1.000
Three-year old	14,209	0.031	0.176	0.000	2.000	2,450	0.023	0.149	0.000	1.000
Four-year old	14,209	0.034	0.183	0.000	2.000	2,450	0.027	0.161	0.000	1.000
Five-year old	14,209	0.042	0.204	0.000	2.000	2,450	0.030	0.171	0.000	1.000
Six-year old	14,209	0.043	0.204	0.000	2.000	2,450	0.031	0.173	0.000	1.000
Seven-year old	14,209	0.104	0.311	0.000	2.000	2,450	0.087	0.283	0.000	2.000
Eight-year old	14,209	0.117	0.325	0.000	2.000	2,450	0.087	0.288	0.000	2.000
Nine-year old	14,209	0.115	0.324	0.000	2.000	2,450	0.109	0.316	0.000	2.000
Ten-year old	14,209	0.129	0.338	0.000	2.000	2,450	0.109	0.315	0.000	2.000
Eleven-year old	14,209	0.131	0.343	0.000	2.000	2,450	0.130	0.341	0.000	2.000
Twelve-year old	14,209	0.134	0.347	0.000	2.000	2,450	0.128	0.340	0.000	2.000
Therteen-year old	14,209	0.131	0.343	0.000	2.000	2,450	0.140	0.355	0.000	2.000
Fourteen-year old	14,209	0.126	0.336	0.000	2.000	2,450	0.133	0.349	0.000	2.000
Fifteen-year old	14,209	0.115	0.323	0.000	2.000	2,450	0.133	0.353	0.000	2.000
Sixteen-year old	14,209	0.103	0.309	0.000	2.000	2,450	0.131	0.343	0.000	2.000
Seventeen-year old	14,209	0.040	0.199	0.000	2.000	2,450	0.053	0.225	0.000	2.000
Eighteen-year old	14,209	0.038	0.193	0.000	2.000	2,450	0.039	0.193	0.000	1.000
Nineteen-year old or more	14,209	0.094	0.351	0.000	5.000	2,450	0.156	0.450	0.000	5.000

(Table A1 continued on following page)

Table A.1Continued: Descriptive Statistics

	Two-Parent Households					Single Mother Households				
Variable	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
Education of the Head										
Years of Schooling	14,209	5.313	4.389	0.000	18.000	2,450	5.371	4.367	0.000	18.000
Illiterate	14,209	0.181	0.385	0.000	1.000	2,450	0.177	0.382	0.000	1.000
Lower Primary	14,209	0.363	0.481	0.000	1.000	2,450	0.340	0.474	0.000	1.000
Upper Primary	14,209	0.232	0.422	0.000	1.000	2,450	0.257	0.437	0.000	1.000
High School	14,209	0.157	0.364	0.000	1.000	2,450	0.160	0.367	0.000	1.000
College	14,209	0.067	0.250	0.000	1.000	2,450	0.067	0.249	0.000	1.000
Income Decile Indicator Variables										
Decile One	14,209	0.089	0.284	0.000	1.000	2,450	0.133	0.340	0.000	1.000
Decile Two	14,209	0.106	0.307	0.000	1.000	2,450	0.145	0.352	0.000	1.000
Decile Three	14,209	0.095	0.293	0.000	1.000	2,450	0.125	0.331	0.000	1.000
Decile Four	14,209	0.092	0.288	0.000	1.000	2,450	0.106	0.308	0.000	1.000
Decile Five	14,209	0.097	0.296	0.000	1.000	2,450	0.116	0.321	0.000	1.000
Decile Six	14,209	0.098	0.298	0.000	1.000	2,450	0.085	0.279	0.000	1.000
Decile Seven	14,209	0.106	0.308	0.000	1.000	2,450	0.089	0.285	0.000	1.000
Decile Eight	14,209	0.106	0.308	0.000	1.000	2,450	0.066	0.249	0.000	1.000
Decile Nine	14,209	0.106	0.308	0.000	1.000	2,450	0.066	0.249	0.000	1.000
Decile Ten	14,209	0.106	0.307	0.000	1.000	2,450	0.067	0.251	0.000	1.000
Locality Controls										
Rural Area	14,209	0.191	0.393	0.000	1.000	2,450	0.098	0.297	0.000	1.000
Metropolitan Area	14,209	0.332	0.471	0.000	1.000	2,450	0.392	0.488	0.000	1.000
Rondonia	14,209	0.014	0.119	0.000	1.000	2,450	0.016	0.127	0.000	1.000
Acre	14,209	0.008	0.090	0.000	1.000	2,450	0.010	0.099	0.000	1.000
Amazonas	14,209	0.022	0.146	0.000	1.000	2,450	0.024	0.153	0.000	1.000
Roraima	14,209	0.005	0.067	0.000	1.000	2,450	0.006	0.075	0.000	1.000
Para	14,209	0.049	0.216	0.000	1.000	2,450	0.050	0.218	0.000	1.000
Amapa	14,209	0.003	0.052	0.000	1.000	2,450	0.002	0.049	0.000	1.000
Tocantins	14,209	0.020	0.139	0.000	1.000	2,450	0.013	0.114	0.000	1.000
Maranhão	14,209	0.024	0.153	0.000	1.000	2,450	0.021	0.144	0.000	1.000
Piaui	14,209	0.019	0.136	0.000	1.000	2,450	0.015	0.122	0.000	1.000
Ceara	14,209	0.069	0.254	0.000	1.000	2,450	0.074	0.262	0.000	1.000
Rio Grande do Norte	14,209	0.016	0.127	0.000	1.000	2,450	0.018	0.134	0.000	1.000
Paraiba	14,209	0.023	0.150	0.000	1.000	2,450	0.023	0.149	0.000	1.000
Pernanbuco	14,209	0.066	0.248	0.000	1.000	2,450	0.071	0.257	0.000	1.000
Alagoas	14,209	0.018	0.134	0.000	1.000	2,450	0.016	0.124	0.000	1.000
Sergipe	14,209	0.017	0.130	0.000	1.000	2,450	0.023	0.149	0.000	1.000
Bahia	14,209	0.096	0.295	0.000	1.000	2,450	0.115	0.319	0.000	1.000
Minas Gerais	14,209	0.099	0.298	0.000	1.000	2,450	0.090	0.286	0.000	1.000
Espirito Santo	14,209	0.017	0.130	0.000	1.000	2,450	0.024	0.155	0.000	1.000
Rio de Janeiro	14,209	0.053	0.224	0.000	1.000	2,450	0.061	0.240	0.000	1.000
Sao Paulo	14,209	0.110	0.313	0.000	1.000	2,450	0.086	0.281	0.000	1.000
Parana	14,209	0.051	0.220	0.000	1.000	2,450	0.043	0.203	0.000	1.000
Santa Catarina	14,209	0.025	0.155	0.000	1.000	2,450	0.016	0.127	0.000	1.000
Rio Grande do Sul	14,209	0.065	0.247	0.000	1.000	2,450	0.065	0.247	0.000	1.000
Mato Grosso do Sul	14,209	0.019	0.135	0.000	1.000	2,450	0.016	0.125	0.000	1.000
Mato Grosso	14,209	0.022	0.148	0.000	1.000	2,450	0.021	0.144	0.000	1.000
Goias	14,209	0.045	0.208	0.000	1.000	2,450	0.042	0.202	0.000	1.000
Distrito Federal	14,209	0.024	0.155	0.000	1.000	2,450	0.037	0.189	0.000	1.000

Table A.2.a : OLS Regression of Delay Dispersion Measures on Education of the Head

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Intercept	0.458	0.019	0.045	0.004	-0.086	0.059	4.343	0.545
Single Mother	0.078	0.007	0.007	0.001	0.068	0.022	1.012	0.201
Education of the Head								
Years of Schooling	-0.029	0.001	-0.002	0.000	-0.017	0.002	-0.279	0.018
Family Caracteristics								
Age of the Head	-0.001	0.000	0.000	0.000	0.003	0.001	0.012	0.010
Number of Males								
Zero-year Old	0.035	0.019	0.004	0.004	0.021	0.060	0.508	0.561
One_year old	0.027	0.017	0.002	0.003	0.048	0.054	0.168	0.504
Two-year old	0.044	0.016	0.003	0.003	0.058	0.049	0.380	0.461
Three-year old	0.049	0.014	0.006	0.003	0.034	0.045	0.840	0.417
Four-year old	0.047	0.013	0.004	0.003	0.039	0.041	0.581	0.380
Five-year old	0.051	0.012	0.003	0.002	0.027	0.037	0.394	0.349
Six-year old	0.050	0.012	0.010	0.002	0.170	0.036	1.500	0.332
Seven-year old	-0.158	0.008	0.030	0.002	0.682	0.025	5.563	0.237
Eight-year old	-0.043	0.008	0.014	0.002	0.233	0.025	2.884	0.235
Nine-year old	0.005	0.008	0.002	0.002	0.086	0.025	1.234	0.234
Ten-year old	0.038	0.008	-0.001	0.002	0.056	0.024	0.790	0.220
Eleven-year old	0.056	0.008	-0.002	0.002	0.080	0.024	0.646	0.219
Twelve-year old	0.094	0.007	-0.003	0.001	0.077	0.023	0.540	0.214
Therteen-year old	0.116	0.007	-0.004	0.001	0.054	0.023	0.433	0.211
Fourteen-year old	0.136	0.008	0.000	0.001	0.128	0.023	0.925	0.216
Fifteen-year old	0.143	0.008	0.000	0.002	0.097	0.024	0.914	0.224
Sixteen-year old	0.165	0.008	0.003	0.002	0.147	0.024	1.356	0.226
Seventeen-year old	0.033	0.011	0.004	0.002	0.026	0.033	0.609	0.311
Eighteen-year old	0.039	0.011	0.003	0.002	0.050	0.034	0.394	0.317
Nineteen-year old or more	0.041	0.006	0.002	0.001	0.017	0.018	0.268	0.163

(Table A2.a continued on following page)

Table A.2.a Controls Continued :
OLS Regression of Delay Dispersion Measures on Education of the Head

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Number of Females								
Zero-year Old	0.034	0.019	0.004	0.004	0.045	0.058	0.520	0.542
One_year old	0.056	0.018	0.004	0.003	0.073	0.055	0.635	0.509
Two-year old	0.045	0.016	0.000	0.003	-0.060	0.049	-0.106	0.457
Three-year old	0.022	0.014	0.001	0.003	0.032	0.044	0.177	0.408
Four-year old	0.052	0.014	0.005	0.003	0.055	0.042	0.748	0.392
Five-year old	0.039	0.012	0.006	0.002	0.144	0.038	0.852	0.355
Six-year old	0.035	0.012	0.009	0.002	0.149	0.038	1.273	0.351
Seven-year old	-0.169	0.008	0.038	0.002	0.826	0.026	6.674	0.242
Eight-year old	-0.061	0.008	0.013	0.002	0.221	0.025	2.769	0.233
Nine-year old	-0.024	0.008	0.005	0.002	0.148	0.025	1.640	0.232
Ten-year old	0.006	0.008	0.000	0.002	0.080	0.024	0.882	0.222
Eleven-year old	0.035	0.008	-0.002	0.001	0.073	0.023	0.685	0.217
Twelve-year old	0.054	0.007	-0.005	0.001	0.039	0.023	0.226	0.215
Therteen-year old	0.064	0.008	-0.006	0.001	0.037	0.023	0.035	0.216
Fourteen-year old	0.075	0.008	-0.007	0.002	0.040	0.024	-0.096	0.221
Fifteen-year old	0.095	0.008	-0.006	0.002	0.051	0.024	0.051	0.228
Sixteen-year old	0.105	0.008	-0.001	0.002	0.092	0.025	0.732	0.237
Seventeen-year old	0.024	0.012	-0.001	0.002	-0.021	0.037	-0.196	0.347
Eighteen-year old	0.036	0.013	0.007	0.003	0.082	0.039	1.069	0.365
Nineteen-year old or more	0.013	0.007	-0.001	0.001	-0.029	0.021	-0.153	0.200
Locality Controls								
Rural Area	0.047	0.007	0.003	0.001	0.011	0.022	0.367	0.204
Metropolitan Area	0.020	0.006	0.001	0.001	0.005	0.020	0.059	0.185
Rondonia	0.137	0.021	0.017	0.004	0.222	0.066	2.441	0.618
Acre	0.135	0.028	0.024	0.005	0.300	0.085	3.583	0.793
Amazonas	0.211	0.018	0.023	0.004	0.237	0.056	3.304	0.522
Roraima	0.072	0.036	0.011	0.007	0.155	0.112	1.475	1.042
Para	0.228	0.013	0.018	0.003	0.143	0.041	2.578	0.381
Amapa	0.114	0.048	0.008	0.009	0.060	0.147	1.245	1.374
Tocantins	0.156	0.019	0.013	0.004	0.126	0.060	1.951	0.556
Maranhão	0.193	0.018	0.020	0.003	0.203	0.055	2.917	0.509
Piaui	0.230	0.020	0.019	0.004	0.222	0.061	2.924	0.567
Ceara	0.126	0.012	0.016	0.002	0.146	0.037	2.302	0.344
Rio Grande do Norte	0.150	0.020	0.026	0.004	0.280	0.063	3.762	0.586
Paraiba	0.179	0.018	0.026	0.004	0.250	0.055	3.625	0.514
Pernanbuco	0.172	0.012	0.023	0.002	0.235	0.037	3.329	0.348
Alagoas	0.216	0.020	0.028	0.004	0.299	0.061	3.955	0.569
Sergipe	0.259	0.020	0.025	0.004	0.295	0.061	3.651	0.568
Bahia	0.200	0.011	0.024	0.002	0.239	0.034	3.441	0.313
Minas Gerais	0.069	0.011	0.007	0.002	0.072	0.033	1.064	0.310
Espirito Santo	0.051	0.020	0.014	0.004	0.188	0.060	2.131	0.564
Rio de Janeiro	0.203	0.013	0.017	0.003	0.163	0.040	2.490	0.369
Parana	-0.007	0.013	0.012	0.003	0.134	0.041	1.802	0.378
Santa Catarina	0.005	0.018	0.005	0.003	0.016	0.055	0.706	0.509
Rio Grande do Sul	0.043	0.012	0.013	0.002	0.138	0.037	1.918	0.347
Mato Grosso do Sul	0.048	0.020	0.023	0.004	0.251	0.061	3.389	0.564
Mato Grosso	0.085	0.018	0.023	0.004	0.295	0.056	3.291	0.519
Goias	0.124	0.014	0.012	0.003	0.102	0.043	1.770	0.400
Distrito Federal	0.090	0.017	0.008	0.003	0.041	0.052	1.145	0.488
R_Squared	0.365		0.118		0.121		0.137	
# of Obs	16,657		16,657		16,657		16,657	

Table A.2.b: OLS Regression of Delay Dispersion Measures on Education of the Head

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Intercept	0.430	0.020	0.046	0.004	-0.038	0.063	4.524	0.585
Single Mother	0.080	0.007	0.007	0.001	0.068	0.022	1.028	0.201
Education of the Head								
Lower Primary	-0.079	0.007	-0.007	0.001	-0.093	0.022	-1.015	0.207
Upper Primary	-0.161	0.008	-0.014	0.002	-0.157	0.026	-2.045	0.240
High School	-0.312	0.009	-0.021	0.002	-0.206	0.028	-3.061	0.262
College	-0.420	0.012	-0.029	0.002	-0.268	0.036	-4.199	0.336
Family Caracteristics								
Age of the Head	-0.001	0.000	0.000	0.000	0.003	0.001	0.009	0.010
Number of Males								
Zero-year Old	0.035	0.020	0.004	0.004	0.020	0.060	0.501	0.561
One_year old	0.026	0.018	0.002	0.003	0.048	0.054	0.169	0.504
Two-year old	0.046	0.016	0.003	0.003	0.060	0.049	0.410	0.461
Three-year old	0.053	0.015	0.006	0.003	0.035	0.045	0.860	0.417
Four-year old	0.049	0.013	0.004	0.003	0.039	0.041	0.592	0.380
Five-year old	0.053	0.012	0.003	0.002	0.027	0.037	0.408	0.349
Six-year old	0.053	0.012	0.010	0.002	0.170	0.036	1.519	0.332
Seven-year old	-0.154	0.008	0.030	0.002	0.683	0.025	5.589	0.237
Eight-year old	-0.042	0.008	0.014	0.002	0.233	0.025	2.893	0.235
Nine-year old	0.008	0.008	0.002	0.002	0.086	0.025	1.249	0.234
Ten-year old	0.041	0.008	-0.001	0.002	0.057	0.024	0.809	0.220
Eleven-year old	0.057	0.008	-0.002	0.002	0.080	0.024	0.651	0.219
Twelve-year old	0.096	0.007	-0.003	0.001	0.076	0.023	0.549	0.215
Therteen-year old	0.120	0.007	-0.003	0.001	0.055	0.023	0.466	0.211
Fourteen-year old	0.139	0.008	0.000	0.001	0.129	0.023	0.939	0.216
Fifteen-year old	0.145	0.008	0.000	0.002	0.096	0.024	0.918	0.224
Sixteen-year old	0.167	0.008	0.003	0.002	0.148	0.024	1.371	0.226
Seventeen-year old	0.035	0.011	0.004	0.002	0.027	0.033	0.622	0.311
Eighteen-year old	0.041	0.011	0.003	0.002	0.050	0.034	0.408	0.317
Nineteen-year old or more	0.042	0.006	0.002	0.001	0.017	0.018	0.282	0.163

(Table A2.b continued on following page)

Table A.2.b Controls Continued:

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Number of Females								
Zero-year Old	0.038	0.019	0.004	0.004	0.046	0.058	0.549	0.542
One_year old	0.057	0.018	0.004	0.003	0.071	0.055	0.634	0.509
Two-year old	0.047	0.016	0.000	0.003	-0.059	0.049	-0.090	0.457
Three-year old	0.026	0.014	0.001	0.003	0.033	0.044	0.205	0.408
Four-year old	0.053	0.014	0.005	0.003	0.055	0.042	0.760	0.392
Five-year old	0.045	0.012	0.006	0.002	0.147	0.038	0.902	0.355
Six-year old	0.039	0.012	0.009	0.002	0.151	0.038	1.305	0.351
Seven-year old	-0.166	0.008	0.038	0.002	0.827	0.026	6.694	0.242
Eight-year old	-0.060	0.008	0.013	0.002	0.220	0.025	2.774	0.233
Nine-year old	-0.021	0.008	0.005	0.002	0.147	0.025	1.649	0.232
Ten-year old	0.008	0.008	0.000	0.002	0.080	0.024	0.891	0.223
Eleven-year old	0.038	0.008	-0.001	0.001	0.073	0.023	0.701	0.217
Twelve-year old	0.057	0.007	-0.005	0.001	0.039	0.023	0.240	0.215
Therteen-year old	0.065	0.008	-0.006	0.001	0.038	0.023	0.049	0.216
Fourteen-year old	0.077	0.008	-0.007	0.002	0.041	0.024	-0.083	0.221
Fifteen-year old	0.097	0.008	-0.006	0.002	0.052	0.024	0.064	0.228
Sixteen-year old	0.106	0.008	-0.001	0.002	0.093	0.025	0.743	0.237
Seventeen-year old	0.025	0.012	-0.001	0.002	-0.020	0.037	-0.190	0.347
Eighteen-year old	0.035	0.013	0.007	0.003	0.081	0.039	1.057	0.365
Nineteen-year old or more	0.014	0.007	-0.001	0.001	-0.027	0.021	-0.135	0.200
Locality Controls								
Rural Area	0.054	0.007	0.003	0.001	0.010	0.022	0.393	0.205
Metropolitan Area	0.015	0.006	0.000	0.001	0.005	0.020	0.036	0.185
Rondonia	0.141	0.022	0.017	0.004	0.223	0.066	2.459	0.618
Acre	0.140	0.028	0.024	0.005	0.296	0.085	3.576	0.794
Amazonas	0.217	0.018	0.023	0.004	0.237	0.056	3.330	0.523
Roraima	0.072	0.036	0.011	0.007	0.153	0.112	1.460	1.042
Para	0.236	0.013	0.018	0.003	0.142	0.041	2.613	0.382
Amapa	0.104	0.048	0.008	0.009	0.056	0.147	1.165	1.375
Tocantins	0.161	0.019	0.013	0.004	0.129	0.060	1.997	0.557
Maranhão	0.201	0.018	0.021	0.004	0.201	0.055	2.946	0.510
Piaui	0.241	0.020	0.020	0.004	0.219	0.061	2.955	0.568
Ceara	0.136	0.012	0.016	0.002	0.144	0.037	2.345	0.344
Rio Grande do Norte	0.159	0.020	0.027	0.004	0.282	0.063	3.834	0.586
Paraiba	0.189	0.018	0.026	0.004	0.247	0.055	3.664	0.514
Pernanbuco	0.181	0.012	0.023	0.002	0.235	0.037	3.370	0.348
Alagoas	0.226	0.020	0.028	0.004	0.295	0.061	3.988	0.570
Sergipe	0.265	0.020	0.025	0.004	0.291	0.061	3.649	0.568
Bahia	0.210	0.011	0.024	0.002	0.236	0.034	3.471	0.314
Minas Gerais	0.069	0.011	0.007	0.002	0.072	0.033	1.062	0.310
Espirito Santo	0.049	0.020	0.014	0.004	0.188	0.060	2.116	0.564
Rio de Janeiro	0.201	0.013	0.017	0.003	0.162	0.040	2.469	0.369
Parana	-0.006	0.013	0.012	0.003	0.133	0.041	1.791	0.378
Santa Catarina	-0.005	0.018	0.005	0.003	0.015	0.055	0.650	0.509
Rio Grande do Sul	0.044	0.012	0.013	0.002	0.141	0.037	1.949	0.347
Mato Grosso do Sul	0.052	0.020	0.023	0.004	0.254	0.061	3.427	0.564
Mato Grosso	0.088	0.018	0.023	0.004	0.298	0.056	3.335	0.520
Goias	0.129	0.014	0.013	0.003	0.104	0.043	1.812	0.401
Distrito Federal	0.098	0.017	0.008	0.003	0.042	0.052	1.192	0.489
R_Squared	0.360		0.118		0.121		0.136	
# of Obs	16,657		16,657		16,657		16,657	

Table A.3: OLS Regression of Delay Dispersion Measures on Per-Capita Family Income Deciles and Other Controls

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Intercept	0.433	0.021	0.043	0.004	-0.120	0.065	4.132	0.602
Single Mother	0.043	0.007	0.005	0.001	0.047	0.022	0.651	0.204
Income Decile Indicator Variables								
Decile Two	-0.004	0.011	0.003	0.002	0.074	0.033	0.418	0.309
Decile Three	-0.034	0.011	-0.002	0.002	0.012	0.034	-0.257	0.319
Decile Four	-0.056	0.011	-0.003	0.002	-0.012	0.035	-0.444	0.327
Decile Five	-0.065	0.011	-0.004	0.002	-0.029	0.035	-0.554	0.327
Decile Six	-0.111	0.012	-0.010	0.002	-0.074	0.036	-1.418	0.334
Decile Seven	-0.164	0.012	-0.009	0.002	-0.050	0.036	-1.317	0.334
Decile Eight	-0.220	0.012	-0.013	0.002	-0.076	0.037	-1.870	0.342
Decile Nine	-0.300	0.012	-0.021	0.002	-0.188	0.037	-3.095	0.345
Decile Ten	-0.398	0.012	-0.026	0.002	-0.190	0.037	-3.788	0.349
Family Caracteristics								
Age of the Head	0.000	0.000	0.000	0.000	0.004	0.001	0.028	0.010
Number of Males								
Zero-year Old	0.033	0.020	0.003	0.004	0.016	0.060	0.461	0.561
One_year old	0.037	0.018	0.002	0.003	0.055	0.054	0.271	0.504
Two-year old	0.036	0.016	0.002	0.003	0.055	0.050	0.307	0.461
Three-year old	0.051	0.015	0.006	0.003	0.038	0.045	0.864	0.417
Four-year old	0.051	0.013	0.004	0.003	0.041	0.041	0.607	0.380
Five-year old	0.033	0.012	0.001	0.002	0.013	0.038	0.180	0.351
Six-year old	0.039	0.012	0.009	0.002	0.163	0.036	1.371	0.333
Seven-year old	-0.168	0.008	0.029	0.002	0.674	0.026	5.438	0.239
Eight-year old	-0.057	0.008	0.013	0.002	0.224	0.025	2.737	0.236
Nine-year old	-0.011	0.008	0.001	0.002	0.077	0.025	1.064	0.236
Ten-year old	0.025	0.008	-0.002	0.002	0.048	0.024	0.640	0.222
Eleven-year old	0.042	0.008	-0.003	0.002	0.070	0.024	0.488	0.220
Twelve-year old	0.082	0.008	-0.004	0.001	0.069	0.023	0.409	0.216
Therteen-year old	0.108	0.007	-0.004	0.001	0.049	0.023	0.345	0.212
Fourteen-year old	0.127	0.008	-0.001	0.001	0.123	0.023	0.823	0.217
Fifteen-year old	0.138	0.008	0.000	0.002	0.094	0.024	0.853	0.224
Sixteen-year old	0.171	0.008	0.003	0.002	0.150	0.024	1.403	0.226
Seventeen-year old	0.030	0.011	0.004	0.002	0.024	0.033	0.580	0.311
Eighteen-year old	0.042	0.011	0.003	0.002	0.051	0.034	0.413	0.317
Nineteen-year old or more	0.054	0.006	0.003	0.001	0.024	0.017	0.388	0.163

(Table A3 continued on following page)

Table A.3 Controls Continued:

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Number of Females								
Zero-year Old	0.044	0.019	0.004	0.004	0.052	0.058	0.604	0.542
One_year old	0.059	0.018	0.005	0.003	0.077	0.055	0.675	0.510
Two-year old	0.039	0.016	-0.001	0.003	-0.063	0.049	-0.173	0.457
Three-year old	0.020	0.014	0.001	0.003	0.031	0.044	0.150	0.408
Four-year old	0.056	0.014	0.005	0.003	0.057	0.042	0.773	0.392
Five-year old	0.026	0.012	0.005	0.002	0.135	0.038	0.696	0.356
Six-year old	0.015	0.012	0.007	0.002	0.135	0.038	1.046	0.352
Seven-year old	-0.179	0.008	0.037	0.002	0.819	0.026	6.551	0.243
Eight-year old	-0.076	0.008	0.012	0.002	0.210	0.025	2.601	0.235
Nine-year old	-0.037	0.008	0.004	0.002	0.140	0.025	1.489	0.233
Ten-year old	-0.010	0.008	-0.002	0.002	0.069	0.024	0.702	0.224
Eleven-year old	0.023	0.008	-0.003	0.002	0.065	0.023	0.550	0.219
Twelve-year old	0.041	0.008	-0.006	0.001	0.031	0.023	0.083	0.217
Therteen-year old	0.057	0.008	-0.007	0.001	0.033	0.023	-0.042	0.217
Fourteen-year old	0.069	0.008	-0.008	0.002	0.037	0.024	-0.160	0.221
Fifteen-year old	0.088	0.008	-0.007	0.002	0.046	0.025	-0.034	0.229
Sixteen-year old	0.103	0.008	-0.001	0.002	0.091	0.025	0.710	0.237
Seventeen-year old	0.019	0.012	-0.002	0.002	-0.024	0.037	-0.254	0.347
Eighteen-year old	0.030	0.013	0.007	0.003	0.079	0.039	1.009	0.365
Nineteen-year old or more	0.018	0.007	-0.001	0.001	-0.027	0.021	-0.112	0.200
Locality Controls								
Rural Area	0.057	0.007	0.003	0.001	0.016	0.022	0.430	0.205
Metropolitan Area	0.004	0.006	0.000	0.001	-0.004	0.020	-0.078	0.184
Rondonia	0.121	0.022	0.015	0.004	0.213	0.066	2.268	0.618
Acre	0.120	0.028	0.023	0.005	0.288	0.085	3.401	0.794
Amazonas	0.152	0.018	0.019	0.004	0.201	0.056	2.710	0.523
Roraima	0.070	0.036	0.011	0.007	0.152	0.112	1.432	1.042
Para	0.182	0.013	0.014	0.003	0.114	0.041	2.102	0.384
Amapa	0.047	0.048	0.003	0.009	0.016	0.147	0.564	1.374
Tocantins	0.127	0.019	0.011	0.004	0.107	0.060	1.634	0.558
Maranhão	0.149	0.018	0.017	0.004	0.175	0.055	2.451	0.512
Piaui	0.190	0.020	0.016	0.004	0.197	0.061	2.489	0.570
Ceara	0.087	0.012	0.013	0.002	0.118	0.037	1.855	0.349
Rio Grande do Norte	0.100	0.020	0.023	0.004	0.247	0.063	3.235	0.588
Paraiba	0.131	0.018	0.022	0.004	0.220	0.055	3.120	0.517
Pernanbuco	0.120	0.012	0.019	0.002	0.203	0.038	2.766	0.354
Alagoas	0.180	0.020	0.025	0.004	0.274	0.061	3.551	0.572
Sergipe	0.219	0.020	0.022	0.004	0.268	0.061	3.219	0.569
Bahia	0.159	0.011	0.021	0.002	0.211	0.034	2.986	0.317
Minas Gerais	0.043	0.011	0.005	0.002	0.055	0.033	0.780	0.311
Espirito Santo	-0.001	0.020	0.011	0.004	0.158	0.061	1.619	0.565
Rio de Janeiro	0.170	0.013	0.015	0.003	0.143	0.040	2.151	0.369
Parana	-0.026	0.013	0.011	0.003	0.124	0.041	1.608	0.379
Santa Catarina	0.001	0.018	0.005	0.003	0.014	0.055	0.670	0.509
Rio Grande do Sul	0.030	0.012	0.012	0.002	0.131	0.037	1.794	0.347
Mato Grosso do Sul	0.019	0.020	0.021	0.004	0.235	0.061	3.102	0.565
Mato Grosso	0.070	0.018	0.022	0.004	0.285	0.056	3.129	0.520
Goias	0.100	0.014	0.011	0.003	0.087	0.043	1.515	0.402
Distrito Federal	0.081	0.017	0.007	0.003	0.033	0.053	1.040	0.489
R_Squared	0.359		0.119		0.121		0.138	
# of Obs	16,657		16,657		16,657		16,657	

Table A.4: OLS Regression of Delay Dispersion on Education of the Head, Per-Capita Family Income Deciles and Other Controls

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Intercept	0.546	0.022	0.053	0.004	0.003	0.069	5.593	0.644
Single Mother	0.052	0.007	0.005	0.001	0.052	0.022	0.740	0.204
Education of the Head								
Lower Primary	-0.064	0.007	-0.006	0.001	-0.083	0.022	-0.850	0.208
Upper Primary	-0.121	0.008	-0.011	0.002	-0.130	0.026	-1.617	0.245
High School	-0.219	0.010	-0.014	0.002	-0.145	0.031	-2.046	0.284
College	-0.268	0.014	-0.017	0.003	-0.173	0.043	-2.520	0.397
Income Decile Indicator Variables								
Decile Two	-0.004	0.011	0.001	0.002	0.062	0.034	0.259	0.319
Decile Three	-0.031	0.011	0.000	0.002	0.031	0.034	-0.017	0.320
Decile Four	-0.043	0.011	-0.002	0.002	-0.005	0.034	-0.346	0.317
Decile Five	-0.049	0.011	-0.003	0.002	-0.023	0.035	-0.497	0.329
Decile Six	-0.083	0.011	-0.007	0.002	-0.043	0.036	-0.986	0.333
Decile Seven	-0.119	0.012	-0.006	0.002	-0.022	0.037	-0.901	0.340
Decile Eight	-0.162	0.012	-0.009	0.002	-0.038	0.037	-1.302	0.348
Decile Nine	-0.211	0.012	-0.016	0.002	-0.139	0.039	-2.307	0.361
Decile Ten	-0.253	0.014	-0.018	0.003	-0.119	0.043	-2.587	0.400
Family Caracteristics								
Age of the Head	-0.001	0.000	0.000	0.000	0.003	0.001	0.015	0.010
Number of Males								
Zero-year Old	0.028	0.019	0.003	0.004	0.012	0.060	0.405	0.560
One_year old	0.028	0.017	0.002	0.003	0.050	0.054	0.189	0.503
Two-year old	0.037	0.016	0.002	0.003	0.057	0.049	0.328	0.461
Three-year old	0.046	0.014	0.005	0.003	0.032	0.045	0.797	0.416
Four-year old	0.042	0.013	0.003	0.003	0.034	0.041	0.518	0.380
Five-year old	0.031	0.012	0.001	0.002	0.011	0.038	0.161	0.350
Six-year old	0.034	0.011	0.009	0.002	0.159	0.036	1.317	0.332
Seven-year old	-0.172	0.008	0.029	0.002	0.672	0.026	5.401	0.238
Eight-year old	-0.059	0.008	0.012	0.002	0.222	0.025	2.708	0.236
Nine-year old	-0.012	0.008	0.001	0.002	0.075	0.025	1.043	0.235
Ten-year old	0.023	0.008	-0.002	0.002	0.046	0.024	0.615	0.222
Eleven-year old	0.041	0.008	-0.003	0.002	0.068	0.024	0.468	0.220
Twelve-year old	0.081	0.007	-0.004	0.001	0.066	0.023	0.379	0.215
Therteen-year old	0.105	0.007	-0.004	0.001	0.047	0.023	0.314	0.212
Fourteen-year old	0.124	0.007	-0.001	0.001	0.121	0.023	0.795	0.217
Fifteen-year old	0.133	0.008	-0.001	0.002	0.090	0.024	0.800	0.224
Sixteen-year old	0.161	0.008	0.003	0.002	0.145	0.024	1.316	0.226
Seventeen-year old	0.026	0.011	0.004	0.002	0.021	0.033	0.532	0.310
Eighteen-year old	0.035	0.011	0.002	0.002	0.045	0.034	0.335	0.317
Nineteen-year old or more	0.043	0.006	0.002	0.001	0.017	0.018	0.279	0.163

(Table A4 continued on the following page)

Table A.4 Controls Continued

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Number of Females								
Zero-year Old	0.034	0.019	0.004	0.004	0.045	0.058	0.505	0.541
One_year old	0.050	0.017	0.004	0.003	0.071	0.055	0.585	0.509
Two-year old	0.036	0.016	-0.001	0.003	-0.065	0.049	-0.198	0.456
Three-year old	0.015	0.014	0.000	0.003	0.028	0.044	0.095	0.407
Four-year old	0.048	0.013	0.005	0.003	0.053	0.042	0.703	0.392
Five-year old	0.025	0.012	0.005	0.002	0.135	0.038	0.693	0.355
Six-year old	0.017	0.012	0.007	0.002	0.136	0.038	1.063	0.352
Seven-year old	-0.184	0.008	0.037	0.002	0.816	0.026	6.509	0.243
Eight-year old	-0.078	0.008	0.012	0.002	0.208	0.025	2.573	0.234
Nine-year old	-0.040	0.008	0.004	0.002	0.136	0.025	1.448	0.233
Ten-year old	-0.011	0.008	-0.002	0.002	0.067	0.024	0.688	0.224
Eleven-year old	0.019	0.007	-0.003	0.002	0.061	0.023	0.508	0.219
Twelve-year old	0.040	0.007	-0.006	0.001	0.029	0.023	0.063	0.216
Therteen-year old	0.052	0.007	-0.007	0.001	0.030	0.023	-0.085	0.217
Fourteen-year old	0.064	0.008	-0.008	0.002	0.033	0.024	-0.217	0.221
Fifteen-year old	0.086	0.008	-0.007	0.002	0.044	0.025	-0.065	0.228
Sixteen-year old	0.099	0.008	-0.002	0.002	0.088	0.025	0.665	0.237
Seventeen-year old	0.017	0.012	-0.002	0.002	-0.026	0.037	-0.281	0.346
Eighteen-year old	0.026	0.012	0.007	0.003	0.075	0.039	0.963	0.365
Nineteen-year old or more	0.012	0.007	-0.001	0.001	-0.029	0.021	-0.158	0.200
Locality Controls								
Rural Area	0.034	0.007	0.001	0.001	-0.002	0.022	0.184	0.207
Metropolitan Area	0.019	0.006	0.001	0.001	0.007	0.020	0.079	0.185
Rondonia	0.124	0.021	0.015	0.004	0.212	0.066	2.271	0.617
Acre	0.121	0.027	0.023	0.005	0.284	0.085	3.381	0.793
Amazonas	0.179	0.018	0.020	0.004	0.211	0.056	2.918	0.524
Roraima	0.062	0.036	0.010	0.007	0.145	0.112	1.345	1.040
Para	0.195	0.013	0.015	0.003	0.116	0.041	2.175	0.384
Amapa	0.076	0.047	0.005	0.009	0.034	0.147	0.834	1.372
Tocantins	0.129	0.019	0.011	0.004	0.108	0.060	1.653	0.557
Maranhão	0.158	0.018	0.017	0.004	0.174	0.055	2.487	0.512
Piaui	0.195	0.020	0.016	0.004	0.192	0.061	2.468	0.570
Ceara	0.086	0.012	0.013	0.002	0.112	0.037	1.808	0.349
Rio Grande do Norte	0.115	0.020	0.023	0.004	0.252	0.063	3.357	0.587
Paraiba	0.139	0.018	0.022	0.004	0.217	0.056	3.137	0.517
Pernanbuco	0.126	0.012	0.019	0.002	0.201	0.038	2.790	0.354
Alagoas	0.180	0.020	0.025	0.004	0.265	0.061	3.493	0.572
Sergipe	0.225	0.020	0.022	0.004	0.265	0.061	3.227	0.569
Bahia	0.164	0.011	0.021	0.002	0.207	0.034	2.980	0.318
Minas Gerais	0.046	0.011	0.006	0.002	0.057	0.033	0.810	0.311
Espirito Santo	0.016	0.019	0.012	0.004	0.169	0.061	1.780	0.564
Rio de Janeiro	0.180	0.013	0.016	0.003	0.148	0.040	2.239	0.369
Parana	-0.023	0.013	0.011	0.003	0.124	0.041	1.623	0.378
Santa Catarina	0.002	0.017	0.005	0.003	0.019	0.055	0.712	0.508
Rio Grande do Sul	0.034	0.012	0.012	0.002	0.134	0.037	1.840	0.347
Mato Grosso do Sul	0.028	0.019	0.022	0.004	0.239	0.061	3.177	0.564
Mato Grosso	0.071	0.018	0.022	0.004	0.285	0.056	3.138	0.519
Goias	0.107	0.014	0.011	0.003	0.090	0.043	1.572	0.401
Distrito Federal	0.083	0.017	0.007	0.003	0.031	0.053	1.037	0.489
R_Squared	0.383		0.122		0.123		0.141	
# of Obs	16,657		16,657		16,657		16,657	

Table A.5.a: OLS Regression of Delay Dispersion on Education of the Head, Interactions, and Other Controls

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Intercept	0.456	0.019	0.044	0.004	-0.089	0.059	4.296	0.548
Single Mother	0.085	0.011	0.009	0.002	0.084	0.034	1.223	0.316
Education of the Head								
Years of Schooling	-0.029	0.001	-0.002	0.000	-0.016	0.002	-0.273	0.019
Interactions of Single Mother and Education of the Head Indicator Variables								
Years of Schooling	-0.001	0.002	0.000	0.000	-0.003	0.005	-0.039	0.045
Family Caracteristics								
Age of the Head	-0.001	0.000	0.000	0.000	0.003	0.001	0.013	0.010
Number of Males								
Zero-year Old	0.035	0.019	0.004	0.004	0.021	0.060	0.511	0.561
One_year old	0.027	0.017	0.002	0.003	0.048	0.054	0.168	0.504
Two-year old	0.044	0.016	0.003	0.003	0.058	0.049	0.382	0.461
Three-year old	0.050	0.014	0.006	0.003	0.034	0.045	0.842	0.417
Four-year old	0.047	0.013	0.004	0.003	0.039	0.041	0.584	0.380
Five-year old	0.051	0.012	0.003	0.002	0.027	0.037	0.394	0.349
Six-year old	0.050	0.012	0.010	0.002	0.170	0.036	1.503	0.332
Seven-year old	-0.158	0.008	0.030	0.002	0.682	0.025	5.563	0.237
Eight-year old	-0.043	0.008	0.014	0.002	0.233	0.025	2.883	0.235
Nine-year old	0.005	0.008	0.002	0.002	0.087	0.025	1.236	0.234
Ten-year old	0.038	0.008	-0.001	0.002	0.056	0.024	0.790	0.220
Eleven-year old	0.056	0.008	-0.002	0.002	0.080	0.024	0.645	0.219
Twelve-year old	0.094	0.007	-0.003	0.001	0.077	0.023	0.540	0.214
Therteen-year old	0.116	0.007	-0.004	0.001	0.054	0.023	0.434	0.211
Fourteen-year old	0.137	0.008	0.000	0.001	0.128	0.023	0.926	0.216
Fifteen-year old	0.143	0.008	0.000	0.002	0.097	0.024	0.914	0.224
Sixteen-year old	0.165	0.008	0.003	0.002	0.147	0.024	1.356	0.226
Seventeen-year old	0.033	0.011	0.004	0.002	0.026	0.033	0.608	0.311
Eighteen-year old	0.039	0.011	0.003	0.002	0.049	0.034	0.391	0.317
Nineteen-year old or more	0.040	0.006	0.002	0.001	0.016	0.018	0.265	0.163

(Table A5.a continued on the following page)

Table A.5.a Controls Continued

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Number of Females								
Zero-year Old	0.034	0.019	0.004	0.004	0.045	0.058	0.525	0.542
One_year old	0.056	0.018	0.004	0.003	0.073	0.055	0.635	0.509
Two-year old	0.045	0.016	0.000	0.003	-0.060	0.049	-0.103	0.457
Three-year old	0.022	0.014	0.001	0.003	0.032	0.044	0.177	0.408
Four-year old	0.052	0.014	0.005	0.003	0.055	0.042	0.751	0.392
Five-year old	0.039	0.012	0.006	0.002	0.144	0.038	0.852	0.355
Six-year old	0.035	0.012	0.009	0.002	0.149	0.038	1.275	0.351
Seven-year old	-0.169	0.008	0.038	0.002	0.826	0.026	6.674	0.242
Eight-year old	-0.061	0.008	0.013	0.002	0.221	0.025	2.770	0.233
Nine-year old	-0.024	0.008	0.005	0.002	0.148	0.025	1.638	0.232
Ten-year old	0.006	0.008	0.000	0.002	0.080	0.024	0.882	0.222
Eleven-year old	0.035	0.008	-0.002	0.001	0.073	0.023	0.684	0.217
Twelve-year old	0.054	0.007	-0.005	0.001	0.039	0.023	0.227	0.215
Therteen-year old	0.063	0.008	-0.006	0.001	0.037	0.023	0.033	0.216
Fourteen-year old	0.075	0.008	-0.007	0.002	0.040	0.024	-0.096	0.221
Fifteen-year old	0.095	0.008	-0.006	0.002	0.051	0.024	0.053	0.228
Sixteen-year old	0.105	0.008	-0.001	0.002	0.092	0.025	0.734	0.237
Seventeen-year old	0.024	0.012	-0.001	0.002	-0.021	0.037	-0.197	0.347
Eighteen-year old	0.036	0.013	0.007	0.003	0.082	0.039	1.068	0.365
Nineteen-year old or more	0.013	0.007	-0.001	0.001	-0.030	0.021	-0.156	0.200
Locality Controls								
Rural Area	0.047	0.007	0.003	0.001	0.012	0.022	0.377	0.205
Metropolitan Area	0.020	0.006	0.001	0.001	0.005	0.020	0.060	0.185
Rondonia	0.137	0.021	0.017	0.004	0.223	0.066	2.450	0.618
Acre	0.136	0.028	0.024	0.005	0.300	0.085	3.590	0.793
Amazonas	0.212	0.018	0.023	0.004	0.237	0.056	3.308	0.522
Roraima	0.072	0.036	0.011	0.007	0.156	0.112	1.491	1.042
Para	0.228	0.013	0.018	0.003	0.143	0.041	2.582	0.381
Amapa	0.114	0.048	0.008	0.009	0.060	0.147	1.241	1.374
Tocantins	0.156	0.019	0.013	0.004	0.127	0.060	1.962	0.557
Maranhão	0.193	0.018	0.020	0.003	0.203	0.055	2.925	0.509
Piaui	0.230	0.020	0.019	0.004	0.222	0.061	2.929	0.568
Ceara	0.126	0.012	0.016	0.002	0.146	0.037	2.305	0.344
Rio Grande do Norte	0.150	0.020	0.026	0.004	0.280	0.063	3.764	0.586
Paraiba	0.179	0.018	0.026	0.004	0.250	0.055	3.632	0.514
Pernanbuco	0.172	0.012	0.023	0.002	0.236	0.037	3.334	0.348
Alagoas	0.217	0.020	0.028	0.004	0.299	0.061	3.960	0.569
Sergipe	0.259	0.020	0.025	0.004	0.296	0.061	3.656	0.568
Bahia	0.201	0.011	0.024	0.002	0.239	0.034	3.447	0.313
Minas Gerais	0.069	0.011	0.007	0.002	0.073	0.033	1.070	0.310
Espirito Santo	0.051	0.020	0.014	0.004	0.189	0.060	2.134	0.564
Rio de Janeiro	0.203	0.013	0.017	0.003	0.164	0.040	2.497	0.369
Parana	-0.006	0.013	0.012	0.003	0.135	0.041	1.807	0.378
Santa Catarina	0.006	0.018	0.005	0.003	0.016	0.055	0.709	0.509
Rio Grande do Sul	0.043	0.012	0.013	0.002	0.138	0.037	1.921	0.347
Mato Grosso do Sul	0.048	0.020	0.023	0.004	0.251	0.061	3.393	0.564
Mato Grosso	0.085	0.018	0.023	0.004	0.296	0.056	3.298	0.520
Goias	0.124	0.014	0.012	0.003	0.102	0.043	1.777	0.400
Distrito Federal	0.090	0.017	0.008	0.003	0.042	0.052	1.151	0.488
R_Squared	0.365		0.118		0.121		0.137	
# of Obs	16,657		16,657		16,657		16,657	

Table A.5.b: OLS Regression of Delay Dispersion on Education of the Head, Interactions, and Other Controls

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Intercept	0.432	0.021	0.045	0.004	-0.040	0.063	4.505	0.590
Single Mother	0.057	0.016	0.007	0.003	0.066	0.050	0.955	0.470
Education of the Head								
Lower Primary	-0.085	0.008	-0.007	0.002	-0.098	0.024	-1.086	0.223
Upper Primary	-0.168	0.009	-0.014	0.002	-0.153	0.028	-2.033	0.259
High School	-0.312	0.010	-0.020	0.002	-0.194	0.030	-2.913	0.282
College	-0.414	0.013	-0.029	0.002	-0.280	0.039	-4.300	0.361
Interactions of Single Mother and Education of the Head Indicator Variables								
Lower Primary	0.042	0.020	0.003	0.004	0.040	0.062	0.533	0.574
Upper Primary	0.045	0.021	-0.001	0.004	-0.020	0.065	-0.026	0.609
High School	0.000	0.024	-0.007	0.005	-0.077	0.073	-0.940	0.678
College	-0.042	0.031	0.005	0.006	0.086	0.096	0.737	0.893
Family Caracteristics								
Age of the Head	-0.001	0.000	0.000	0.000	0.003	0.001	0.010	0.010
Number of Males								
Zero-year Old	0.034	0.020	0.003	0.004	0.019	0.060	0.485	0.562
One_year old	0.025	0.018	0.002	0.003	0.048	0.054	0.168	0.504
Two-year old	0.046	0.016	0.003	0.003	0.061	0.049	0.414	0.461
Three-year old	0.053	0.015	0.006	0.003	0.036	0.045	0.864	0.417
Four-year old	0.048	0.013	0.004	0.003	0.039	0.041	0.591	0.380
Five-year old	0.053	0.012	0.003	0.002	0.027	0.037	0.413	0.349
Six-year old	0.053	0.012	0.010	0.002	0.170	0.036	1.521	0.332
Seven-year old	-0.154	0.008	0.031	0.002	0.684	0.025	5.597	0.237
Eight-year old	-0.042	0.008	0.014	0.002	0.233	0.025	2.890	0.235
Nine-year old	0.008	0.008	0.002	0.002	0.086	0.025	1.247	0.234
Ten-year old	0.041	0.008	-0.001	0.002	0.057	0.024	0.812	0.220
Eleven-year old	0.057	0.008	-0.002	0.002	0.080	0.024	0.650	0.219
Twelve-year old	0.097	0.007	-0.003	0.001	0.076	0.023	0.548	0.215
Therteen-year old	0.120	0.007	-0.003	0.001	0.055	0.023	0.467	0.211
Fourteen-year old	0.138	0.008	0.000	0.001	0.129	0.023	0.943	0.216
Fifteen-year old	0.145	0.008	0.000	0.002	0.096	0.024	0.912	0.224
Sixteen-year old	0.167	0.008	0.003	0.002	0.147	0.024	1.363	0.226
Seventeen-year old	0.035	0.011	0.004	0.002	0.027	0.033	0.625	0.311
Eighteen-year old	0.042	0.011	0.003	0.002	0.050	0.034	0.416	0.317
Nineteen-year old or more	0.042	0.006	0.002	0.001	0.016	0.018	0.273	0.163

(Table A5.b continued on the following page)

Table A.5.b: Controls Continued

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Number of Females								
Zero-year Old	0.039	0.019	0.004	0.004	0.047	0.058	0.560	0.542
One_year old	0.057	0.018	0.004	0.003	0.072	0.055	0.638	0.509
Two-year old	0.047	0.016	0.000	0.003	-0.059	0.049	-0.095	0.457
Three-year old	0.026	0.014	0.001	0.003	0.033	0.044	0.206	0.408
Four-year old	0.053	0.014	0.005	0.003	0.055	0.042	0.762	0.392
Five-year old	0.045	0.012	0.006	0.002	0.146	0.038	0.895	0.355
Six-year old	0.039	0.012	0.009	0.002	0.151	0.038	1.305	0.351
Seven-year old	-0.166	0.008	0.038	0.002	0.827	0.026	6.698	0.242
Eight-year old	-0.060	0.008	0.013	0.002	0.220	0.025	2.776	0.233
Nine-year old	-0.021	0.008	0.005	0.002	0.147	0.025	1.648	0.232
Ten-year old	0.008	0.008	0.000	0.002	0.080	0.024	0.886	0.223
Eleven-year old	0.038	0.008	-0.001	0.001	0.073	0.023	0.704	0.217
Twelve-year old	0.057	0.007	-0.005	0.001	0.039	0.023	0.241	0.215
Therteen-year old	0.065	0.008	-0.006	0.001	0.038	0.023	0.049	0.216
Fourteen-year old	0.077	0.008	-0.007	0.002	0.041	0.024	-0.085	0.221
Fifteen-year old	0.098	0.008	-0.006	0.002	0.051	0.024	0.059	0.228
Sixteen-year old	0.106	0.008	-0.001	0.002	0.093	0.025	0.743	0.237
Seventeen-year old	0.025	0.012	-0.001	0.002	-0.019	0.037	-0.179	0.347
Eighteen-year old	0.035	0.013	0.007	0.003	0.082	0.039	1.063	0.365
Nineteen-year old or more	0.014	0.007	-0.001	0.001	-0.027	0.021	-0.136	0.200
Locality Controls								
Rural Area	0.054	0.007	0.003	0.001	0.012	0.022	0.411	0.205
Metropolitan Area	0.015	0.006	0.000	0.001	0.005	0.020	0.044	0.185
Rondonia	0.141	0.022	0.017	0.004	0.225	0.066	2.483	0.618
Acre	0.140	0.028	0.024	0.005	0.298	0.085	3.605	0.794
Amazonas	0.218	0.018	0.023	0.004	0.239	0.056	3.355	0.523
Roraima	0.072	0.036	0.011	0.007	0.157	0.112	1.505	1.042
Para	0.236	0.013	0.018	0.003	0.143	0.041	2.624	0.382
Amapa	0.106	0.048	0.008	0.009	0.059	0.147	1.194	1.375
Tocantins	0.162	0.019	0.013	0.004	0.130	0.060	2.018	0.557
Maranhão	0.201	0.018	0.021	0.004	0.203	0.055	2.958	0.510
Piaui	0.241	0.020	0.020	0.004	0.220	0.061	2.969	0.568
Ceara	0.136	0.012	0.017	0.002	0.145	0.037	2.351	0.344
Rio Grande do Norte	0.159	0.020	0.027	0.004	0.282	0.063	3.836	0.586
Paraiba	0.190	0.018	0.026	0.004	0.249	0.055	3.688	0.514
Pernanbuco	0.181	0.012	0.023	0.002	0.236	0.037	3.383	0.348
Alagoas	0.227	0.020	0.028	0.004	0.296	0.061	4.000	0.570
Sergipe	0.266	0.020	0.025	0.004	0.293	0.061	3.675	0.569
Bahia	0.210	0.011	0.024	0.002	0.238	0.034	3.496	0.314
Minas Gerais	0.070	0.011	0.007	0.002	0.074	0.033	1.079	0.310
Espirito Santo	0.049	0.020	0.014	0.004	0.190	0.060	2.141	0.564
Rio de Janeiro	0.202	0.013	0.017	0.003	0.162	0.040	2.472	0.369
Parana	-0.006	0.013	0.012	0.003	0.134	0.041	1.804	0.378
Santa Catarina	-0.004	0.018	0.005	0.003	0.016	0.055	0.658	0.509
Rio Grande do Sul	0.044	0.012	0.013	0.002	0.140	0.037	1.951	0.347
Mato Grosso do Sul	0.052	0.020	0.024	0.004	0.255	0.061	3.446	0.564
Mato Grosso	0.090	0.018	0.023	0.004	0.299	0.056	3.353	0.520
Goias	0.130	0.014	0.013	0.003	0.103	0.043	1.808	0.401
Distrito Federal	0.099	0.017	0.009	0.003	0.045	0.052	1.227	0.489
R_Squared	0.361		0.118		0.121		0.137	
# of Obs	16,657		16,657		16,657		16,657	

Table A.6: OLS Regression of Delay Dispersion on Family Per-Capita Income Decile Indicator Variables, Interactions, and Other Controls

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Intercept	0.426	0.021	0.043	0.004	-0.110	0.066	4.146	0.615
Single Mother	0.068	0.020	0.003	0.004	-0.020	0.060	0.385	0.562
Income Decile Indicator Variables								
Decile Two	0.001	0.012	0.001	0.002	0.039	0.037	0.177	0.345
Decile Three	-0.029	0.012	-0.002	0.002	0.001	0.038	-0.278	0.355
Decile Four	-0.051	0.013	-0.003	0.002	-0.014	0.039	-0.397	0.362
Decile Five	-0.059	0.013	-0.004	0.002	-0.044	0.039	-0.662	0.362
Decile Six	-0.103	0.013	-0.010	0.003	-0.095	0.039	-1.527	0.365
Decile Seven	-0.159	0.013	-0.009	0.003	-0.065	0.039	-1.368	0.364
Decile Eight	-0.215	0.013	-0.013	0.003	-0.086	0.040	-1.873	0.369
Decile Nine	-0.290	0.013	-0.021	0.003	-0.198	0.040	-3.065	0.373
Decile Ten	-0.390	0.013	-0.026	0.003	-0.203	0.040	-3.838	0.376
Interactions of Single Mother and Family Per-Capita Income DecileIndicator Variable								
Decile Two	-0.022	0.027	0.007	0.005	0.181	0.083	1.234	0.769
Decile Three	-0.022	0.028	0.000	0.005	0.056	0.085	0.096	0.796
Decile Four	-0.022	0.029	-0.003	0.006	0.001	0.089	-0.333	0.827
Decile Five	-0.028	0.028	0.003	0.006	0.078	0.087	0.598	0.808
Decile Six	-0.042	0.030	0.004	0.006	0.124	0.093	0.718	0.871
Decile Seven	-0.014	0.030	0.001	0.006	0.084	0.092	0.272	0.857
Decile Eight	-0.011	0.032	-0.003	0.006	0.028	0.100	-0.206	0.929
Decile Nine	-0.070	0.032	-0.005	0.006	0.025	0.100	-0.549	0.930
Decile Ten	-0.049	0.032	0.001	0.006	0.056	0.099	0.255	0.925
Family Caracteristics								
Age of the Head	0.000	0.000	0.000	0.000	0.004	0.001	0.029	0.010
Number of Males								
Zero-year Old	0.032	0.020	0.003	0.004	0.019	0.060	0.475	0.562
One_year old	0.038	0.018	0.002	0.003	0.053	0.054	0.248	0.504
Two-year old	0.036	0.016	0.002	0.003	0.055	0.050	0.304	0.462
Three-year old	0.051	0.015	0.006	0.003	0.037	0.045	0.866	0.417
Four-year old	0.052	0.013	0.004	0.003	0.040	0.041	0.603	0.380
Five-year old	0.034	0.012	0.001	0.002	0.013	0.038	0.182	0.351
Six-year old	0.040	0.012	0.009	0.002	0.163	0.036	1.368	0.333
Seven-year old	-0.168	0.008	0.029	0.002	0.675	0.026	5.443	0.239
Eight-year old	-0.057	0.008	0.013	0.002	0.225	0.025	2.742	0.236
Nine-year old	-0.011	0.008	0.001	0.002	0.077	0.025	1.066	0.236
Ten-year old	0.025	0.008	-0.002	0.002	0.048	0.024	0.638	0.222
Eleven-year old	0.042	0.008	-0.003	0.002	0.070	0.024	0.489	0.220
Twelve-year old	0.082	0.008	-0.004	0.001	0.068	0.023	0.403	0.216
Therteen-year old	0.107	0.007	-0.004	0.001	0.049	0.023	0.345	0.212
Fourteen-year old	0.127	0.008	-0.001	0.001	0.123	0.023	0.824	0.217
Fifteen-year old	0.138	0.008	0.000	0.002	0.095	0.024	0.855	0.224
Sixteen-year old	0.171	0.008	0.003	0.002	0.150	0.024	1.401	0.226
Seventeen-year old	0.031	0.011	0.004	0.002	0.023	0.033	0.574	0.311
Eighteen-year old	0.042	0.011	0.003	0.002	0.050	0.034	0.402	0.317
Nineteen-year old or more	0.053	0.006	0.003	0.001	0.023	0.017	0.380	0.163

(Table A6 continued on the following page)

Table A.6: Controls Continued

	Pdelay		Gini		Theil		CV	
	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error	Coeff.	Est. Error
Number of Females								
Zero-year Old	0.044	0.019	0.004	0.004	0.051	0.058	0.609	0.542
One_year old	0.059	0.018	0.005	0.003	0.077	0.055	0.670	0.510
Two-year old	0.039	0.016	-0.001	0.003	-0.063	0.049	-0.170	0.457
Three-year old	0.020	0.014	0.001	0.003	0.032	0.044	0.157	0.408
Four-year old	0.056	0.014	0.005	0.003	0.056	0.042	0.766	0.392
Five-year old	0.026	0.012	0.005	0.002	0.135	0.038	0.697	0.356
Six-year old	0.015	0.012	0.007	0.002	0.136	0.038	1.056	0.353
Seven-year old	-0.180	0.008	0.037	0.002	0.820	0.026	6.554	0.243
Eight-year old	-0.076	0.008	0.012	0.002	0.211	0.025	2.610	0.235
Nine-year old	-0.037	0.008	0.004	0.002	0.140	0.025	1.487	0.233
Ten-year old	-0.010	0.008	-0.001	0.002	0.069	0.024	0.709	0.224
Eleven-year old	0.023	0.008	-0.003	0.002	0.065	0.023	0.547	0.219
Twelve-year old	0.041	0.008	-0.006	0.001	0.031	0.023	0.084	0.217
Therteen-year old	0.057	0.008	-0.007	0.001	0.034	0.023	-0.038	0.217
Fourteen-year old	0.069	0.008	-0.008	0.002	0.037	0.024	-0.163	0.221
Fifteen-year old	0.089	0.008	-0.007	0.002	0.045	0.025	-0.043	0.229
Sixteen-year old	0.103	0.008	-0.001	0.002	0.091	0.025	0.712	0.237
Seventeen-year old	0.019	0.012	-0.002	0.002	-0.024	0.037	-0.252	0.347
Eighteen-year old	0.030	0.013	0.007	0.003	0.078	0.039	1.001	0.365
Nineteen-year old or more	0.018	0.007	-0.001	0.001	-0.027	0.021	-0.117	0.200
Locality Controls								
Rural Area	0.058	0.007	0.003	0.001	0.016	0.022	0.443	0.205
Metropolitan Area	0.004	0.006	0.000	0.001	-0.004	0.020	-0.076	0.184
Rondonia	0.121	0.022	0.015	0.004	0.212	0.066	2.261	0.618
Acre	0.121	0.028	0.023	0.005	0.285	0.085	3.378	0.794
Amazonas	0.153	0.018	0.019	0.004	0.200	0.056	2.701	0.523
Roraima	0.072	0.036	0.011	0.007	0.152	0.112	1.452	1.043
Para	0.182	0.013	0.015	0.003	0.115	0.041	2.111	0.384
Amapa	0.046	0.048	0.003	0.009	0.016	0.148	0.549	1.375
Tocantins	0.128	0.019	0.011	0.004	0.106	0.060	1.629	0.558
Maranhão	0.150	0.018	0.017	0.004	0.175	0.055	2.459	0.512
Piaui	0.190	0.020	0.016	0.004	0.195	0.061	2.472	0.571
Ceara	0.087	0.012	0.013	0.002	0.119	0.037	1.858	0.349
Rio Grande do Norte	0.100	0.021	0.023	0.004	0.250	0.063	3.257	0.588
Paraiba	0.131	0.018	0.022	0.004	0.220	0.055	3.127	0.517
Pernanbuco	0.120	0.012	0.019	0.002	0.204	0.038	2.777	0.354
Alagoas	0.180	0.020	0.025	0.004	0.276	0.061	3.567	0.572
Sergipe	0.219	0.020	0.022	0.004	0.268	0.061	3.223	0.570
Bahia	0.159	0.011	0.021	0.002	0.213	0.034	2.999	0.317
Minas Gerais	0.043	0.011	0.005	0.002	0.056	0.033	0.783	0.312
Espirito Santo	-0.001	0.020	0.011	0.004	0.159	0.061	1.622	0.565
Rio de Janeiro	0.170	0.013	0.015	0.003	0.144	0.040	2.156	0.369
Parana	-0.026	0.013	0.011	0.003	0.124	0.041	1.615	0.379
Santa Catarina	0.001	0.018	0.005	0.003	0.015	0.055	0.675	0.509
Rio Grande do Sul	0.030	0.012	0.012	0.002	0.132	0.037	1.796	0.347
Mato Grosso do Sul	0.019	0.020	0.021	0.004	0.235	0.061	3.109	0.565
Mato Grosso	0.071	0.018	0.022	0.004	0.284	0.056	3.119	0.520
Goias	0.100	0.014	0.011	0.003	0.090	0.043	1.535	0.402
Distrito Federal	0.081	0.017	0.007	0.003	0.034	0.053	1.050	0.490
R_Squared	0.359		0.119		0.122		0.138	
# of Obs	16,657		16,657		16,657		16,657	