Why Children do not Go to School in Pakistan–
Some Estimates and a Theoretical Framework

MOAZAM MAHMOOD, TARIQ JAVAID and AJMAL BAIG

1. INTRODUCTION

Pakistan has a grave problem of human capital. The majority of our children tend not to go to school. Instead they go to work. Policy on education and child labour has been clearly deficient in Pakistan. This policy failure, we feel is due to analytical deficiency in understanding the determinants and impact of children's schooling and labour.

The theoretical framework of this study is based on five arguments.

1. Schooling, and child labour, are two aspects of the the same problem, the problem of why children do not go to school. Schooling and child labour are both the result of one decision-making process, whether to send a child to school, or to work.

2. Mainstream literature on Pakistan does not consider the impact of this household decision-making about children's schooling and labour on the aggregate labour market.

3. Mainstream literature on Pakistan further does not consider the impact of child labour on the labour market for women.

4. Mainstream literature also does not consider yet another impact of household decision-making about children's schooling and labour on fertility behaviour.

5. These three processes, household decision-making about children, the impact on the labour market, and the impact on fertility, combine to give a perverse signalling mechanism that tends to depress children's schooling, increase child labour, depress adult employment especially for women, and increase fertility rates. So policy failure in Pakistan, may in large part be due to the inability to understand these three processes, and their combination in a perverse signalling mechanism.

Moazam Mahmood is Senior Research Economist, Tariq Javaid and Ajmal Baig are Staff Economists at the Pakistan Institute of Development Economics, Islamabad.

These five arguments are based on a model of household behaviour, labour market behaviour, fertility behaviour, and their interaction. In this paper we are simply putting forward this set of theoretical propositions to be tested subsequently.

2. MACRO ESTIMATES OF CHILD LABOUR

There is only one partial macro estimate for child labour in Pakistan. Hussain has estimated urban child labour for 1987-88 at 4.1 million.[1] If we extrapolate this for the entire economy, assuming an equal incidence of child labour between urban and rural areas, this gives 9.6 million. A UNICEF study estimates child labour labour below the age of 15 years at a minimum of 8 million.[2] However it gives no basis for the estimate.

Our estimation of child labour defines a child as falling in the age cohort between 5 and 14 years. Now a child can be engaged in three mutually exclusive alternatives. The child is either:

(a)   In school, or
(b)   working in a workplace or at home, or
(c)   is physically disabled, unable to go to school or to work.

If we have estimates for children's (a) enrollment, and (c) disability, this will give us a residual estimate for (b) working. Table 1 presents our estimates for children's enrollment, disability, and as a residual, labour, for 1989-90. Children in the age cohort 5 to 9 years are the most vulnerable to child labour, their physical, mental and conceptual development being critically jeopordised. Table 1 estimates that of the total population of children in this age group of 5 to 9 years, 39 percent are working. In the next age group of 10 to 14, 77 percent of the children are working. For the entire age cohort of children from 5 to 14, 58 percent are working. This gives a child labour force of 19 million, of whom 7 million are below the age of 10 years, and another 12 million are between the ages of 10 and 14 years.

3. A SUMMARY SURVEY OF THE LITERATURE
ON CHILD LABOUR

The literature on child labour in Pakistan is conceptually weak because it does not investigate causality very well.

---

[1]Hussain, S. A. (1988), Strategic Issues in Pakistan's Economic Policy, Progressive Publishers, Lahore.

[2]UNICEF (1990), The Situation of Child Labour in Pakistan in 1990, UNICEF, and the National Commission for Child Welfare, Development of Special Education and Social Welfare Division, Government of Pakistan.

Table 1

Estimates of Child Labour

Children	5–9 Years	10–14 Years	Total
	1989-90		
	% of Age Cohort		
A. Enrollment	58.8	22.9	42.1
B. Labour	39.0	76.8	57.6
C. Disability	0.2	0.3	0.3
Total	100	100	100
Number of Working Children (Million)	6.8	11.8	18.8

The primary supply side determinant of child labour is seen to be poverty of household income.[3] A second supply side determinant of child labour is considered to be children's acquisition of skills for employment, which schools do not provide.[4] The third supply side determinant of child labour is considered to be dropouts.[5]

On the demand side, the formal literature in Pakistan does not stress any of the main determinants, leave alone investigate them. We can simply note some of the major demand determinants to be:

1. Lower wage rates for child labour compared to adult labour;
2. greater subordination of child labour by employers; and
3. a child apprenticeship system through which the employer gains a skilled labourer at a lower training cost.

[3]Khan, S. (1982) Labour Force Participation of Children: A Case Study, *Pakistan Economic and Social Review*, vol 20, 1; Ahmed M. (1991), Child Labour, A Time to Reflect, United Nations Children Fund (UNICEF); Pakistan Institute for Labour Education and Research (1991), Child Work and Family Life in Karachi, International Labour Organisation (ILO); Institute for Social Research and Development (1991), Children in Specially Difficult Circumstances, UNICEF; Hussain, A. (1986) Economic Growth Poverty and the Plight of Children, in Children's Development Trends in Pakistan, UNICEF; Aslam, K. and Ashfaq H. M. (1990), Child Labour–an Unavoidable Choice for Livelihood, *Journal of Rural Administration*, vol 22, 4; Rashid, J. H. (1987), Working Conditions for 8 Million Child Workers Deplorable, *Dawn* July 22; UNICEF (1990) The Situation of Child Labour in Pakistan, UNICEF; Muslim (1987), 3.5 Million Children Working Under Miserable Conditions, May 19.

[4]PILER (1991) op cit; UNICEF (1990) op cit; Rashid, J. H. (1987) op cit.

[5]UNICEF (1991) Children in Specially Difficult Circumstances–Street Children of Karachi, Institute for Social Research and Development and UNICEF.

Now having identified poverty as the major determinant of child labour still leaves many questions unanswered. We need to examine:

1. What particular causal characteristic of poverty initiates child labour;
2. the factors that spread child labour;
3. the implications of the spread of child labour for the labour market and for specific sectors;
4. the possible implications of the spread of child labour for other groups in the labour market, like women; and
5. the demographic implications of the increase in child labour.

These questions requires the positing of a theoretical framework for analysing child labour.

4. TOWARDS A THEORETICAL MODEL FOR ANALYSING CHILD LABOUR–A THEORY OF HETEROGENEOUS LABOUR

We will put forward a model of child labour, based on the existence of heterogeneous labour in the labour market. To do this we need to first examine the inconsistencies implied by using a homogenous labour model.

The Problems in Using a Homogenous Labour Model

If we assume homogenous labour, then:

The labour market demands an abstract quantity of labour L.

Households supply an abstract quantity of labour L.

This assumption of homogenous labour L, demanded and supplied, leads to some counter intuitive results.

Let us take the Chicago school theory of the demand for children as modified by Vosti and Lipton.[6] Their argument is that the demand for children is linked to the household's decision about child labour. The argument runs that poverty implies that household income is low. We can represent this argument in the following way. Household income Y comprises a wage rate component W and an employment component N, thus:

$$Y1 = (W1 * N1)$$

Now $W1$ is constant for households, because it is given by the macro

---

[6]Vosti, S. and M. Lipton (1992) Paper presented at the 8th AGM of the PSDE.

equilibrium wage rate which the household cannot affect. So the only option that the poor household has to raise its low income above $W1$, is to raise its low employment level above $N1$. This the household can do by adding child labour employment on to adult labour employment.

However Vosti and Lipton's logic is that if poverty is being caused by low employment, then the probability of future employment is low, then the probability of children's employment will be low, and this will lower the demand for children. So Vosti and Lipton's theory predicts that low growth areas will have low fertility rates, while high growth areas will have high fertility rates.

Unfortunately Vosti and Lipton's results based on a cross sectional analysis of India prove counter intuitive for them. Low growth rural areas are found to have high fertility rates and high growth rural areas are found to have low fertility rates.

We feel however that there is a problem with the Chicago school/Vosti Lipton theory. The problem lies with the assumption of homogenous labour. We will posit an alternative model using heterogenous labour. This theory is also seen to be consistent with the Vosti Lipton results.

A Heterogenous Labour Model

We will base this model on four different types of labour, although it can be extended to other types of labour as well.

We have:

Adult labour:	La with wage rate: Wa
Woman's labour:	Lw with wage rate: Ww
Child labour:	Lc with wage rate: Wc
International labour:	Li with wage rate: Wi

Assume an initial point in time t1, when there is only an adult labour market with wage rate W, low income and employment at the macro level, and low micro household income Y, and low household employment N. The household needs to increase Y, but as seen above, is confronted by a macro given constant $W_{\hat{a}}$ so its only option is to increase its N. This is the Vosti Lipton dilemma.

In t2, we posit that household decision-making realises that the only way its N can be increased with macro given high unemployment is by lowering its offered W. However W is sticky downwards due to institutional rigidities like bargaining power positions.[7]

---

[7]Burton, J. (1976) Wage Inflation, MacMillan.

Therefore the household response is to introduce a qualitatively different type of labour on the market, with its own wage rate, which can be distinct now from the adult wage rate. Based on this general proposition, we will specify here, the qualitatively distinct type of labour to be child labour, with a wage rate below that for adults. We have:

$$Wc < Wa$$

So the poor household generates additional demand for its labour by offering cheaper child labour. The impact of this demand generation can be seen in Diagram 1. In this diagram, in t1, there is a demand curve for adult labour given by DaDa. The supply curve for adult labour Sa is probably perfectly elastic, and so horizontal, but is drawn here for convenience as slightly inelastic. The bargaining strengths of employers and labour give a market wage rate Wa, and employment Na in t1.

**Diagram 1. Composition of the Kinked Demand Curve.**
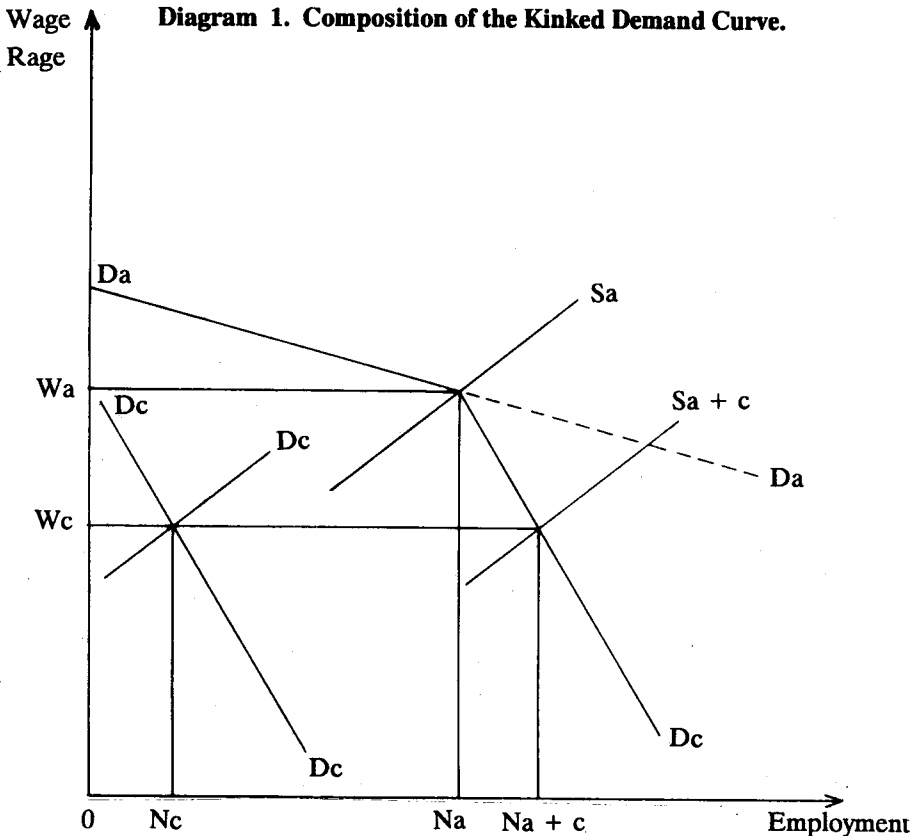
In t2, child labour is introduced into the market at Wc < Wa. This gives us another demand curve for child labour DcDc, which begins at Wa. We can expect this DcDc curve to be less elastic than DaDa, because it is additional employment generation. The supply curve for child labour Sc and the demand curve for child labour DcDc give the child wage rate Wc, and child employment Nc.

For analytic convenience, we can superimpose the demand curve for child labour DcDc onto the demand curve for adult labour DaDa.

This results in a classically kinked demand curve, as seen in Diagrams 1 and 2, given by DaDc. For the adult portion of the demand curve, above Wa, market wage rate Wa, and employment Na, remain constant. But at the adult market wage rate Wa, the curve kinks, and the child portion of the demand curve begins.

Diagram 2
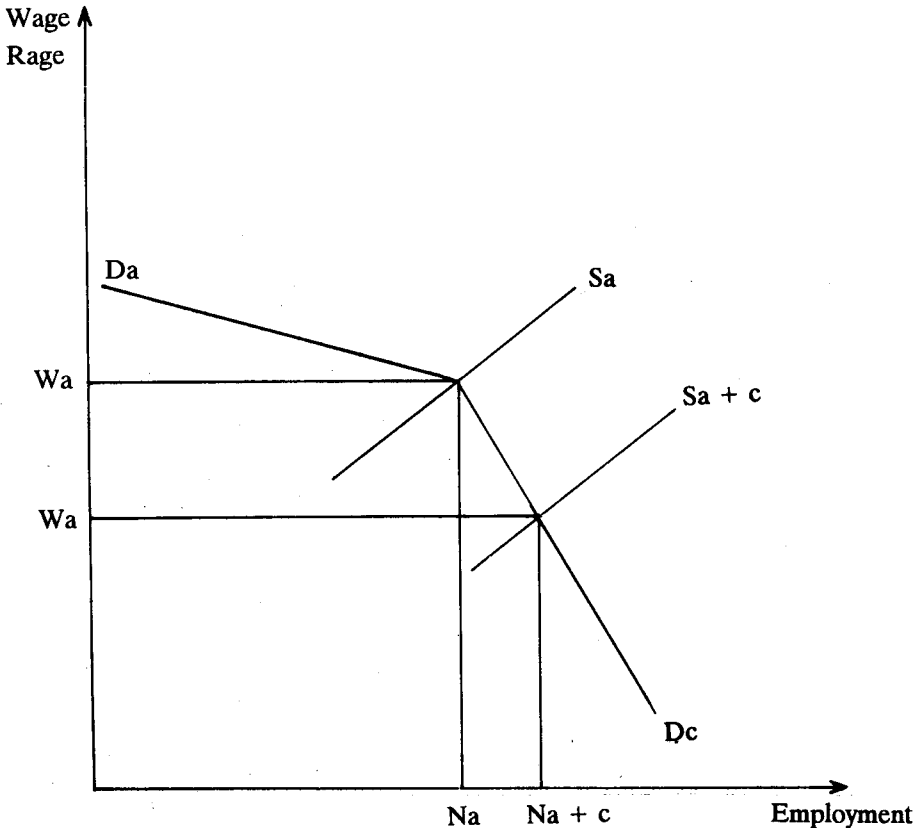
Superimposing the supply curve for child labour Sc onto the supply curve for adult labour Sa, again for analytic convenience although the two are qualitatively different forms of labour, gives us a composite supply curve for adult plus child labour, Sa + c.

So in Diagrams 1 and 2, we now have a kinked demand curve DaDc, with an adult portion above Wa, and a child portion below Wa. Its intersection with the adult supply curve Sa gives adult the wage rate Wa and employment Na. Its intersection with the additive supply curve for adults and children Sa + c, gives the additional employment creation for child labour of NaNa + c. Note that NaNa + c is simply Nc in Diagram 1 added onto Na, for convenience.

This then has two important corollaries:

- 1. Poor households with low adult employment will tend to keep their children back from school; and
- 2. these households will have a higher demand for children to provide child labour to earn additional income.

So our model predicts, contrary to the Vosti Lipton hypothesis, that low growth regions will tend to have high fertility, while high growth regions will tend to have low fertility. This also explains Vosti and Lipton's Indian cross sectional data results. This model can now be extended in three ways.

Child Labour Proliferation Through a Perverse Signalling Mechanism

This model of child labour has a very important macro implication. It implies that in an economy with a slow growth rate of employment, there will be a tendency towards proliferation of child labour, through a perverse signalling mechanism. And of course the accompanying impact will be a tendency towards higher fertility levels. This proliferation is caused through two effects:

1. A Supplemental Domino effect across sectors.
2. A Substitution Domino effect across sectors.

The Supplemental Domino Effect Across Sectors

In t1:	sector i has:	an adult labour market La
		a child labour market Lc
	sector j has:	an adult labour market La
		but no child labour market.

In t2, in sector i, Wa was already sticky downwards, so it cannot be bid down further. Now Wc also becomes similarly sticky downwards. Therefore supplemental child labour demand generation becomes exhausted in sector i. If additional households need to generate demand for child labour, they will do so in sector j. So the child labour market Lc is now introduced in sector j, with :

Wc < Wa.

In t3, by analogy, sector k will introduce child labour.

This is the supplemental effect, generating child employment NaNa + c in Diagram 2, dominoing across sectors, kinking the demand curves in these sectors.

The Substitution Domino Effect Across Sectors

From the polar case of the supplemental effect in Diagram 2, we can now go on to the second polar case of the substitution effect shown in Diagram 3.

In t1, in sector i, we have (DaDc)1, which intersects with Sa1 to give the adult wage rate Wa and employment Na1. (DaDc)1 also intersects with composite (Sa + c)1 to give the child labour wage rate Wc and employment (Na)1(Na + c)1. This is the supplemental child employment effect in t1 as seen above.

In t2, in sector i, households now offer more child labour to sector i than (Na)1(Na + c)1, rather than offering it to sector j immediately. Employers in sector i, now also choose to accept this cheaper child labour to partly substitute for adult labour. Because less adult labour is now being demanded at the same adult market wage rate Wa, this implies a shifting in of the demand curve from (DaDc)1 to (DaDc)2. Also, now this drops the adult supply curve to Sa2, since it is perfectly elastic at Wa, and only drawn as slightly inelastic in Diagram 3.

The intersection of (DaDc)2 with Sa2 gives the adult wage rate Wa as before, but now drops adult employment from Na1 to Na2. The intersection of (DaDc)2 with the new composite adult plus child labour supply curve (Sa + c)2, gives the child wage rate Wc as before, but now gives child employment (Na)2(Na + c)2. This new child employment in t2 is composed of a substitution effect and a supplemental effect. The substitution effect is (Na)2(Na)1, by which adult employment is substituted by child employment. The supplemental effect is (Na)1(Na + c)2, by which child employment in t2 supplemented adult employment in t1.

So now we have the possibility of both supplemental and substitution effects

Diagram 3
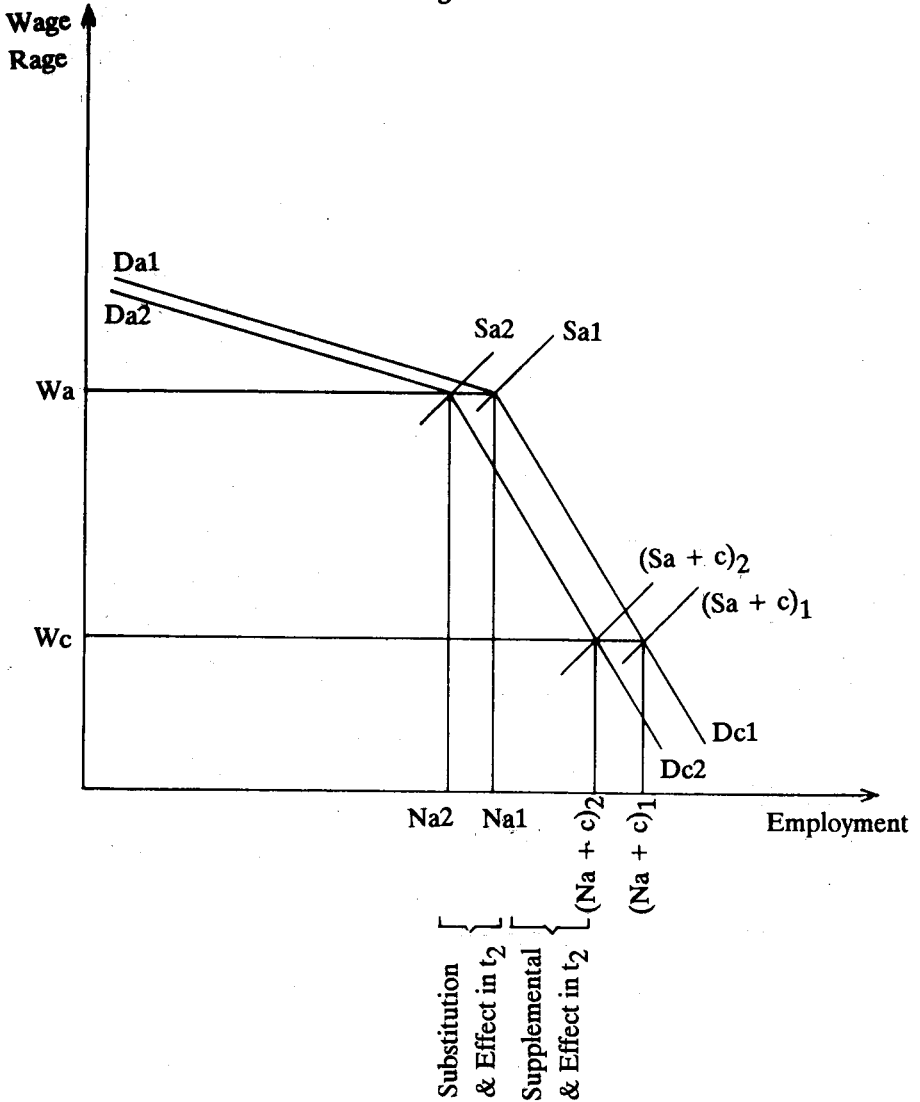
dominoing across from sector i to sector j as the potential for child labour gets exhausted in sector i.

So there can be a perverse signalling mechanism at work leading to the proliferation of child labour from one sector to another. And this will be both

supply lead, with households offering child labour at wage rates below those for adults, and employers generating supplementary demand for child labour and using cheaper child labour to substitute for more expensive adult labour. The perverse signals lie in the causal mechanism posited to initiate child labour, low adult employment per household. If however the substitution effect becomes paramount, and adult employment is further cut back as a result of child labour, then a vicious circle can be created, with low adult employment in t1 leading to child labour in t2, further lowering adult employment in t3.

Three important corollaries emerge from this model of child labour:

1. The market can act perversely through an employment lead mechanism to proliferate child labour, without state intervention.
2. As noted in Diagram 3, the adult wage rate remains constant, so cheap child labour can check the growth of the adult wage rate. By keeping household income low, this can again act as a perverse wage lead mechanism to proliferate child labour.
3. The demand for children can be a more significant positive function of child labour, and poverty, rather than supply side contraception.

Child Labour Constraint on Female Labour

A second extension of this model of child labour can be used to explain the relatively slow growth of female labour, especially in urban production and services.

In t1, in sector i, male adult labour La, has a wage rate of Wa. In t2, poor households with low male adult employment, now offer two other kinds of labour, both with distinct wage rates below Wa.

These are female adult labour Lw, offered with a wage rate Ww, and child labour Lc, offered with a wage rate Wc.

The important condition is that:

$$Wa > Ww > Wc$$

Diagram 4 shows, by analogy to the simple adult and child labour model, that the adult male, adult female, and child labour model, now results in a demand curve with two kinks in it. (DaDwDc)1 has a male adult portion above Wa, a female adult portion between Wa and Ww, and a child portion below Ww. If we allow for both substitution and supplementary effects over time, (DaDwDc)1 shifts inwards to (DaDwDc)2. The intersection of (DaDwDc)2 with respectively, Sa2 gives a male adult wage rate Wa and employment Na2, Sw2 gives a female adult wage rate Ww

Diagram 4
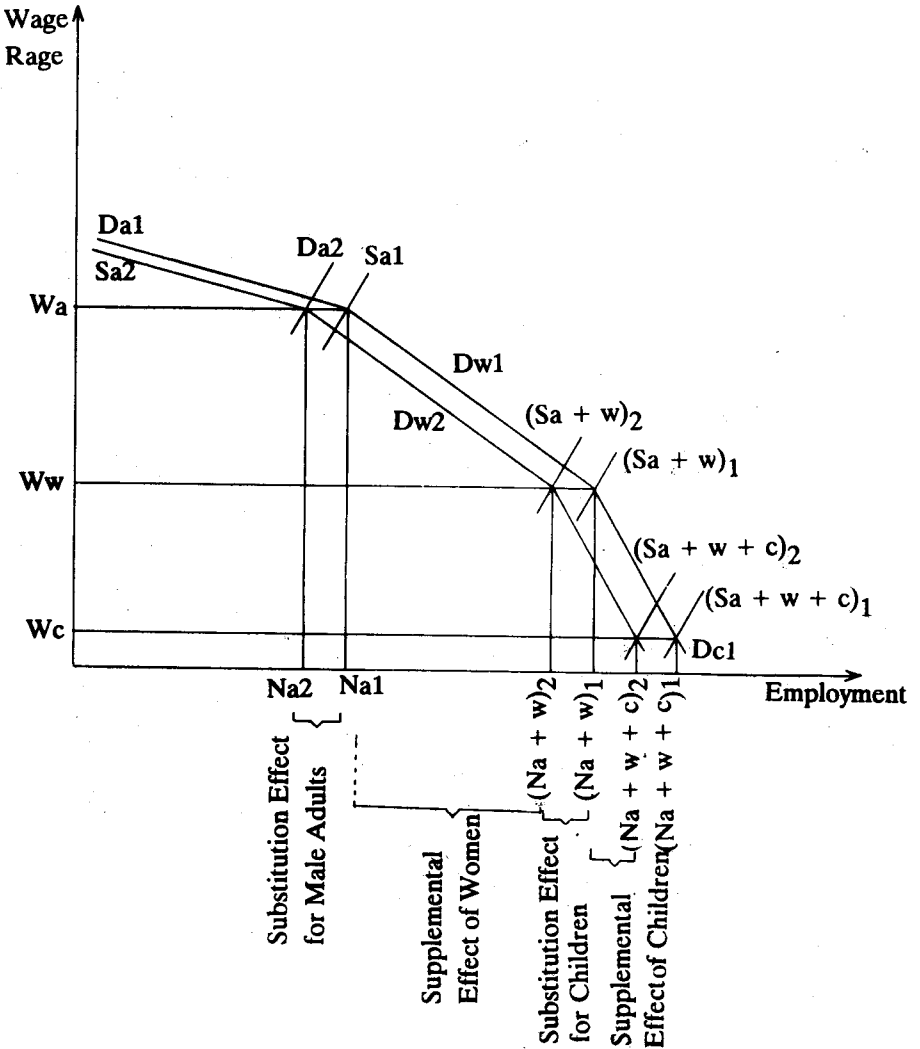
and employment $(Na+w)2$, and $Sc2$ gives a child labour wage rate Wc and employment $(Na+w+c)2$. This gives for female adults a substitution effect of $Na2Na1$, and a supplementary effect of $Na(Na+w)2$. So female adult labour constrains the employment growth of male adult labour.

This also gives for child labour a substitution effect of $(Na+w)2(Na+w)1$, and a supplementary effect of $(Na+w)1(Na+w+c)2$. So child labour constrains the growth of female adult labour.

There are three important points to note in this exercise.

One, growth in female adult labour employment is constrained by the introduction of child labour.

Two, the substitution effect, by female adults of male adults, by children of female adults, in Diagram 4, or indeed by children of male adults in Diagram 3, is not just a function of wage differentials and supply. Since the supply curves are all perfectly elastic and so horizontal along the wage rates, the shift in of the demand curves depends on employers choice. And this employers choice will be determined both by wage rates and by technical substitution possibilities between the different types of labour. Three, obviously the greater the differential between wage rates, the greater is the supplementary effect on demand. Then if employers were to choose between women and children to supplement male adult labour, given technical substitution possibilities, more demand would be generated for child labour.

The Proliferation of Child Labour in Labour
Intensive Export Sectors

We can use a third extension of this model of child labour to explain why child labour has a high incidence in particular sectors and subsectors, for example carpets in Pakistan. This is a straightforward application of the last corollary derived above, that the greater the differential in wage rates, the greater the supplementary effect on demand.

Let us posit a border wage rate for adult labour used in the production of a commodity i which is exported by other countries and by Pakistan. Call this border wage rate Wi. Assume that:

$$Wi > Wa > Wc.$$

Now if i is a capital intensive product like cotton yarn or cloth, then Pakistan's export competitiveness will not depend upon the wage component of its price. If however, i is a labour intensive product like carpets, then Pakistan's export competitiveness will depend considerably on the wage component of its price. The lower the wage rate in this sector, the lower will be the price of i, the greater the competitiveness of i abroad.

This case is represented in Diagram 5. In t1, if Pakistan were to produce i at the border wage rate of Wi, it would have a very small share of the market, and would have a low demand for adult labour at Ni. However in t2, because Pakistan produces i at the domestic adult wage rate of Wa which is below Wi, it is more competitive abroad, and has a higher demand for adult labour in sector i. Now in t3, if child labour is offered at a Wc below Wa, and much below Wi, the supplementary effect of the demand for child labour in sector i will be very high. This will tend to give a higher incidence of child labour in sector i compared to some other sector j.

Diagram 5
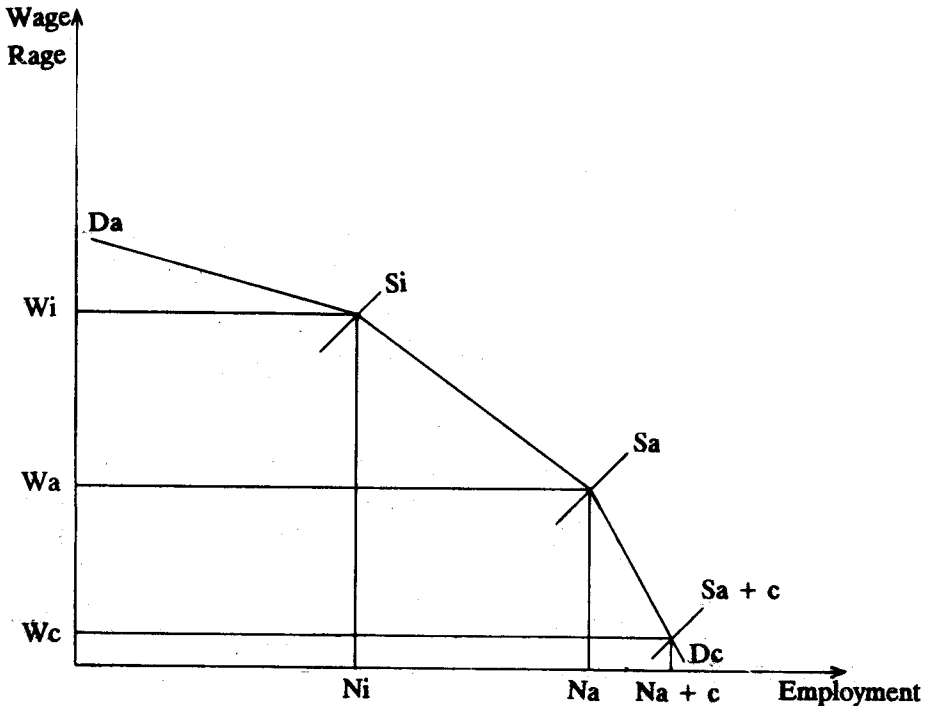
5. CONCLUSIONS

Our estimate of child labour below the age of 15 years verges on 19 million, with 7 million below the age of 10 years. To establish poverty as the major determinant of child labour is not very helpful. We have posited a theoretical model of child labour that attempts to go beyond this simple assertion.

1. The model shows that child labour is initiated by an employment lead causal mechanism.
2. The model demonstrates that child labour can proliferate by dominoing across sectors. This dominoing is composed of supplementary effect and a substitution effect.
3. There can in effect be a perverse signalling mechanism that is both employment and wage lead, which results in a vicious circle of ever increasing child labour.
4. Child labour can act as constraint on female adult labour through the supplementary demand effect.
5. Child labour will tend to have a higher incidence in labour intensive export sectors, through a supplementary demand effect.
6. The proliferation of child labour may be a more significant determinant of fertility than the supply of contraception.

"Why Children do not Go to School in Pakistan
Some Estimates and a Theoretical Framework"

Dr Moazam Mahmood and his co-authors are to be congratulated for their rigorous treatment of a disturbing social phenomenon. Their paper establishes a theoretical framework for child labour markets in Pakistan, analysing its implications for the aggregate labour market and fertility behaviour. The authors have collected an impressive amount of empirical material and carried out a focused literature review. The paper is an important pioneering effort and addresses an extremely topical concern in the present development climate. One hopes it will continue to foster new theoretical insights and further attempts at empirical verification.

My comments are fairly peripheral, touching on both practical and theoretical aspects of the paper. On the empirics, I have a few suggestions as well as a few questions.

- First, the authors might like to attempt the comparative ranking on the basis of purchasing power parity GNP per capita as well. Both Summers-Heston and the World Development Report would be relevant sources of information. Additionally, the authors may also like to use retention rates, to reinforce their assessment of the status of primary and secondary schooling.
- Second, in Table 1 in the secondary enrollment category, it is a little surprising to see the numbers and trends looking much better than in the primary category. One would have thought that secondary enrollments would be a reflection of what happens at the primary level. In particular, in 1990, female enrollment closely tracks the overall figure. This seems at variance with the popular perception that girls between the ages of 9 and 14 are kept back for household work.
- Third, the authors ascribed the sharp pick-up in enrollment from 1988 to 1990 to the proliferation of mosque schools. From 1977 to 1978, a drop of 6.5 percent occurred. What might explain this drop?

– Fourth, does the data on enrollment include private schooling. If so, it would be interesting to see the public-private sector break-down over time.

The authors claim, that the quality of schooling has deteriorated over time, seems to be based on a somewhat uni-dimensional premise, i.e. the average number of enrollments per school. In principal, an estimate of dispersion would be required to substantiate this conclusion. Also, the analysis could be enriched with the inclusion of additional variables. Illustratively, these could be; operational costs per school, rural-urban breakdown, school break-down by gender, public versus private schools, improvement and expansion of school facilities etc.

The estimates of child labour from different sources are apparently quite disparate; variously 8.0 million, 9.6 million and the authors' figure of 19.0 million. Is it possible that the difference could be ascribed to the fact that Hussain and UNICEF only consider the outside-home workplace, while the authors include children working in their homes as well?

In the literature review, it is asserted that the normal tendency is to make an artificial distinction between supply and demand determinants of labour. This does not flow clearly from the arguments. On the demand side the poverty, economic, cultural and demonstration factors are spelled out clearly enough. But it is stated that conceptually demand is viewed separately from supply factors such as distance to school, lack of basic facilities, insufficiency of teaching staff and poor quality of education. It would appear that the impact of these variables on demand would be self-evident. In fact, these concerns are the driving force behind the institutional, programmatic and administrative changes being promoted by the Social Action Programme (SAP) in the education sector.

While pointing out the demand determinants of child labour, the authors might also like to include the specialised nature of the task as an additional variable. This would be true of carpet and some aspects of textile manufacturing.

The Vosti-Lipton homogeneous labour model predicts low fertility rates for low growth areas and high fertility rates for high growth areas. The authors contend that if the analysis is done in the light of a more realistic heterogeneous labour model, the Vosti-Lipton conclusions would be reversed. Both conclusions, while diametrically opposed, are correct because each starts out with different assumptions. Furthermore, the main distinction appears to be one of fixed versus flexible wages. One is not entirely convinced about inherent quality or productivity differences between adult and child labour. Probably, children are capable of doing

the same kind of work but, through coercion, tradition and in the absence of legislation, have to accept a lower wage for it. In fact, the authors posit this in their substitution domino hypothesis. Had child labour been qualitatively different in a more fundamental sense, there would be no basis for modelling substitution or additionality.

The authors have modified the linear Marshallian demand curve by inserting a kink in it, showing the tail end of the demand curve as being relatively more inelastic. Is it not possible that it could be relatively more elastic? The premise is that adults are not prepared to accept lower wages but children are and, hence, they are filling a gap. We have no *a priori* notion of how large or small this gap is. Second, the modification of the demand curve could just as easily be in the form of a discontinuity as in the form a kink. In fact, this would appear closer to reality. However, as the authors have pointed out these aspects need to be empirically investigated.

In conclusion, I would like to express my thanks for the opportunity to comment on a thought provoking, well written and topical paper.

Shaheen Rafi Khan

USAID,
Islamabad.