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WAGES AND PRODUCTIVITY OF
CHILD LABOUR: A CASE OF
THE ZARDOSI INDUSTRY

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This paper attempts to address the demand side strategies of child workers in the traditional zardosi industry based on a primary survey. The detailed analysis reveals that child workers constitute a critical factor in determining the productivity and profitability due to nature of work in the industry. However, exploitation of child workers is also reported in the industry with low wages and longer hours of work. Overall, demand side analysis clearly shows that the presence of child workers plays a significant role in determining the profitability of the workshops. Training and skill development with schooling for children needs special attention so they can later enter into the labour market with skills in hand, which would also enhance their bargaining power. Enforcement of minimum wages and legislative provisions related to working conditions, employment security, etc., need to be considered. Awareness and policy interventions regarding the importance of education and skill training of children to parents would be an attempt in the direction of complete abolition of child workers.

I. INTRODUCTION

Child labour is undeniably a part of the workforce, in both the organised and unorganised sectors of the Indian economy. The country holds the dubious distinction of having the highest concentration of child labour in the world with an estimated 12.6 million child labourers including 6.8 million boys and 5.9 millions girls, according to 2001 population census. Despite divergent estimates, and contrary to all the proclamations in the Indian Constitution and various Acts, the problem of child labour is a reality in India. The common characteristic of most of the child labourers all over the country is their concentration in unskilled and simple routine works, which offer little or no opportunity for innovation or scope of transfer to other more remunerative jobs, and thereby of betterment in the quality of their lives.

The history of providing legal protection to child labour through the enactment of child labour legislation in India is 120 years old. Beginning in 1881, when the Factories Act, regarded as the first protective child labour legislation was passed, many laws have been enacted to safeguard the interests of the children, while amendments have also been made in the existing laws to make them more effective. In order to bring in uniformity in the laws against child labour, in 1986, the Child Labour (Prohibition and Regulation) Act, 1986 (CLA) was enacted, keeping in mind the economic and social aspects of child labour. Specifically, it bans the employment

of children, that is, those who have not completed their 14th year, in specified occupations and processes (NIDC, 1995; GoI, 1999, 2002; Ghosh and Sekar, 2002).

In spite of the existence of legislative measures, the involvement of child labour continues unabated. Extensive research has been carried out to examine why child labour still persists in India, and it takes into account various factors such as socio-economic determinants, social customs, etc by several researchers in the past (Burra, 1986; Mishra and Pande, 1992; Gupta, 1995; Rao and Rao, 1998; Burge, *et al*, 1998; Das, 2000, 2001; Malik, *et al*, 2002; Ramachandran and Lionel, 2002; John and Ghosh, 2002; Antony, 2003; Sharma, *et al*, 2004; Lieten, 2004). However, very little systematic research has been done to assess why there is a high demand for child labour. It is assumed that because children are generally paid less, employers prefer to employ them so as to lower their costs and increase profits.

There is a dearth of studies that investigate the demand-side factors of child labour as compared to the supply side research, which generally concentrates on household factors (John and Ghosh, 2002; Ghosh and Sharma, 2002). Although the exploitation of children is widely talked about by researchers/activists, little evidence exists with regard to the specific details of this exploitation in the strict economic sense, that is, whether children are more or less exploited than adults according to their overall contribution to the unit labour costs of the Workshop¹ (ILO, 2003). As such, the demand-side strategies to address child labour have not been evolved properly. There is a plethora of analysis and literature on the socio-economic circumstances of child labour. This paper attempts to address the gaps outlined above with a major emphasis on capturing the relationship between the children and the workshop, where they are employed or sub-contracted to, and their profitability and productivity within the same.

There has been hardly any research in India that directly tests the relationship between the degree to which the production process utilises child labour and the profitability of output. The reasons for the lack of research in this area are probably methodological. For example, there exist considerable difficulties in eliciting responses from employers, workers and their families, and perhaps other agents connected in the supply chain. There may also be difficulties in ascertaining wages, particularly wherein children's contribution to the overall family income has to be imputed, due to the nature of the remuneration. This paper has attempted to overcome these problems and provide a framework for analyses of children's productivity and wages vis-à-vis adults.

II. OBJECTIVES OF THE STUDY

The principal objectives of this study are to: (a) Demonstrate the contribution of child labour to output and profitability; (b) Compare their output and profitability with that of adult workers to ascertain productivity; and (c) Ascertain, to a lesser extent, whether there are incentives on the part of the employers, not relating to productivity, which influence the employment of child labour.

III. SELECTION FOR INDUSTRIES/SECTORS

The problem of child labour in India is rampant in numerous occupations and processes. In order to select an industry or a sector, the study focused on the following broad criteria: (a) The industry has an identifiable production process where costs and dividends can be identified at each stage of the process; (b) There is wage employment of children; and (c) The work is legally deemed as child labour, according to the ILO Convention 138 and local legislation, and hazardous to the health and well-being of the child. Children should be below the age of 15 years (completed 14 years or less).

Child labour is considered as part of a substantial cost-saving mechanism to employers and hence a means of augmenting profits. Previously, much of the work done by children was factory-based wherein the conditions were very hazardous. However, a public outcry against children's working conditions has resulted in workshops leading to the moving of much of the production process out of the purview of legislative cover. Many would argue that the process of globalisation has led to the demand for a more flexible and informal workforce. Much of the work that once was undertaken in factories is now carried out inside homes. A significant part of the production process that was earlier carried out in the factory by children, has been transferred to informal home-based production units in order to circumvent the law. The Labour Commission Report of the Government of India (National Labour Commission, 2001, p. 168) has stated:

“In recent years much of the paid work that used to be outside the home has now been transferred to home-based work within the home. There has been a tremendous rise in home-based work in the last decades and many activities like carpet-weaving, match-making and glass works which used to be done in factories and sheds is now done by children within the homes.”

A lot of manufacturing activities such as glass bangle production, *beedi*-making, fireworks and match-making have moved from factory-based industries, wherein there was direct recruitment and payment was made directly to the children, to home-based piece rated payment systems. In these situations, the heads of households are paid on behalf of the entire family, thus allowing employers to disclaim knowledge regarding who is actually working for them, children or adults. Since it is the parents that are recruited rather than the children, it was thought that many of these industries could not be used for the study, though their production process and end-product provide convenient opportunities for comparing child and adult performance, as the output is easily identified and measured.

Therefore, the traditional *zardosi* industry is appropriate for carrying out an in-depth study of the wages and productivity levels of child labour in the light of the criteria discussed above. *Zardosi* is a traditional craft, entailing hand embroidery work with gold, silver and other threads, on various types of garments including *sarees*, *dupattas*, *lehengas*, *cholis*, caps and shoes, among other things.

About the *Zardosi* Industry

The industry has a long historical background. Enough evidence has been found of the existence of *zardosi* craft in India since the Mughal period of the fourteenth and fifteenth

centuries. Over a period, this craft adapted itself suitably to changes in political patronage. The craft spread to the European market and in the modern era, it has found American, Middle East and Japanese markets. Overseas patronisation has, in fact, helped revive the crumbling market outlets for this craft. These economic networks have had a direct influence on the design, form, social and production patterns involved in *zardosi* work.

This craft saw a renewed demand all over Indian metros and foreign shores in the late nineteenth century. It has since then also become a part of the Indian bridal couture. Traditionally, only men did *zardosi* work, and mostly in the cities of Lucknow and Kolkata—the traditional markets for embroidered textiles. Currently, however, other cities like Hyderabad, Chennai and Mumbai are also emerging as new major *zardosi* centres. Today, it is estimated that 10-15 per cent of the thousands of *zardosi* workers are women. Their numbers are growing partly because of rehabilitation and livelihood schemes run by some of the NGOs. After Independence, efforts have been made to help the industry through the All India Handloom Board and the Handicrafts Board by sponsoring training programmes for workers in order to impart the required skills to them.

(i) *Zardosi Embroidery Process*

The word *zari* means gold thread and *zardosi* embroidery is heavily encrusted gold thread work, which is extremely intricate. Some of the main varieties of *zardosi* work are *Dapka*, *Salma*, *Nakshi*, *Ari* and *Goti*. In earlier days, *zardosi* embroidery work was done by using only real gold and silver threads. Today, however, that is history, and what one gets instead is synthetic or 'tested' *zari*, made by melting metal ingots and pressing them through perforated steel sheets, to be converted into wires. They are then hammered to the required thinness. The plain wire is called *baadla*, and when woven around a thread, it is called *kasav*. *Salma* is a type of flexible thread spirally twisted and used for embroidering floral patterns. Smaller spangles are called *sitaras*, and tiny dots made of *baadla* are called *mukaish*. *Zardosi* has become a blanket term for a particular style of embroidery and sewing of ornaments on to garments, regardless of the thread quality. Lately, work done in coloured cotton thread of gold, silver and other colours is also being called *zardosi*, if it is done in the traditional style. The *zardosi* work looks delicate and it takes a long time to complete a piece of work. The embroidery is done with the help of a common needle for running the thread known as *zari* (a thin spiral like copper pipe with golden polish) and other material such as beads, etc., which are also used for the embroidery. The pipe-like thread or *zari*, when stitched with the help of a common needle in specific patterns, imparts a thick embossing effect on the cloth. The process of carrying out *zardosi* work is elaborate and is done in several stages. First, a pattern is traced on the fabric. The pattern is then pricked along the tracing with a pin. Chalk powder is spread on the fabric and then dusted off so that each tiny hole is highlighted. The actual embroidery is then done along this outline. Work along the outline, which is called *ari*, is mostly done by the child workers.

(ii) *Forward and Backward Linkages*

The artisans of this craft depend mostly on the contractors and sub-contractors (in a loose sense, in this case, the *karkhanedar* is equal to sub-contractor), to a large extent. A

contractor is linked up with the shopkeeper in the market, who is, in turn, linked up with exporters. Some of the *karkhanedars* are also directly in contact with the exporter.

The craft is not purely intended for the export market as *zardosi* products also have a large demand in the domestic market. The *karkhanedars* go to shops/offices of the trader in the main market every week to settle the accounts for the work finished during the week and collect orders for the following week. It is for this reason that the atmosphere in the *karkhanas* (factories) is comparatively intense during the weekends. The shopkeepers or exporters provide raw materials, cloth, threads, beads, etc., to the artisans through the *karkhanedars*. The raw material including cloth may not necessarily be made locally. In many cases, it comes from places as far as Surat, Mumbai, and even cities in Tamil Nadu.

(iii) Nature of Production

The *zardosi* industry is organized somewhat like a three-tier basis in which the power lies mainly in the hands of the big businessmen and the exporters. At the top of the system are the manufacturers (who are also the exporters in many cases) and the traders. They finance the production by supplying the necessary materials like the pieces of cloth, saris or curtains on which the embroidery is to be done. Sometimes designs are also specified. Each manufacturer or trader is associated with a *karkhanedar* who gets the work done through the *karigars*. The *karkhanedars* (who are in the second tier) are the commission agents and in most of the cases the *karkhanedar* is also a *karigar*. The workers who actually do the embroidery work are the *karigars*. These *karigars* who are the skilled workers form the lowest strata in the entire system. Once the traders place the orders, the *karkhanedars* take them to their *karkhanas* and get the work done by the *karigars*. Many a time's orders are also taken directly by the artisans from the traders and *karkhanedars*. However, the percentages of individual buyers, who directly contact the *karigars* are very small.

(iv) Child Labour

Since special expertise is required on the part of the *karigars* (artisans), their wages are expected to be high, in fact, much higher than those of unskilled labourers. However, in a traditional craft-based occupation with a closed labour market, wherein the skill passes from one generation to another, social and cultural determinants of the craftsmen lead to an internally generated demand for child labour in the industry. Also, the external forces in the form of static technology with low level of productivity coupled with low-income levels, generate a high demand for child labour. Thus, on the one hand, we talk of a closed labour market, and on the other, the low productivity of the *karigars*, which leads to a greater demand for labour. Coupled with static technology, this makes the transfer of skills from one generation to the next easier.

In this industry, the technique of production has not undergone any major change. As a result, the skill required for carrying out the trade passes on from generation to generation. Since the skill requirements of the craft are not changing, the children of the *karigars* seem to develop an understanding and learning of the craft at an early age, as they see it being carried out done in the nearby *karkhanas*. The maximum period required to acquire the skill is about

3–4 years. Hence, training for two or three years is enough for a child to become a *karigar*, thereby adding to the family income as a regular wage earner. Obviously, employers benefit by employing children as the latter's wage rate is generally more flexible than that of the adults. Moreover, children basically work as apprentices and therefore, it is not necessary to pay them a full-fledged wage, which is again a major motivating factor for employing children. Thus, if the adults in this industry are exploited, then the children stand twice exploited.

IV. METHODOLOGY AND SAMPLE SELECTION

Keeping in view the objective of the study, both quantitative and qualitative methods were used to get the required information. Three sets of questionnaires (Employer, Adult worker and Child) were used to elicit the requisite information. While formulating these questionnaires, the following points were taken into consideration: (a) Identification of production chain; (b) Gathering data on children's earnings, to elicit necessary information on child wages from employers, adults and children, for ensuring consistency and reliability of child wages; and (c) Child labour productivity.

Apart from the questionnaire method, a close observation of a few workshops was done to observe the process, mechanism of the child workers' assignment in the workshop. A few case studies were also undertaken to observe the social background and other factors involved in each of the sectors.

Sample Selection

The *zardosi* industry is located in the city of Lucknow and its rural hinterlands. The primary data has been collected through the multi-stage purposive sampling technique. During the first stage, the areas where there was a concentration of *zardosi* work were identified after discussions with the local people. During the second phase, contacts were established with the local residents and residents of the identified areas so that the work spots could be identified and accessed. Finally, during the third stage, workshops were identified for the survey. A total of 160 workshops were selected by using the purposive sampling method, in order to ensure representation of the industry.² In order to draw a comparison between the workshops using child labour and those not doing so, it was decided to cover some 'adult only' units. Since a majority of the units use child labour, the coverage of the 'adult only' labour units was low. Thus, out of the total sample of 160, there are only 38 units in which children do not work.

V. MAIN CHARACTERISTICS OF ZARDOSI WORKSHOPS

This section discusses information regarding the basic characteristics of the *zardosi* workshops, information about adults and children, wage payments and hours of work. It also attempts to bring out the differences between workshops using child workers alongside adult workers and workshops using only adult workers.

1. Basic Characteristics of the Workshop

(i) Profile

A total of 160 workshops were covered under the study including 122 (76.25 per cent) workshops employing child labour (henceforth called child workshops) and the rest 38

(23.75 per cent) without child labour (henceforth called adult workshops). None of the surveyed workshops was registered with any authority. The use of child workers was most common and visible in many units, which could be attributed to the absence of registration and regulation by the public authorities. The average size of the workshop was 5.6 workers in a workshop employing children and 4.08 in that employing adults. On an average, the —The classification of workshops by the year of establishment revealed that most of them were set up more than five years back, and only about 10 per cent of the units were established during the past three years. The rest had a span ranging from 4 to more than 15 years. It was also noted that over 15 per cent of the units were more than 15- years old and over 17 per cent of the units that employed child labour were over 15-years old (Table 1). While this does not reflect *per se* the existence of child labour in the industry for the last many years, one can make a conjectural inference that the incidence of child labour in this industry is not recent.

Table 1
Span of Operation of Workshop and Type of Workers

Type of worker	Existence period (in years)					Total
	1-3	4-6	7-10	11-15	15 +	
Child	8.20	20.49	31.97	22.13	17.21	100(122)
Adult	13.16	23.68	28.95	28.95	5.26	100(38)
Total	9.38	21.25	31.25	23.75	14.38	100(160)

Source: Field Survey for all Tables.

The newer workshops (less than 3-years old), constituting about 13 per cent of the total sample, were more likely to be employing adult labour. However, one can observe that the units set up during the past 1-3 years (8.2 per cent of the units) also reported the incidence of child labour and therefore, any inferences that newer workshops were not employing child workers must be used with caution (Table 1).

(ii) Working Hours of the Workers

The working hours for most of the workshops start early in the morning between 8 a.m. and 9 a.m. and the workshop closes around 7 to 8 p.m. Invariably, there was a one hour break for lunch in a day, with perhaps some time set aside for prayers (generally in the case of Muslim workshops).

Table 2
Average Hours of Work

Worker	Type of workshop		Total
	Child	Adult	
Child	6.77	-	6.77
Adult	8.14	7.99	8.10
Total	7.75	7.99	7.79

It can be observed from Table 2 that there was a marginal difference between the average number of working hours of child and adult workers. The average number of working hours per day was around 7 for children and 8 for adults. However, there was no such difference in the average number of working hours between the child and non-child workshops (see Table 2).

2. Classification of Workers

(i) Workers' Profile

The proportion of total adult workers and adult workers employed in child-employing workshops were 76.72 per cent and 71.91 per cent, respectively. The overall percentage of child workers in the total sample was 23.28 per cent, and 28.09 per cent in child-employing workshops (see Table 3).

Table 3
Distribution of Workers by Type of Workshop and Workers

Worker	Type of workshop					
	Child		Adult		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Child	166	28.09	-	0.00	166	23.28
Adult	425	71.91	122	100.00	547	76.72
All	591	100.00	122	100.00	713	100.00

The average age of the workers in child- and adult-employing workshops was 20 years and 23 years, respectively. However, the average age was 11 years for a child worker and 23 years for an adult worker. This analysis shows that mainly younger child and adults are working in this industry.

Anecdotal discussions that took place with the workers during the course of the survey indicated that the craftwork affects their eyesight adversely at a very early age and as a result, the workers are not able to work beyond a certain age (usually middle age) or after a certain number of years of work. The above analysis thus indicates that a majority of the workers were young in both the child and non-child workshops, perhaps lending support to the notion that workers in this industry retire early due to work-related injury and hazards.

(ii) Type of Workers by Mode of Payment

Most of the workers were paid on a daily and weekly basis. The monthly payment was made to a minuscule proportion of the workers (0.84 per cent) and an overwhelming majority received weekly payment (89.48 per cent), while about one-tenth received payment on a daily basis (see Table 4). There was also no difference in the modes of payment of wages between the child and non-child workshops. This means that most workers were not in the 'regular' category in this industry. Even though the nature of work might have been

Table 4
Distribution of Workers by Mode of Payment

Payment mode	Workshop type		
	Child	Adult	Total (%)
Daily	9.64	9.84	9.68
Weekly	89.51	89.34	89.48
Monthly	0.85	0.82	0.84
Total (%)	82.89	17.11	100(713)

Note: *125 were owners of the workshop.

regular in certain cases in the *zardosi* industry, but no usual benefits were provided to the workers as were provided to the regular workers (monthly payment) in other sectors. This would, in effect, imply that there is a great deal of insecurity and vulnerability associated with *zardosi* work.

(iii) Wages or Compensation

The broad definition of compensation includes monetary and non-monetary compensation. The study indicates that in the *zardosi* industry, non-monetary benefits are not provided. The average wage per month of workers in the child workshops was less than that of the non-child workshops (see Table 5). In the child-employing workshops, children were being paid low wages, which makes the overall average of the compounded wages in the child workshop low.³

Table 5

Payment mode	Average Monthly Wage by Type of Workshop (Rs.)			Workers' type		
	Workshop type		Total	Workers' type		Total
Child	Adult	Child		Adult		
Daily	1325	2084	1457	259	1957	1363
Weekly	1434	1713	1482	330	1847	1451
Monthly	1558	1560	1558	-	1558	1558
Total	1425	1748	1480	321	1853	1443

Table 5 clearly shows that the average monthly wage of child workers was far lower at Rs. 321 than that of the adult workers at Rs. 1853. The average payment made to children on a daily basis was lower than that on a weekly basis; however, in the case of adult workers, the opposite is true. During some parts of the year, the work was not available, and hence the monthly wage payments for adult workers were lower than the daily and weekly payments made to workers. There was no provision extra benefits reported by the workers in this industry.

Wage disparity and discrimination was visible as 98 per cent of the child labourers (120 out of 122 child workers) claimed that there was a difference between the child and adult wages. The main reason for child workers getting lower wages was their little or no experience as also the fact that child workers cannot carry out as much hard work as the adults. Hard work in the *zardosi* context often means executing intricate embroidery patterns, complex stitches and the placement of *salma sitara* (sequins and other ornaments) in elaborate arrangements. More than half of the adult workers (51 per cent) pointed out that the child workers are useful for the *zardosi* industry. This is primarily because the children save time as 50.82 per cent of the adult workers revealed that children were available on low wages, which would lead to a reduction in the costs and thereby more profits for the workshops.

Out of all the adults who responded as to why children are useful, 83 per cent said that children save time as they do small work like the initial embroidery work (bordering and lining), which helps adult workers to save time later.

*(iv) Training and Literacy**(a) Training*

Recruitment and training are the two most crucial components in any workshop. The recruitment process interfaces with the access of labour to the industry while the training part emphasises the requirements of modernisation and skill upgradation of the workers. Most of the employers of the child workshops (64 per cent) said that they provide training to the workers. But in the case of ‘adult only’ workshops, no training was provided. This revealed that children do get training when they work in child workshops, whereas in the ‘adult only’ workshops, trained craftsmen join as workers. However, when the adult workers and employers were asked about training, most of them responded that the children in the workshop had been provided training. As regards the mode of training, children in the workshops acquired training mostly by observing the master craftsmen. However, the employers also said that in some cases, live demonstration was also provided, while in certain cases, they learnt by themselves.

(b) Literacy

As far as literacy and education are concerned, it is seen that in most cases, the levels of literacy of children and adults are close to the state averages. Almost an equal proportion of the child and adult workers were literate, and the literacy rate was quite close to the state average, which means that children had started attending school at an early age. The education level of the child and adult workers, however, does not necessarily imply regular school education. Children and adults who had attended religious institutions like the *madarsas* were also included in the literate status. Usually, they were seen to have spent a few years in these institutions and were able to read and write simple Urdu. In this study they were treated as literate.

Table 6 shows that the percentage of children below the primary level of education was very high, though given the average age of the children, it was greater than 11 years. This explains that many children dropped out after the primary school level and joined the workforce (the proportion of children who had been associated with the next stage of schooling was significantly lower than the former). This highlights the fact that the dropout rate after the primary level was quite high. In the case of literate adult workers, they were distributed in all the levels with the highest being at the middle level of education (see Table 6).

Table 6
Educational Level of Child and Adult Workers

<i>Level</i>	<i>Child</i>	<i>Adult</i>
Below primary	50.00	16.48
Primary	40.48	25.27
Middle	9.52	49.45
Secondary	-	8.79
Total	84	91

It can be seen from Table 7 that child workers, who were literate, started working only after completing nine years. In fact, the average age of literate child workers grows with experience.

Table 7
Educational Level of Child Workers with Experience and Average Age

Schooling	Experience				Total
	Less than one year	Exactly one year	Between 1 and 2 years	More than 2 years	
	Average age				
Below primary	10	11	12	11	11
Primary	10	11	12	12	12
Middle	11	-	13	12	12
Total	10	11	12	12	11

(v) Age Distribution and Experience

Child labourers in the *zardosi* workshop mostly belong to the 10–13 year age group. About 64 per cent of the workshops had one child worker, while 30 per cent had more than one child per workshop. This reveals that the representation of child labourers in the workshops was quite significant as the average number of workers per child-employing workshop stands at about 6.

Almost 60 per cent of the child workers, with an average age of 12 years, had work experience of more than one year. In the case of adult workers, whose average age was 25–29 years, 96.18 per cent had more than 6–10 years of experience. In the *zardosi* industry, the average age of the adult workers is less than around 30 years, though a substantial number of them have spent more than six years in this work. Anecdotally it has been ascertained that after a certain age or more than 15 years of work experience, a majority of the workers become incapable of carrying out the work due to poor eyesight. Since children enter this craft at an early age, therefore, the adverse effect of this craft on their eyesight is a cause for serious concern. From this analysis, it can be conjectured that many of these workers would have joined these workshops at a very young age, though it cannot be concretely established whether they joined as child labourers.

Case Study of Child a Worker

Shahabuddin (not his real name) is a 12-year old worker, who lives with his family at Chowk. His father works as a tailor and his mother is engaged in household chores. He has three brothers aged 15, 12 and 6 years, respectively, and one sister, who is 10 years old. He has studied up to class V and dropped out five months ago. He was irregular at school. He claims that when he was in school, he enjoyed the science subject. Shahabuddin works in a *zardosi* Workshop at Chowk and puts in about 6-7 hours of work per day. When he was asked about his aspiration and what he would like to become, he was not able to respond and an elderly neighbour commented that “it is these children’s destiny to do this work”. He gets about Rs. 50 per week as wage, out of which he gives Rs. 40 to his mother and keeps Rs. 10 for himself. He says that his employer has promised to him that in two to three years, he will give him full pay. His elder brother, who is 15-year old, also works in a *zardosi* workshop. When the interviewer was talking to Shahabuddin, he was sewing golden-coloured thread into a Benares style machine-printed *sari* in organza with *salma sitara* being sown on with mut, while his brother was sewing coloured thread with a needle.

(vi) Migration

A majority of the children had migrated from rural areas (56 per cent), while only sixteen child workers (13.11 per cent) reported having migrated from other places.

(vii) Task of the Child Workers

Children do mostly the *ari* (bordering) work and sewing *salma sitara* work during their initial years (see Table 8). They are not capable of performing complex jobs and are not trained for certain jobs, and hence they acquire training by doing simpler jobs initially. The fact that their hands are soft is also one of the reasons why they are given this type of work to do initially.

Table 8
Child Workers According to Type of Work (%)

	<i>Sewing fabrics</i>	<i>Tracing pattern</i>	<i>Threading needle</i>	<i>Salma Sitara</i>	<i>Zari</i>	<i>Zardosi-embroidery</i>	<i>Ari</i>	<i>Others</i>	<i>All (No.)</i>
Child	4.92	5.74	60.66	84.43	9.84	36.07	93.44	-	122
Adult	-	-	-	86.14	22.89	27.71	90.36	4.22	166

Note: *One worker does two or three jobs—all jobs are combined together.

The difference between the quality of work performed by the children and adults, according to their employers, is mainly that children do not have the experience to do highly skilled jobs, which they learn in the due course of time.

(viii) Working Hours of Child Workers

Children usually start work late in morning, that is, around 11 a.m. to 2 p.m. and finish the work about 7 p.m. to 8 p.m., with a half an hour break in between. The average duration of stay in the workshop for children is this about 6-7 hours per day (as mentioned earlier).

Case Study of an Adult Worker

Khadir (not his real name) is 19- years old. He completed class VI at the local school. He and his three cousin brothers have been working in the local *zardosi* workshop. His cousins are aged 10, 12 and 14 years, respectively. He lives in a joint family and is not married. He has two sisters aged 10 and 12 years, who are studying in the school. He has four brothers, aged 13, 15, 18, and 24 years. All of them are engaged in *zardosi* work. While the elder two get wages, the younger ones do not get any wage at all. His household income is approximately Rs. 1600 per week. His eldest brother brings the most money to the house. Khadir started working when he was 12-years old. At first, he learned bordering, threading, and how to put *tiki (salma sitara)* on the garments. He says that he enjoys his job. His ambition is to own a workshop or shop but he feels that it is beyond his capacity. He works six days a week. He says children learn work by watching the adults doing it for an hour and then they try it out on their own on *betan* material (practice on canvas). He says it takes about one year to fully learn all the skills. He says that by the time he reaches the age of 40, he may get vision impairment (eyesight problem). He works for about eight hours daily and often the work time extends beyond that as well. He says that children at his shop get a daily wage of Rs. 5-10. According to him, a 13-year-old child labourer gets Rs. 50 per week while a 15-year old gets Rs. 100 per week.

VI. PRODUCTIVITY AND PROFITABILITY

This section discusses the following key issues: productivity, profitability and exploitation of child labour by using an econometric model. It also includes an analysis of results that give an indication of the measurement of the key concepts discussed.

1. Productivity

In the *zardosi* workshops, children and adults also perform different tasks that contribute to the overall outcome in terms of the embroidered apparels. The children in the industry are generally employed for doing the bordering and lining of the embroidery, which is also part of the production process. In a majority of the cases, restructuring of the production process would have taken place if children were not employed. There would also be a difference in the output of the workshop when they use children and when they do not use children to perform these tasks.

Two approaches have been adopted in the measurement of productivity of child labour in the *zardosi* industry. The first approach is adopted to compare the performance of child-employing workshops with those employing adults by measuring throughput, revenue and profit. The second approach adopted uses the regression method to measure the incremental value of the child workers' contribution.

Table 9

Average Level of Throughput, Capital (Fixed Asset), and Type of Labour Cost and Revenue							
Type of workshop	Average apparels per month	Average adult labour's time per week	Average child labour's time per week	Average cost per month (Rs.)	Average revenue per month (Rs.)	Average profit per month (Rs.)	Ratio of revenue to cost
Child	15	39	35	10,352	18,059	7,707	0.74
Adult	12	36	-	7,755	13,138	5,383	0.69
Total	14	38	35	9,735	16,890	7,155	0.73

It was observed that workshops which employ child workers had better throughput, indicating that the adult workers in the workshops not having child workers contributes less number of hours in a week. Both the profit and revenue were higher in the case of child-employing workshops, though the average cost was also on the higher side for the same. The higher ratio of profit to cost in child-employing workshops strengthens the argument that child workers were being paid lesser amount of wages while contributing to higher profitability (see Table 9).

Table 10

Average Child Labour, Throughput, Capital (Fixed Capital), Adults, Cost and Revenue								
Number of child workers	Number of workshops	Average number of apparels	Average capital (Rs.)	Average number of adults	Average costs (Rs.)	Average revenue (Rs.)	Average profit (Rs.)	Ratio of revenue to costs
0	38	12	3,856	4	7,755	13,138	5,383	1.69
1	83	13	4,950	4	9,378	15,560	6,182	1.66
2	35	17	6,099	4	11,548	21,989	10,441	1.90
3	3	22	11,533	6	20,622	37,033	16,411	1.80
All	160	14	5,123	4	9,735	16,890	5,383	1.73

Note: In the analysis, one record indicating the number of child labourers as 4 has been dropped because there was just one sample in this category

Table 10 indicates that the average level of physical output (embroidery apparels), average capital, cost, profit and revenue increase with the number of child employed. Similarly, the ratio of revenue to the cost also indicates the same trends, wherein child-employing

workshops had a higher ratio, with the exception being workshops that employ one and four children. It can also be seen that there was a significant change in profitability when a workshop employed two children. One can thus conclude that employers would gain more economies of time when two children support the workshop instead of one.

As stated earlier, an attempt was made to measure productivity differentials by using the regression approach.

Model 1:

$$P = b + b_0a + b_1b + b_2k + b_3d + e \quad (1)$$

where

'P' stands for net output (profit per month) of the workshop; net output has been calculated by deducting total cost from revenue.

a = number of child workers employed in each workshop

b = no of adult workers employed in each workshop

k = capital intensity defined as capital per worker

d = size dummy- smaller emp size (1-5)=0 and large emp size (>5)=1

Model 2

The second model is specified as follows:

$$P = b + b_0a + b_1b + b_2k + b_3d + e \quad (2)$$

where

P = Revenue per month of the workshop

a = Number of child workers employed in each workshop.

B = Number of adult workers employed in each workshop.

K = capital intensity is defined as capital per worker.

d = size dummy- smaller emp size (1-5)=0 and large emp size (>5)=1

Model 3

The third model is specified as follows:

$$P = b + b_0a + b_1b + b_2k + b_3d + e \quad (3)$$

where

P = Physical output (no of apparels per month) of the Workshop

a = Number of child workers employed in each Workshop.

B = Number of adult workers employed in each Workshop.

K = capital intensity is defined as capital per worker.

d = size dummy- smaller emp size (1-5)=0 and large emp size (>5)=1

It was assumed that the higher the number of workers (child or adult), the higher would be the physical output, revenue and profit. Also, it was highly likely that physical output, revenue and profit would increase with higher capital intensity. Therefore, we postulate that the sign of coefficients, such as the number of child workers, the number of adult workers, and capital intensity would be positive. The results show that all the coefficients turned out to be positive across three models.

Table 11
Regression Results of the Above Models

Variable	β Coefficients			Standard error		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Number of children	2419.90 ***	4033.81 ***	2.83 **	554.43	615.24	0.81
Number of adults	980.92 **	2711.70 ***	1.53 **	369.09	409.57	0.54
Capital intensity	0.76	1.14	0.0	0.5	0.55	0
Size dummy	81.62	1671.35	1.16	1274.57	1414.36	1.85
Adjusted R ²	0.24	0.57	0.24			
No. of observations	160	160	160			

Note: ***Significant at 1 % level; ** Significant at 5% level; * Significant at 10% level.

The significance level of individual coefficients indicates that the variables relating to the number of child and adults are significant in all the three models. As far as capital intensity and size dummy are concerned, either of them turned out to be insignificant. Evidence presented from the model reveals that the profit of the workshops depends on both child and adult labour, as the coefficients of both are positive and highly significant. The ratios of children to adults in the models are 2.5, 1.5, and 1.8, respectively. All the results in Table 11 indicate that the influence of child workers on profit, revenue and physical output of the workshops is more than that of the adults.

Model 4: (Cobb-Douglas Production Function)

The Cobb-Douglas production function, which defines output as a function of capital and labour, has been used further as follows:

$$Y = \alpha L_1^{\beta_1} L_2^{\beta_2} K^{\beta_3} e^{\epsilon}$$

To transform the above model into a log form, natural logarithms are taken on both sides of the equation:

$$\ln(Y) = \beta_0 + \beta_1 \ln(L_1) + \beta_2 \ln(L_2) + \beta_3 \ln(K) + \epsilon$$

where $\beta_0 = \ln(\alpha)$ is the intercept of the log model, and the slopes β_1 , β_2 , and β_3 are interpreted as elasticities.

where:

Output = Y

Labour = L

Number of children = L1

Number of adults = L2

Capital = K

Table 12
Result of Cobb-Douglas Production Function

Variable	b Coefficients	Standard error
Number of children	0.592**	0.174
Number of adult	0.273*	0.157
Capital	0.401**	0.122
Adjusted R ²	0.2	
No of observations	160	

Note: ** and * denote the significance level at 5% and 10%, respectively.

Evidence presented in the above model suggests that the sign of the coefficients turned out to be positive and significant. However, the estimated adjusted R square is low at 0.2. Further, the results imply that the marginal productivity of children is higher than that of the adult workers. In other words, the elasticity of output with respect to child workers is more than that of adults in this particular industry. Since child workers in the *zardosi* industry are involved directly in the production process, their contribution is also high. These jobs add relatively more value to the final product than other assignments in which adult workers are largely concentrated. In addition, these jobs speed up the process of production. This is reflected in the higher marginal productivity of children in this particular industry.

2. Exploitation

It is assumed that workshops employing children often do so because it improves the throughput of their workshops with less remuneration being paid to the child worker than to the adult workers for the similar tasks performed. This explains the concept of exploitation.

In the *zardosi* industry, the throughput and profit per month increases with the number of child workers in the workshop. The result shows that if an employer hires one more child, the average throughput goes up by 4 to 24 apparels in terms of numbers and similarly the average profit and labour cost also go up.

The average unit labour cost per month also reveals a similar pattern but this change is not as notable as the one witnessed in the case of average profit. Thus, one can conclude that child workers were being paid meagre amounts and were more economically exploited than adult workers in the *zardosi* industry. The throughput of child-employing workshops was seen to rise steadily as a child worker was added. The labour cost did not increase in the same proportion as the output, (generally it decreased in real terms with an increase in throughput via adding a child labourer). This implies that child workers are more exploited in the *zardosi* industry, as the throughput increases by 283 per cent while the labour cost rises by only 140 per cent with an increase in the number of child workers from zero to four.

3. Profitability

Systemic productivity is the definition of productivity being used in this analysis. This is also relevant to profitability. Initial investigations revealed that workshops with more workers had greater throughput. On an average, workshops with children had a better throughput.

It can be observed from Table 14 that as the throughput size (number of apparels) increases, profitability also increases, particularly in child workshops. This was true in all the apparel size groups barring the lowest and the highest ones. This corroborates the broad evidence that child-employing workshops had a higher intensity of profitability. The principal reason for higher profitability was directly related to the low wage cost in these workshops. The exploitation of children by paying low wages was thus the prime mover for higher profitability.

VII. CONCLUSION AND POLICY ISSUES

The study of the *zardosi* workshops brings out interesting insights into the productivity and profitability of employing child labour, and possible explanations for employing child

Table 13
Throughput of Workshops by Size of Child Workforce and Wages Paid

<i>Number of child workers</i>	<i>Average adult workforce</i>	<i>Throughput per month (average no. of apparels)</i>	<i>Average profit per month (Rs.)</i>	<i>Average labour cost per month (Rs.)</i>	<i>Average unit labour cost per month (Rs.)</i>
0	4	12	5,383	5,613	1901
1	4	13	6,182	6,391	1814
2	4	17	10,441	7,304	1871
3	6	22	16,411	14,129	2210
All	4	14	7,155	6,596	1859

Note: In the analysis, one record indicating the number of child labourers as 4 has been dropped because there was just one sample in this category.

labour from the demand side. The study identifies children's contribution to productivity, throughput as well as profits. Several policy implications can be drawn on the basis of the findings of the study. In order to provide the context, the summary findings are recapitulated below, followed by a set of recommendations.

The *zardosi* industry is quite traditional in nature, and involves different work processes, which provide a context for employing child labour, as the technology used in this craft has been static for many centuries. Of all the units studied, 76 per cent employed children as workers, and the incidence of child labour was around 26 per cent of the total workforce enumerated in the units studied. An important feature of the work conditions was that most children and even adults are predominantly daily wage earners or weekly wage earners. The wage differential between adult and child workers was quite pronounced in these workshops in both the daily and weekly categories of workers. The average wage of the adults was over six times that of the children in the *zardosi* industry. The reasons for low wages for children did not stem from the fact that they cannot work hard or are less skilled, rather it comes from the fact that they come from poor families and socio-economic backgrounds and thus have low reservation wages and weak bargaining power. In the case of *zardosi* work, most of the learning takes place through observation while in some cases, live demonstration also takes place. Given that this is a traditional skill, on-the-job training and practice become critical, as the workers have to learn the skill from master craftsmen only.

The average age of the workers was comparatively low in this industry. Given that the skill and craft work that they were engaged in is strenuous for the eyes, most workers report visual impairment at a later stage in their lives. Many of the workers would normally join at a very young age and would move out of the occupation as they reach middle age. As regards productivity and profitability, the results from the analysis revealed that the presence of child labor was a critical factor in determining the productivity, throughput and profitability. The results demonstrate that the influence of child labour was more than that of adults. It can be demonstrated that if the employer takes one more child labourer on board, the average throughput rises by 4 and 5, if two workers are added and by 24, if three workers are added, and similarly the average profit increases in that proportion.

The study further shows that child workers are more exploited in the *zardosi* industry, as the throughput increases by 283 per cent while the labour costs rise only by 140 per cent with an increase in the number of workers from zero to four children. Thus, the exploitation

Table 14
Distribution of Average Profit by Workshop Type

<i>Apparel output</i>	<i>Capital (Rs.)</i>	<i>Employment size</i>	<i>Type of workshop</i>	<i>Average profit (Rs.)</i>	<i>Workshop number</i>	<i>Total childrens</i>	<i>Total adults</i>	
Up to 10	Up to 2500	3-4	Child	5,040	1	1	3	
			Adult	5,430	1		3	
	2501-5000	3-4	Child	5,705	14	17	36	
			Adult	5,670	16		58	
		4-5	Child	6,049	18	18	72	
			Adult	4,699	2		10	
	5001-7500	3-4	Child	7,100	1	1	3	
			Adult	7,400	1		3	
		4-5	Child	650	1	2	3	
			Adult	5,161	1		5	
	11-15	Up to 2500	3-4	Child	4,030	1	1	3
				Adult	3,535	2		7
2501-5000		3-4	Child	4,020	1	1	3	
			Adult	2,950	2		8	
		4-5	Child	8,158	9	13	32	
			Adult	3,188	2		10	
5001-7500		3-4	Child	12,399	2	2	6	
			Adult	9,125	2		8	
16-20	Up to 2500	3-4	Child	3,590	2	2	6	
			Adult	3,223	3		10	
	2501-5000	3-4	Child	1,640	2	2	6	
			Adult	-	1		3	
	5001-7500	6+	Child	9,491	5	9	36	
			Adult	8,745	1		8	
	21-25	Up to 2500	3-4	Child	3,880	1	1	3
				Adult	4,140	1		3
6+			Child	4,016	1	1	8	
			Adult	4,200	1		8	
5001-7500		6+	Child	19,530	1	1	8	
			Adult	19,770	1		8	

Note: *The workshops wherein there was no child and only adult distribution was found have been deleted for the analysis.

of children through low wages was the prime mover of profitability in the *zardosi* workshops. Given the traditional nature of the work, most of the employers are approached by the relatives or other workers to take their wards as child workers. It can also be seen that it is customary to hire children for engaging in some of the activities in the *zardosi* workshops. While their presence was contributing to the productivity, there was a perception among the employers that children were not able to make as much of a qualitative contribution to the work as the adults. Therefore, according to employers, this was one reason for the low wages being paid to the children.

In the workshops wherein children were not employed, many employers were of the view that it would not make any difference in the work process, as the adults would be engaged in undertaking all the activities. Very few employers reported the need for taking additional workers in lieu of child workers. An overwhelming number reported no change. This brings us to the issue of the value of child labour from the employer's point of view.

The demand-side analysis brings out clearly that the presence of child labour plays a significant role to play in determining the profitability of the workshops. Given this situation and the fact that the wages are critical in determining the profitability and labour replacement in the work processes, one has to identify policy directions and formulate strategies to address the issue of child labor. Families feel that it is necessary for their children to acquire the skill at an early age.

In view of the above conclusions, the following recommendations can be made.

There is a need to ensure registration of all the units, which will facilitate the enforcement of statutory legal provisions available to the workers, especially in addressing the participation of child labour in the workshops. One of the findings of the study is that the higher profitability and productivity enjoyed by the units that employ child labour is at the cost of abysmally low and exploitative wage conditions of children. This warrants policy action and legal enforcement in terms of the complete abolition of child labour in these industries. Given that most employers hire children to save time and attribute their inexperience to the low wages paid to them, such an exploitative practice needs to be stopped with immediate effect.

The perception of the employers is that the activities undertaken by the children can also be undertaken by adults, without enhancing the labour costs in many cases and with an increase of only one-fourth of the current labour cost. This implies that economic viability is not a valid argument for engaging children in these industries. The profitability is many times higher than the costs and the units would still be viable without the presence of child labour in the work processes.

At the same time, the desire of the parents to engage their children in these activities, especially to 'learn the skill' of *zardosi* needs to be considered. This implies identifying suitable mechanisms of training and skill development for children who are of adolescent age so that they will be trained by the time they reach 16-17 years of age and enter the labour market with the requisite skills. This would also enhance their bargaining power. There is a need to develop one- or two-year training programmes in *zardosi*, especially for illiterate and dropout children of the age of 14-15 years, as they would be able to benefit from such schemes. The current rural/urban community polytechnics could start special courses for such children (who are normally illiterate or have had little education, as also girls from the minority communities). The enforcement of minimum wages and legislative provisions related to working conditions, employment security, etc., also need to be considered.

Notes

1. Defined in the ILO-IPEC Terms of Reference by a worker for group of worker divided by the additional output that they are responsible for producing.
2. Only Workshops which are not Own Account Workshop (in which all the workers are family members) and in which the working children are not relatives of the owner.
3. It is to be noted that by converting the wages received (daily or weekly) into monthly figures, we arrive at the comparability of wages on monthly basis. this has been done consistently at the time of manual data scrutiny and verification.

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