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ABSTRACT

Were American Parents Really Selfish? Child Labour in the 19th Century*

Using the US Commissioner of Labor Survey of 1890, we examine household decisions and parental altruism vis-a-vis their children. Contrary to Parsons and Goldin (1989), we find that parental location choices were dictated by constraints rather than the desire to exploit child labour opportunities. We also find significant income effects on child labour supply, indicating that rising affluence played an important part in the secular decline of child labour. We also find that the effects of childrens' income on their own consumption are weak, once child labour is controlled for.

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1 Introduction

Contemporary commentators normally assume that parents who send their children out to work do so due to the constraints of poverty. Indeed, most economic analyses of child labor (e.g. Basu and Van (1998), Baland and Robinson (2000) or Ranjan (2001)) assume that parents are altruistic. Social reformers in the 19th century were less charitable, arguing that parents were often selfish and exploited their children. This view was the main basis of child labor laws in England in the 19th century. Support for this view is found in a provocative paper by Parsons and Goldin (1989) (PG henceforth). They analyze a rich data source, the Commissioner of Labor Survey conducted by Carrol Wright in 1889-90 and conclude that “the empirical results suggest that parents did not have strong altruistic concerns for their children...working class families apparently sold the schooling and potential earnings of their offspring very cheaply.” Indeed, they quote Marx (1867) in this context and conclude that behavior fitted closely with Marx’s critique – “previously, the workman sold his own labor power, which he disposed of nominally as a free agent. Now he sells wife and child. He has become a slave dealer.”

Were American parents really selfish? Were their preferences and motivations so different from parents in poor countries today? And if PG are right and American parents were exploitative, is political correctness preventing a hard look at parental motivation today? These questions are of utmost importance in understanding child labor and framing a policy response to it. If parents are altruistic, standard revealed preference arguments imply that a ban on child labor will make poor families (including children) worse off, unless the ban has significant general equilibrium effects on the adult wage (as in Basu and Van, 1988). Conversely, if parents are exploitative, a ban on child labor may well make children better off, even absent any general equilibrium effects.

This paper re-examines PG’s arguments using the Wright data in order

to answer some of these questions. Our main finding is that their main test of parental altruism/selfishness does not stand. While PG claim that many American parents sacrificed high wage opportunities in order to send their children to work, we find that constraints rather than preferences dictated their choices. PG also claim that the decline in child labor demand due to technological change was the main factor behind the decline of child labor in US. However, we find significant income effects on child labor supply, suggesting that the rise in incomes was no less important. We conclude therefore that there is no evidence that American parents at the end of the 19th century were selfish and exploitative of their children.

The Wright data also contain detailed information on household consumption, which may be used to shed additional light on the motivations underlying household decisions. Following the pioneering work of Browning et. al. (1994), there has been much interest in examining whether an increase in income of one member of the household (say the wife) increases with share of household income earned by that member. For married couples in full time work, Browning et. al. find such effects, and argue that this implies a rejection of the “unitary model” of household decision making, where the household behaves as though it were maximizing a single utility function. In place of the unitary model, Browning et. al. argue that decisions may be made via intra household bargaining, where the bargaining power of various members reflects their contribution to household income. This work has found resonance in the literature on child labor, as in Bhalotra (2004) and Moehling (2005). Moehling analyzes data from a later period in American history, 1917, and argues that children had an independent interest in going to work, since this increased their importance and influence within the household. We argue that from a methodological point of view, this literature on child labor has been too quick to reject the unitary model, since we need to control for variations in child labor supply while examining the effect of variations in child incomes upon child consumption. Utilizing such controls,

we find weak evidence that increases in child incomes led to increases in the consumption children's clothing, providing some evidence against the unitary model and for bargaining power effects. We also examine how child income affects the consumption of goods exclusive to adults, such as adult clothing or liquor.

The remainder of the paper is organized as follows. Section 2 examines whether household employment decisions are better explained in terms of preferences or constraints. Section 3 estimates a model of household child labor supply, and finds significant income effects. Section 4 examines the determinants of consumption of childrens' goods such as childrens' clothing, and also some adult goods. The final section concludes.

2 Location Choices: Preferences versus Constraints

Carroll Wright conducted a pioneering large survey as the U.S. Commissioner of Labor in 1889-90, in order to study the costs of production in nine industries across 24 states. The data consists of wide ranging cross-sectional information on 6809 American households, of which 5900 had at least one child. The coverage of industries was uneven, cotton textiles accounting for a disproportionately large share of workers, and was also dependent upon the degree of cooperation of the respondents – Haines (1979) provides extensive background on this exercise. Despite these limitations, the survey provides valuable information on earnings within a family and prevalence of childwork in factory industry. There is detailed information on the number of children in a family, how many worked, their age and earnings. The Wright data also contains detailed information on household consumption expenditures, allowing us to examine how spending on goods exclusive to children (such as children's clothing) varies with child income.

PG's analysis is based on the data in the Commissioner of Labor Survey, and their argument is an adaptation of Mincer's (1978) model of family migration decisions. Employment opportunities for children localized, with ample opportunities in textile towns, but limited scope for the employment of children in other locations.¹ If male earners value these child labor income opportunities, they will, *ceteris paribus*, prefer to locate in textile towns. Non-textile occupations must therefore pay a compensating differential for the lack of child employment opportunities. The magnitude of this differential allows PG to infer the extent to which parents valued children's schooling and leisure.

More specifically, PG's methodology is to estimate a standard earnings equation for adult male workers, which is augmented by the addition of an index of child-earnings possibility that is area specific. The coefficient on this index allows them to infer the extent of the compensating differential required for labor market equilibrium, i.e. so that the marginal worker is indifferent between the locations. The estimated coefficient is extremely large. Indeed, PG conclude that for the average family, 90 per cent of the increase in child income that was gained in a location with favorable child labor opportunities was eroded by lower adult (male) wages. In view of other evidence showing that the returns to schooling were very high, PG conclude that parents were selling the future prospects of their children very cheaply.

The underlying assumption in the PG analysis is that the pattern of observed locations reflects choices rather than constraints. That is, it was perfectly feasible for an adult working in cotton textiles to move to a high wage industry and get a job at the going wage. The fact that they chose not to do so implies that they preferred low wage jobs in the textile towns,

¹Goldin and Sokoloff show that in the first half of the 19th century, child work was widespread in agriculture and artisanal industries. Within manufacturing industry, cotton and woollen textiles were the main users of child labor. Children constituted 50% of the workforce in cotton textiles, and 41% of the workforce in woollen textiles (in firms employing 16 or more workers).

since these allowed for higher child earnings. It is this assumption that allows PG to infer that the compensating differential for child labor is so very large. Our main argument will be to demonstrate that the micro data is inconsistent with the PG explanation. We shall demonstrate that a very large number of families would have been better off by migrating to high wage industries, even assuming that they did not have any child labor opportunities at the destination industry. We shall argue that this demonstrates that the families who worked in the textile towns did not have the opportunity to work in high wage industries, since they lacked the requisite skills. Thus the wage differentials between cotton textile and other industries were not determined by arbitrage in the labor market, since workers from cotton textiles were not perfectly substitutable for workers in other industries.

We should note that there is an alternative explanation for wage differentials between industries based on constraints rather than preferences, even when workers are assumed to have homogeneous skills. This is a nutritionally based efficiency wage mode, as in Leibenstein (1957), Bliss and Stern (1978) or Dasgupta and Ray (1987). The idea here is that in localities without child labor possibilities, workers with larger families would need a higher efficiency wage than workers with smaller families. Labor market equilibrium in such a model would result in workers with large families working in localities with child labor and commanding a lower wage than workers with smaller families who would work in locations without child labor opportunities. High wage employers would be unwilling to employ workers with large families since their efficiency wage would need to be even higher. Wage differentials would not reflect compensating differentials, but rather differences in efficiency wages between locations where child labor is available and those where it is not. Our empirical analysis will also cast some light on the relevance of this explanation.

We begin our analysis by estimating a simple Mincerian earnings equation for unskilled workers with terms for age (proxying experience) and age

squared. Our basic estimated equation is as follows:

$$y_i = 572.5 - 5.05 \times age + 0.02(age)^2, \quad (1)$$

where the (robust) standard error on the age term is 2.3 and that on the squared term is 0.027, so that only the negative linear effect is statistically significant (at 5% level). This specification and the estimated coefficients are robust to the inclusion of a number of controls, such as dummies for the state of residence. Rather than the familiar pattern, where wages rise initially with experience and then fall, we find that the age effects are always negative. Indeed, the quadratic term is not significant, and we find a linear negative age effect. This result indicates significant unobserved heterogeneity in the skill level of workers, within the category of unskilled workers. That is, it is likely that later cohorts are better educated, and this would give rise to negative age effects. This result in itself casts doubt on the PG findings, since if there is unobserved heterogeneity in skill levels, the assumption that workers in textile towns could increase their wages by moving to non-textile towns is incorrect, since the wage differentials reflect differences in (unobserved) skill levels in the population in the two places.

We now augment our earnings equation with industry dummies, in order to estimate industry wage premia. Let $B(i)$ denote the estimated coefficient on the dummy for industry i . Under the PG assumptions, if a male worker moves from industry i to industry j , the change in his earnings is given by $B(j) - B(i)$. For example, our estimates imply that a worker in cotton textiles could increase his earnings by \$105 by moving to the woollen textiles industry, the industry with the highest wage premium. Of course family labor income includes the income of the wife as well as child income. Moving from one industry to another also entails changes in the other components of income. Let us make the following very conservative assumption – on moving to an industry with a higher male wage, all non-male labor income is zero. That is, we are assuming that there are no earnings opportunities for

the migrating family’s wife and children in the destination industry. This is very conservative indeed, since the data show ample child labor in woollen textiles.² Under this assumption, the income gain to family i from migrating from industry j to industry k is given by

$$\Delta y_i(j, k) \geq B(k) - B(j) - \text{wifeinc}(i) - \text{kidinc}(i), \quad (2)$$

where $\text{wifeinc}(i)$ is the income earned by the wife of family i in our data, and $\text{kidinc}(i)$ is child labor income. Clearly, the true income gain for a family must be more than the right hand side above, since wife and child income in the destination can never be negative, and are indeed likely to be strictly positive.

Let us now examine what the PG theory predicts about the distribution of the income gain term, $\Delta y_i(j, k)$, in industries with low wages. The key prediction is that the income gain term must always be negative, for *every* family in a low wage industry. This is for three reasons. First, we are underestimating the income gain, by assuming that non male income is zero at the destination location. Second, to the extent that parents care about child leisure or schooling (or about the leisure of the wife), they would be happy to accept a loss of income without migrating. Finally, indifference in labor market equilibrium only applies to the marginal household, so that infra-marginal households will be strictly better off at their current locations. Put differently, the Mincer model of location choice, as used by PG, implies that the *utility* of the marginal household is the same across the two locations. Thus infra-marginal households will be strictly better off at their current location, implying that most low wage workers are strictly better off by not migrating. To the extent that child leisure or schooling is positively valued, and the extent that there are child labor opportunities at the destination, there are additional reasons for the income gain from migration to be negative.

²25% of the children of unskilled workers in woollen textiles were employed.

Table 3 summarizes our main findings. We find that 345 families in the cotton textile industry would have a positive income gain from migrating to work in the wool industry. This number constitutes 43 percent of the total families in the cotton textile industry with an unskilled male head of household. Furthermore, the mean rise in income for those who would gain is substantial – \$96, or almost one third of the wage for an unskilled male worker. Almost identical results are obtained when we use glass or pig-iron as the destination industry. Similarly, a very large fraction of the families in the other low wage industries – iron ore (42 out of 44), coal (22 out of 28), steel (43 out of 52) — would have a positive income gain from migrating, to the pig iron industry, and the mean gain for those who would gain is also very large. Our results have the strong implication that these families failed to migrate to high wage areas not because they chose to stay, but because they could not do so. The data shows that they would have clearly been better off financially from migrating, even taking into account any losses of child income. The fact that they did not do migrate suggests that these males may have been unable to secure jobs in the high wage areas, possibly because they lacked the requisite skills. Low wage workers failed to migrate to high wage industries because they could not migrate. In the light of these results, the PG conclusion, that these families sacrificed the interests of their children by staying in low wage areas appears seriously flawed.

Our analysis also casts doubt on the alternative hypothesis that the differentials in wages across industries reflect mainly nutritional efficiency wage considerations. Under the efficiency wage hypothesis, families in low wage industries would experience a fall in incomes by moving to industries without child labor opportunities, which is why employers would be unwilling to employ the adult male. This is clearly not the case for a substantial number of families in the data.

3 Income Effects on Child Labor Supply

PG extrapolate beyond their analysis of parental preferences at fixed income levels to argue that parental altruism played very little role in the secular decline in child labor. Whereas much standard analysis (e.g. Nardinelli 1980; Basu and Van, 1998) attributes the decline in child labor with economic development to rising income, and the consequent income effects on child labor supply,³ PG argue that in the United States child labor declined due fall in labor demand, rather than a reduction in labor supply. To quote, “the large increases in schooling over time in the US may have resulted, not from the altruistic motives of parents, but from the fact that more advanced industrial technologies find little value in the unskilled labor of children.” This argument is not based on any additional evidence beyond what we have already discussed. However, we now show that the Commissioner of Labor data do allow us to identify income effects, and thereby provide some indication of the role of labor supply versus demand factors in the decline of child labor. The basic point of our analysis is that the data permit the identification of the effects of parental income effects on children’s labor supply. Fix an industry of employment for the father, thereby fixing child labor opportunities. Variations in observed child labor across households can be attributed to variations in labor supply. One can therefore see how this variation in child labor can be related to variation in non-child household income. Table 3 reports the proportion of children in the household working and male labor income, as a function of the category of worker. We see that the extent of child labor declines as we move from the category of cotton unskilled to cotton skilled to wool unskilled workers. Consider the comparison between skilled and unskilled workers in the cotton industries” since these were in the same location, they face identical child labor opportunities (or demand conditions), but skilled labor earned higher wages. We can therefore attribute

³However, Ray (2000) analyses data from Pakistan and Peru and finds mixed results, with weak income effects in Pakistan.

the reduction in child labor (the proportion of kids working) from 0.46 to 0.41 to can be attributed to income effect on labor supply. Consider next the comparison between skilled workers in the cotton industry and unskilled workers in the wool industry. We see that these workers had almost identical male earnings (approximately 445), but they faced different child labor opportunities. Consequently the reduction in proportion of children working from 0.41 (for cotton skilled) to 0.25 (wool unskilled) can be attributed to labor demand. Thus in comparing unskilled workers in the cotton and wool industries, about one fourth of the reduction in child labor can be attributed to income effects on child labor supply. This is *prima facie* evidence against the PG claim, that demand factors were almost solely responsible for the child labor.

We now conduct a more systematic analysis of the determinants of child labor supply. One problem with our data is that we have observations only at household level, not at the level of the individual child. That is, we have information of the total number children working, but not on their identities. We also have independent information on as well as the total number of children in the family, and their composition by age and gender categories. Furthermore, children of the age of seventeen and above are included within the categories of children and working children. This is consistent with the pattern of American family life at the period – for example, in 1850, the median age at which children left home was 22.5 for males and 20.5 for females (see Whaples, 2005). It would be peculiar to include children aged 17 and above as child labor – even today, the minimum age for full time work is below 17 in most advanced countries.

One measure of the proportion of children working (child labor) is

$$CL_2 = \frac{\max\{\#\text{kids working} - \text{kids17+}, 0\}}{\#\text{kids} - \text{kids}(0-4) - \text{kids17+}}, \quad (3)$$

which is defined only when the denominator is positive (families with a negative or zero denominator do not have any children eligible for work). This

effectively assigns any child above 17 to work, irrespective of sex. However, it is clear that the extent of women’s working this period is substantially lower than that of men’s and it is possible that not all girls above the age of 17 are working. An alternative measure, which does not assume that girls above seventeen work is given by

$$CL_1 = \frac{\max\{\#kids\ working - boys17+,0\}}{\#kids - kids(0-4)-boys17+}. \quad (4)$$

These adjustments to the child labor variable also require that we adjust our measures of non child income. We do this as follows. If a family has any children above seventeen, we estimate their income by dividing total child income by the number of children working. The income of those above seventeen is then added to total non child income, to provide a corrected measure of non child income.

Table 4 reports Tobit regressions of the child labor variable. The income effects are significant and marginal income effect for each of the specifications is the same, at -0.09. These show that a ten percent rise income reduces the fraction of kids working by just under 0.01 points. The income effects are significant and positive. But they are weaker than the raw data comparison from the table. Thus, using the marginal income effects a 30% rise in income would reduce the proportion of children working by 0.03, whereas our raw data calculation from Table 3 (the cotton skilled versus unskilled comparison) is 0.05 for the same 30% rise in income. This is of course explicable, since the raw data comparison does not control for effects such as family size, and also the marginal effects understate the change for large changes, since in this case families will be pushed above the threshold where censoring occurs.

Table 4 shows that family composition has a significant on child labor. Controlling for family size, an older children are more likely to raise the proportion of child labor, as one would expect. Furthermore, in each age group, boys are significantly more likely to work than girls. Indeed, boys in the group 13-14 have a stronger positive effect on the extent of child labor than

girls two years older, in the age group 15-16. This suggests that the specification of the dependent variable (CL_2) that does not automatically assign girls above 17 to work may be preferable. One finding in this specification is noteworthy. The presence of boys in the age group 17+substantially increases the incidence of child work. This suggests that peer effects may be important in increasing the extent of child work – children who have elder male siblings who also work are substantially more likely to work.

To summarize, we find significant income effects upon child labor supply, supporting the assumption made by Basu and Van (1998), that a rise in parental incomes plays a role in reducing the incidence of child labor. This suggests that the rise in incomes at the end of the nineteenth century and in twentieth century played a significant role in reducing the incidence of child labor.

4 Child labor and consumption

What were the effects of child labor on the pattern on household consumption? Did increased child contribution to household give children a higher share of income, possibly by giving children a greater say in household decision making? The Wright data affords us some insight into this question, since it contains detailed information on household consumption expenditures.

The effects of income source upon consumption allocations has become a focus of recent research following the pioneering work of Browning et. al. (1994). They examined cross section data on Canadian married couples, and focused on the expenditure of one of the goods, such as male clothing or female clothing. Their principal finding was that controlling for total expenditure, an increase in the share of income earned by the woman increased the relative spending on women’s clothing relative to men’s clothing. They argue that this constitutes a rejection of the “unitary model” of household decision

making, where the household acts so as to maximize a single utility function. They suggest a bargaining interpretation, where a greater share of income earned by the woman increases her bargaining power, thereby increasing the spending on goods exclusive to her. This work has found resonance in some of the recent literature on child labor, e.g. Bhalotra (2004) or Moehling (2005). Most relevant is the work of Moehling, who uses data from a later period of American history (1917) and shows that increased child earnings resulted in increased expenditure on clothing for that specific child. This is interpreted as reflecting increased bargaining power of the child, due to a greater contribution to family income, and as rejection of the unitary model of household decision making.

A methodological point is relevant here – a positive coefficient effect of child income upon child consumption is *not* prima facie evidence against the unitary model (and evidence bargaining power effects), unless child labor supply is controlled for. Indeed, the positive effect of child income on child consumption may well be consistent with a unitary model, since child labor supply may not be fixed.⁴ To see this, consider the following unitary model of a household with one adult and one child, which maximizes subject to a budget constraint a single welfare function, W , the arguments of which are the utilities of the adult and the child:

$$W = W(u(x_A, \ell_A), v(x_C, \ell_C)), \quad (5)$$

where u is adult utility, which is an increasing concave function of the

⁴This critique does not apply to Browning et. al. since they only compares families where both partners are working full time, where labour supply is plausibly fixed at the statutory level for both partners. Thus variations in incomes are not associated with any variations in labour supply. Our critique applies beyond the child labor context. For example, Luke and Munshi (2005) examine survey data from Indian plantation workers. They reject the unitary model on the basis that changes in the wife's share of total income affect outcome variables, such as childrens' schooling. Again, this does not control for the wife's labor supply, so this interpretation is unwarranted. Conversely, we should mention that in one of her specifications, Moehling (2005) restricts attention to siblings in full time work – here the inference of bargaining power effects is warranted.

adult good x_A , and leisure ℓ_A , while v is child utility, which is again and increasing and concave function of the child good x_C , and child leisure ℓ_C . Denoting time endowments by T_A and T_C respectively, the household budget constraint is given by

$$p_A x_A + p_C x_C = w_A [T_A - \ell_A] + w_C [T_C - \ell_C]. \quad (6)$$

Assume for simplicity that working hours for the adult are fixed, at the statutory level, and that this gives rise to a level of adult income, y_A . So the Lagrangian for the household is given by

$$\mathcal{L} = W(u(x_A), v(x_C, \ell_C)) + \lambda [y_A + w_C (T_C - \ell_C) - p_A x_A - p_C x_C]. \quad (7)$$

From the first order conditions for maximization, we can deduce that :

$$\frac{W_1[u(\cdot), v(\cdot)]u'(x_A)}{W_2[u(\cdot), v(\cdot)]v_1(x_C, \ell_C)} = \frac{p_A}{p_C}. \quad (8)$$

From equation (8), we can deduce that keeping the total family budget fixed, relative consumptions of the adult and child will be unaffected by the changes in relative earnings of the two parties, *provided that* ℓ_C is also kept fixed. However, if the change in relative earnings is associated with a change in ℓ_C , then this conclusion is unwarranted. First, the change in ℓ_C will affect $v_1(\cdot)$, the marginal utility of child consumption, as long as leisure and consumption are not separable in the utility function. Second, even if separability is assumed, an increase in ℓ_C reduces the level of child utility. If the household welfare function is egalitarian so that it is strictly concave in individual utilities, the weight given to child utility will rise, so that more consumption must be allocated to the child. That is, as long as the household welfare function is not linear in individual utilities, changes in child labor supply would be associated with changes in child consumption.⁵

⁵A sufficient condition for variations in ℓ_C to be not associated with changes in relative

To summarize, we must control for child labor supply when we consider how child consumption varies with child income, before we can infer bargaining power effects. Notice that the analysis does not specify exactly how child labor supply variations affect consumption directly, since this hinges on two separate factors.

Our data contains information on aggregate expenditure on child clothing, i.e. it is not disaggregated by child. We regress total expenditure on child clothing upon total expenditure, child labor supply, and child income, which controls for family size and composition (the number of children in each age/gender category that is reported in the data). Our main results are reported in table 5. The basic regression instruments for total expenditure, but not for child income or child labor supply and is reported in the first column. We see that child income raises child clothing, with coefficient of 0.08, which is greater than the effect of total expenditure. Child labor however has a negative effect on clothing expenditure. When we instrument for child income and child labour as well, in the second column, the coefficients on both these variables become insignificant. The third specification includes the father's income and mother's income and finds that the coefficients on these are significant, but the child income variable has insignificant effects. Overall, our results do not decisively reject the unitary model of household decision making and indicate weak support for the hypothesis that child income significantly raises consumption of childrens' clothing. Our tables also show that family composition has an important effect on clothing expenditures – older children raise such expenditures, and there is some evidence that the presence of female children also does so. Finally, we may also examine the effects of child income on the consumption of adult goods, such as the clothing expenditures of the husband or wife, and upon expenditure on liquor. These results are reported in table 6. An increase in child income has

consumptions is that child utility is separable in leisure and consumption and that the household welfare function is utilitarian (or other linear form). These are obviously very strong requirements.

a significant negative effect on the consumption of liquor, while an increase in the husband's income has a strong positive effect. When we examine husband's clothing or the wife's clothing, we find significant own income effects. There is some evidence that a rise in an individual's income has an effect on his/her own consumption, although this effect is not very strong.

To summarize, our results show some evidence against the unitary model of household decision-making, although these effects are weaker when we control for child labor supply. A caveat that one should add is that there is not a one-to-one relation between unitary model of household decision making and parental altruism. Household decisions may reflect relative contributions to the household budget, but this does not imply that parents are exploitative. Conversely, the household may be ruled by an iron hand – and would thus maximize a single utility function – but this may either be exploitative or paternalistic.

5 Conclusion

Child labor has become an important policy concern, and also a focus of recent research in development economics. Theoretical work on child labor (Basu, 1998; Baland and Robinson, 2000; Ranjan, 2001) has examined efficiency or distributional reasons for intervening in order to restrict its incidence. There has also been extensive empirical work on child labor and its determinants. One focus of empirical work is the effect of family income upon child labor supply. Ray (2000) uses data from Pakistan and Peru, and finds weak income effects in Pakistan, with stronger effects in Peru. Bhallowtra (2006) also uses household data from Pakistan, and finds that for boys with positive hours of work, the own-wage elasticity of child labor supply is negative.⁶ This is interpreted as being consistent with child labor being used to meet subsistence requirements. Beegle et. al. (2006) use household data

⁶For girls, the own-wage elasticity is not significantly different from zero.

from Tanzania and find that shocks to household income have a significant effect upon child labor supply decisions, suggesting that capital market constraints are important. Relatedly, Edmonds (2006) finds that the *timing* of anticipated income has an important effect upon child labor and schooling decisions in South Africa, suggesting that capital market imperfections play an important role.

It is our contention that the contemporary debate on child labor can learn from the historical experience of developed countries. For example, Moehling (1999) has examined the efficacy of state child labor laws in the US in reducing child labor. More provocatively, Goldin and Parsons have argued that American parents were exploitative rather than altruistic, at the end of the nineteenth century. The present paper disputes this contention. Contrary to Parsons and Goldin's claim, we find that constraints rather than preferences dictated the choices made by parents. Our evidence suggests that households where children worked did not choose the "low wage, child labor" option, but were most likely unable to secure high wage jobs. We find significant income effects on child labor supply, suggesting that the decline of child labor in the US was in part due to rising affluence. Our analysis also sheds light on intra-household allocation of consumption. We find that income shares play a role in this context, but only a weak one, once variations in child labor supply are controlled for. In summary, American parents at the end of the nineteenth century were not selfish and exploitative, and many of their choices reflect their constraints and relative poverty.

Table 1: Incidence of Child Labor (CL), Wages and Family Size by Industry

	CL	CL, Unskilled Father	Unskilled Wage	# kids, Unskilled
All industries	0.23	0.29		
Pig Iron	0.05	0.04	469	2.5
Bar Iron	0.08	0.13	444	2.4
Steel	0.11	0.15	384	2.2
Coal	0.15	0.10	361	3.4
Coke	0.04	0.05	411	2.3
Iron Ore	0.12	0.16	281	2.5
Cotton	0.43	0.46	341	3.5
Wool	0.25	0.25	447	2.5
Glass	0.10	0.18	455	2.5

Notes: CL is the proportion of children working in the family, and is

$$\text{defined by } \frac{\# \text{kids working} - \text{boys17+}}{\# \text{kids} - \text{kids}(0-4) - \text{boys17+}}.$$

Family skill level refers to the skill level of the father.

Table 2: Estimated Income Gains by Migration, Unskilled Workers

From/To	#	Male wage gain	# with income rise	Mean gain for gainers
Cotton - Wool	805	104.8	345 (43%)	95.7
Iron ore - Pig Iron	44	176.4	42 (95%)	157.4
Coal - Pig Iron	28	98.1	22 (79%)	97.0
Steel - Pig Iron	52	76.9	43 (83%)	75.7

Table 3: Adult Wages and Child Labor

	Cotton unskilled	Cotton skilled	Wool unskilled
Adult male wage income, \$	341	447	447
Proportion of children working	0.46	0.41	0.25

Table 4: Tobit Regressions, Child Labor

	CL_1	CL_2
Non child income	-0.26 (0.02)	-0.30 (0.02)
# children	-0.08 (0.01)	-0.07 (0.01)
# boys 10-12	0.15 (0.02)	0.18 (0.02)
# girls 10-12	0.08 (0.02)	0.11 (0.02)
# boys 13-14	0.43 (0.02)	0.49 (0.02)
# girls 13-14	0.27 (0.02)	0.33 (0.02)
# boys 15-16	0.51 (0.02)	0.58 (0.02)
# girls 15-16	0.32 (0.02)	0.40 (0.02)
# boys 17+	0.14 (0.02)	0.12 (0.02)
# girls 17+	0.26 (0.01)	0.00 (0.02)
cotton textiles	0.36 (0.03)	0.36 (0.03)
# uncensored obs.	1672	1391
# observations	4461	4280

Notes: robust standard errors in parentheses.

Dependent Variable is the extent of child labor.

$$CL_1 = \frac{\#kids\ working - boys17+}{\#kids - kids(0-4)-boys17+}.$$

$$CL_2 = \frac{\#kids\ working - kids17+}{\#kids - kids(0-4)-kids17+}.$$

Industry dummies included as controls.

Table 5: Dependent Variable: Expenditure on Childrens' Clothing

	1	2	3
Total Expenditure	0.067** (0.003)	0.053** (0.003)	0.03** (0.006)
Child Income	0.06** (0.008)	0.02 (0.05)	0.034 (0.05)
# KidsWorking	-6.4**(1.1)	-12.2 (7.5)	-10.0 (7.6)
Male Income			0.017** (0.004)
Wife Income			0.024** (0.007)
#Kids 0-4	5.0 (0.5)		
#Kids 5-9	9.6 (0.5)		
# Boys 10-12	10.9 (1.0)		
# Girls 10-12	12.7 (1.2)		
# Boys 13-14	18.0 (1.7)		
# Girls 13-14	16.6 (1.7)		
# Boys 15-16	20.4 (2.0)		
# Girls 15-16	18.2 (1.7)		
# Boys 17+	21.7 (2.0)		
# Girls 17+	25.1 (1.6)		
# observations	5900	5900	5900

Notes: robust standard errors in parentheses.

*(resp. **) denotes significance at 5% (resp. 1%) level.

In the first specification, only total expenditure is instrumented.

In subsequent ones, child income and child labor are also instrumented.

Instruments: non child income and industry dummies.

Demographic variables (#kids by gender and age categories) included in each regression,

but not reported separately since the coefficients are very similar.

Table 6: Dependent Variable : Expenditure on Adult Goods

	Liquor (Tobit)	Husband's Clothing	Wife's Clothing
Total Expenditure	0.07** (0.004)	0.004 (0.002)	0.015** (0.002)
Child Income	-0.03** (0.007)	0.008** (0.002)	0.008** (0.002)
# Children working	-1.03 (1.4)	-0.71 (0.36)	0.40 (0.33)
Wife's income	-0.04** ((0.015)	0.007 (0.004)	0.032** (0.005)
Husband's Income	0.011** (0.003)	0.035** (0.002)	0.026** (0.002)
# censored	3271		
# observations	5658	5900	5900

Notes: robust standard errors in parentheses.

*(resp. **) denotes significance at 5% (resp. 1%) level

Controls include family composition variables, age and age² of husband
(columns 1 & 2) or wife (column 3).

IV regressions: total expenditure instrumented, instruments as in table 5.

References

- [1] Baland, J-M., and J. Robinson, 2000, Is Child Labor Inefficient?, *Journal of Political Economy*, 102, 663-679.
- [2] Basu, K., and P. Van, 1998, The Economics of Child Labor, *American Economic Review* 88, 412-427.
- [3] Beegle, K., R. Dehejia and R. Gatti, 2006, Child Labor and Agricultural Shocks, *Journal of Development Economics*, forthcoming.
- [4] Bhalotra, S., 2004, Parental Altruism, Cash Transfers and Child Poverty, mimeo, University of Bristol.
- [5] Bhalotra, S., 2006, Is Child Work Necessary? *Oxford Bulletin of Economics and Statistics*, forthcoming.
- [6] Bliss, C., and N. Stern, Productivity, Wages and Nutrition, Part I: The Theory, *Journal of Development Economics*, 5, 331-362.
- [7] M. Browning, F. Bourguignon, P-A. Chiappori, and V. Lechene, 1994, Incomes and Outcomes: A Structural Model of Intra-Household Allocation, *Journal of Political Economy*, 102, 1067-1096.
- [8] Dasgupta, P., and D. Ray, Inequality as a Determinant of Malnutrition and Unemployment: Theory, *Economic Journal* 97, 1011-1034.
- [9] Goldin C., and K. Sokoloff, 1982, Women, Children and Industrialization in the Early Republic: Evidence from the Manufacturing Censuses, *Journal of Economic History*, 741-774.
- [10] Edmonds, E., 2006, Child Labor and Schooling Responses to Anticipated Income in South Africa, *Journal of Development Economics*, forthcoming.

- [11] Leibenstein, H., 1957, *Economic Backwardness and Economic Growth*, New York: Wiley.
- [12] Haines, M.R., 1979, Industrial Work and the Family Life Cycle, 1889-1890, *Research in Economic History*, 4, 289-356.
- [13] Marx, K., 1867, *Capital*, Vol I, Reprinted 1971, London: Lawrence & Wishart.
- [14] Mincer, J., 1978, Family Migration Decisions, *Journal of Political Economy*, 5, 331-3
- [15] Moehling, C., 1999, State Child Labor Laws and the Decline of Child Labour, *Explorations in Economic History*, 36, 72-106.
- [16] Moehling, C., 2005, ‘Suddenly she has become Powerful’: Youth Employment and Household Decision-Making in the Early Twentieth Century, *Journal of Economic History*, 414-38.
- [17] Luke N. and K. Munshi, 2005, Women as Agents of Change: Female Income, Social Affiliation and Household Decisions in South India, mimeo, Brown University.
- [18] Nardinelli, Child labour and the Factory Acts, *Journal of Economic History*, 739-755
- [19] Parsons, D.O., and C. Goldin, 1989, Parental Altruism and Self-Interest: Child Labor among Late Nineteenth-Century American Families, *Economic Inquiry*, 637-659.
- [20] Ray, R., 2000, Analysis of Child Labor in Peru and Pakistan: A Comparative Study, *Journal of Population Economics* 13, 3-19.
- [21] Whaples, R., 2005, Child Labor in the United States, *EHnet Encyclopedia*.