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Working Paper

Globalization, reform and the informal sector

WIDER Research Paper, No. 2005/12

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Suggested Citation: Marjit, Sugata; Maiti, Dibyendu S. (2005) : Globalization, reform and the informal sector, WIDER Research Paper, No. 2005/12, ISBN 9291906913, The United Nations University World Institute for Development Economics Research (UNU-WIDER), Helsinki

This Version is available at:

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Research Paper No. 2005/12

Globalization, Reform and the Informal Sector

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April 2005

Abstract

The objective of the paper is to understand the transforming relationship between the formal and informal sector in a liberalizing open developing economy. There are various facets in this relationship, and we focus on three essential aspects. First, we look at the impact of deregulatory policies in the informal sector on informal wages, the earning index of the substantial majority of the workforce in a developing economy. Theoretical discussions are followed by empirical evidence on informal manufacturing in India. Implications of introducing labour laws are also discussed. Then, we highlight the vertical relationship between the formal and the informal sectors and the consequence of reformatory policies, in particular, the impact on the relative size of these segments within an erstwhile protected sector. Empirical evidence from Brazil and Colombia seems to match our theoretical conjectures. We conclude with a discussion of a field-based survey on the changing relationship between formal and informal entrepreneurs in a range of rural industries in India, as these industries gear up for expanded markets and export. This is done to provide further insight into the transformation process.

Keywords: informal sector, reformatory policies, production organization

JEL classification: E26, F16

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This study was presented at the EGDI-WIDER Conference on Unlocking Human Potential – Linking the Informal and Formal Sectors in Helsinki, 17-18 September 2004.

UNU-WIDER gratefully acknowledges the support and collaboration of the Expert Group on Development Issues (EGDI) of the Swedish Ministry of Foreign Affairs. UNU-WIDER also acknowledges the financial contributions to its research programme by the governments of Denmark (Royal Ministry of Foreign Affairs), Finland (Ministry for Foreign Affairs), Norway (Royal Ministry of Foreign Affairs), Sweden (Swedish International Development Cooperation Agency – Sida) and the United Kingdom (Department for International Development).

ISSN 1810-2611 ISBN 92-9190-691-3 (internet version)

Figures and tables are given at the end of the study.

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Camera-ready typescript prepared by Liisa Roponen at UNU-WIDER

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1 Introduction

It is recognized that a substantial part of economic action in the developing world takes place in the informal sector which hosts unregistered or officially unrecorded activities. It follows that the size of informal employment would also be substantial. Agenor (1996) and references therein suggest that the share of informal employment may be as high as 70-80 per cent in many developing countries. For example in India the proportion is as high as 90 per cent when agriculture is considered as a major section of the informal sector. The informal sector likely produces goods and services which are vertically linked to those in the formal sector, either as finished or semi-finished items which compete with those produced in the formal sector as well as purely nontraded consumption goods exclusive to this sector.

'Informal' is sometimes interpreted as 'illegal'. Strictly speaking, officially unrecorded transactions are not legal because no taxes or license fees are paid, or because they flout existing labour laws by paying lower wages and ignoring the usual fringe benefits paid to unionized labour in the organized sector. Then there are also criminal activities, such as smuggling, extortion, theft, etc. All of these in a sense are 'informal'. At the outset of this study, we define 'informal' as essentially the noncriminal production of goods and services that utilizes unorganized workers at a market-determined wage with no restrictions on profitable retrenchment. Such a characterization still allows us to focus on the economic conditions of the majority of the workforce in a typical developing country.

Deregulation, economic reform and increasing global exposure should have some impact on informal activities, wages and employment. The way production is organized between the formal and informal segments should also be affected. Unfortunately, empirical evidence on the interaction between the formal and informal sectors is quite limited and scattered. However, there is a growing literature that deals with the informal sector of a relatively open, deregulated developing country. We will trace the literature and the questions raised, and then look to substantiate the claims with theory and evidence. In doing so, we cannot cover all possible dimensions of the problem, but instead we shall attempt to cover a subset of topics.

Section 2 deals with the issues of reform and informal wages. Is it true that a downsized formal segment depresses informal wages by pushing laidoff workers from the formal sector into the informal? This is a concern of many who believe that increasing competition will lead to unemployment in the formal sector and to sliding wages in the informal sector. We look at a generic example from a group of models, which have analysed such a problem, and conclude that informal wages and employment can go up even when displaced workers crowd into the informal sector.

Recent papers by Kar and Marjit (2001), Marjit (2002), Marjit, Kar and Sarkar (2004), Marjit and Beladi (2002) and Wuyts (2001) provide the building blocks. Empirical support for the theoretical conclusions is drawn from the national sample survey (NSS) data on informal manufacturing in India collected during various rounds in the pre- and post-liberalization periods.

Sections 3 and 4 both highlight the organization of production and allocation of resources between the formal and the informal segments of the same industry. Section 3 reviews the issue of protection and the size of the informal sector. It refers to the

evidence recently analysed in Goldberg and Pavcnik (2003) for Latin America. Marjit and Biswas (2004) provide a formal-informal subcontracting model, to bring in the element of monitoring and corruption. In a way, they offer an alternative theoretical interpretation that is much simpler than the one proposed by Goldberg and Pavcnik (2003) and substantiates their empirical finding. Section 3 shows that different types of ‘liberal’ policies will have offsetting effects on the size of the informal segment.

Section 4 is based on fieldwork and primary data. We look at the workings of the formal-informal segments in the small or cottage-industries of rural West Bengal, a province in eastern India. Following its increased exposure to international trade essentially through expanding export markets, the nature of the formal/informal production structure is undergoing transformation. There is a clear trend showing the breakdown of independent entrepreneurship of marginal producers who are becoming the tied suppliers to bigger, formal units. This possibly corroborates the famous conjecture that the division of labour is determined by the extent of the market. We undertake an analysis of the operation, dynamics and organizational change in the rural industries of an economy, which has adopted liberal trade and investment policies since early 1990s.

2 Economic reform and informal wage

This section highlights the impact of typical deregulatory policy on informal wages and employment in a small, open developing economy. We have a model consisting of four goods. X is produced in the formal sector with organized labour earning a fixed wage \bar{w} and capital. This is an import-competing manufacturing good. Y is an exportable manufacturing good produced in the informal sector with labour earning a market-determined wage $w(\bar{w} > w)$ and capital. Z is a nontraded informal good produced using labour and capital, and A is the agricultural product produced with informal labour and land. Workers must find a job either in the formal or the informal sector. Those who cannot be employed at \bar{w} move to the informal segment and become absorbed in Y , Z or A . Such a ‘full employment’ interpretation of the labour market is consistent with the analyses of dual labour markets in the less developed countries (LDCs), as given in Carruth and Oswald (1981), Agenor and Montiel (1996), Marjit, Broll and Sengupta (2000), Marjit and Beladi (2002), Marjit and Acharyya (2003) and Marjit (2003). We have a standard neoclassical general equilibrium set-up where each sector operates within competitive markets, constant returns to scale (CRS) and diminishing marginal productivity. The following equations constitute competitive equilibrium and the full-employment condition symbols used have standard interpretation from Jones (1965; 1971):

$$\bar{w}a_{LX} + ra_{KX} = P_X(1+t) \quad (1)$$

$$wa_{LY} + ra_{KY} = P_Y \quad (2)$$

$$wa_{LZ} + ra_{KZ} = P_Z \quad (3)$$

$$wa_{LA} + Ra_{TA} = P_A \quad (4)$$

$$a_{KX} X + a_{KY} Y + a_{KZ} Z = \bar{K} \quad (5)$$

$$a_{LX} X + a_{LY} Y + a_{LZ} Z + a_{LA} A = \bar{L} \quad (6)$$

$$a_{TA} A = T \quad (7)$$

$$D_Z(P_Z, (1+t), \Omega) = Z \quad (8)$$

We chose $P_X = P_Y = P_A = 1$ for this ‘small’ economy; t is the tariff rate; X is the imported good, and Y and A are the exported goods. P_Z is determined internally.

Given t , (1)–(4) determine r , w , P_Z and R and hence the factor proportions. This also determines aggregate factor income ‘ Ω ’. Then (7) and (8) determine A and Z and (5) and (6) determine X and Y . This completes the determination of the general equilibrium.

Suppose liberal trade policy leads to a decline in t . What will be its implication on informal wages and employment?

A decline in t must reduce r , increase w and reduce R , the rental rate in agriculture. The usual output response will be a contraction in X . As a_{LX} declines with a rise in \bar{w}/r , formal employment will fall and informal employment will rise. One could trace the full general equilibrium implications of a decline in t . This is unnecessary for our purpose. A decline in R will increase a_{TA} and reduce A , and employment in agriculture and in the nontraded sector will rise.

This is the case where a reduction in formal employment and the subsequent movement of displaced workers into the informal segment raises informal wages. The clue to such a result is capital mobility.

For example, if capital cannot move between X and (Y, Z) , a drop in t will reduce r , displacing workers but not allowing formal sector capital to move into the informal segment. This would imply that the capital-labour ratio in the informal sector will fall, trading to a drop in w . Several variations of the type of structure have been attempted recently in Marjit, Kar and Sarkar (2004), Marjit and Beladi (2002), Kar and Marjit (2001), etc. The core result suggests that sufficiently limited capital mobility between the formal and informal sectors lends credibility to the conventional wisdom that more workers in the informal sector mean lower wages, otherwise not.

Tables 1 and 2 provide some statistical evidence from the NSS data for nondirectory manufacturing enterprises (NDME) in India. This is the typical representative sample of the informal sector. Tables 1 and 2 show the increase in real informal wages across the states of India over the pre- and post-liberalization period along with the growth of real fixed assets. Table 2 also shows the decline in the rate of capital formation in organized manufacturing over the sample period. More detailed econometric analysis is available in Marjit, Kar and Sarkar (2004). While the overall rate of unemployment, measured in terms of organized employment, has not improved during the reform period, the informal sector has possibly grown with improved real incomes for the average informal worker.

One caveat should be relevant here. Real wages of agricultural labourers have experienced upswings and downswings, and have declined recently. One needs to explore in detail how informal wages for manufacturing and agriculture are actually related. Although they should have a positive correlation, there might be a host of factors which affects them differently. This should be an important agenda for future research.

Do more flexible labour laws in the formal sector, allowing for the relatively easy ‘hire and fire’ strategy, help informal workers? Informal workers in general have no job guarantee and wages are likely to absorb the demand/supply shocks of this segment. Note that if ‘ \bar{w} ’ is reduced because the effective hiring cost has come down, r should, *ceteris paribus*, go up and w should fall if capital is mobile. If capital is immobile, greater employment in the formal sector will also mean higher w , since there will be an excess demand for labour and capital cannot move from the informal into the formal sector.

Now, let us turn to the offsetting effects of a decline in t and \bar{w} with or without capital mobility. If one assumes immobile capital, trade reform will mean higher w . It will be exactly opposite in the case of capital mobility. Such issues are rarely discussed in the theoretical literature on economic reforms in a developing country: another area for future research. A related question is the issue of rising agricultural productivity or agricultural exports and their impact on rural wages, which is easy to check. If capital moves freely between the formal and the informal sectors, it creates excess demand for rural workers without an accompanying rise in the informal, and hence, rural wages. Thus, capital movement plays an important part here as well. We plan to undertake the empirical counterpart to this study in the future. Figures 1 and 2 describe the response path of informal wages after labour market deregulation and trade liberalization, respectively. Capital does not move until time reaches point A and then it moves freely.

Figure 1 relates w to \bar{w} for a given t . As \bar{w} goes down over time, initially with immobile capital, w increases since more people are drawn to the formal sector. As capital becomes mobile, the relationship changes, a further drop in \bar{w} increases r and reduces w . At point A the discontinuity arises because w has to go down once capital leaves the informal sector. We repeat the story for a given \bar{w} in Figure 2 which relates w and t . It is clear that if an economy adopts labour reforms first and then tariff reforms as capital becomes mobile, the informal wage is unlikely to fall. However, if capital is reasonably mobile to start with, the results will be different.

3 Vertical link between the formal and informal sectors

Earlier analyses treat the informal segment as self-contained without any vertical relationship to the formal sector. In this sector we consider situations where the informal sector supplies an input to the formal sector. If deregulation contracts the formal sector by curtailing output and employment, it also hurts the informal segment. Will such a policy reduce informal wages? Common sense suggests that this would be the case.

However, Marjit (2003) argues that when the informal segment contains two subsegments—one supplying an input to the formal sector, the other producing a final good—informal wages and employment can still rise after an adverse shock in the

formal sector. If the segment that is linked vertically with the formal is capital-intensive relative to the other segment, informal wages and employment must rise. One example that comes to mind is the informal service sector. As capital moves from the intermediate-producing subsector to the labour-intensive service sector, wages are likely to rise, provided that the service sector is not faced with a demand that is too inelastic. This is a theoretical result, awaiting empirical verification.

More complete empirical evidence on reform and informalization has been collected and used in Goldberg and Pavcnik (2003) who argue that trade liberalization has ambiguous effects on the ‘informal’ sector. They show that while there is not much evidence of a correlation between trade policy and informality in Brazil, in the case of Colombia there is some evidence that liberal trade policies have expanded the informal sector. Goldberg and Pavcnik (2003) use a ‘shirking’ model of labour markets to justify their empirical claim. We draw from Marjit and Biswas (2004) in constructing the following simple model of formal/informal relationship, with two policy instruments: tariff and interest rate. Then we use the evidence from Brazil and Colombia on the interest rates. It is shown that while a lower tariff is likely to expand informal production, a lower interest rate does exactly the opposite. In the case of Brazil, these two effects seem to offset each other. In the Colombian case, the interest rate did not drop much, so the tariff effect prevailed.

Consider a firm in the import-competing sector, having workers at a wage rate w_1 in the formal sector and w_2 in the informal sector, $w_1 > w_2$. However, producing goods in the informal sector implies avoiding labour laws, i.e., avoiding the effectively higher cost of production as $w_1 > w_2$. If apprehended, this would entail some anticipated penalty costs, which increase with the size of the informal production. However, there is another crucial point. With tariff protection, the firm would gain relative to any other activity. Thus, ‘ t ’ also denotes the margin of benefit for being in a protected sector. In the event the firm is caught and penalized it may lose not only its license but also the benefit from protection as well. Note that this is equivalent to a situation when the firm is apprehended but pays a bribe to escape punishment, in which case the equilibrium bribe should be increasing in t . The greater ‘ t ’ is, the greater the extent of such a loss. The firm maximizes the following:

$$\text{Max } \Pi(L_1, L_2) = (1+t)f(L_1 + L_2) - (w_1L_1 + w_2L_2)(1+r) - z(L_2, t) \quad (9)$$

L_1 is the employment in the formal sector, L_2 in the informal, t is the tariff rate and $z(.)$ represents anticipated punishment costs, $z_1 > 0$, $z_{11} > 0$, $z_{12} > 0$, $f' > 0$, $f'' < 0$. r is the interest rate on working capital, assumed to be the same in both the formal and informal sectors. This is not essential for our results. The two policy instruments are t and r , and liberalization implies a decline in both t and r .

First-order conditions yield:

$$(1+t)f' = w_1(1+r) = w_2(1+r) + z_1 \quad (10)$$

Second-order conditions are satisfied (see Figures 3 and 4).

In Figure 3, initially L_0 is total employment with L_{10} in the formal and L_{20} in the informal. If t goes down $(1+t)f'$ shifts down, so is z_1 as $z_{12}>0$. This shows that total employment declines, but L_{20} increases, the informal sector expands.

It is obvious that a drop in t will reduce aggregate output and employment. But as ' t ' goes down, the anticipated marginal cost of punishment also goes down increasing L_{20} .

A drop in r will shift both $w_1(1+r)$ down and $w_2(1+r)$ down. But $w_1(1+r)$ will go down more than $w_2(1+r)$ as $w_1>w_2$. Total employment will increase as we move down along $(1+t)f'$ line. Therefore, L_{10} will increase and L_{20} will contract. The theoretical lesson is that a drop in r reduces the marginal cost in the formal sector more than in the informal sector as $w_1>w_2$, hence L_2 will fall.

A drop in t and r has offsetting effects. In Table 3, we show that even though tariffs have come down in both Brazil and Colombia, the decline in the interest rate is far more visible in Brazil. One may entertain a conjecture that we simply have, on the part of Brazil, the interplay of offsetting effects with little change in the size of the informal sector, but the tariff effect naturally dominates for Colombia.

4 Export market and production organization in rural formal and informal industries

This section deals with a micro-level analysis of informalization based on primary data from rural West Bengal. India started liberalizing its economy in the mid-1980s and since 1991 the process has been vigorously stepped up. 'First generation reforms' emphasized growth by encouraging private sector investment through the reduction of taxes, opening up to foreign trade and investment, and promoting other deregulatory policies. The Ninth Five Year Plan has emphasized the acceleration of economic growth through speeding up the liberalization process and highlighting modernization and formalization as a corollary of this growth process by making it more market friendly.

Now, the questions are: How is the formal-informal reorganization of production responding to liberalization policies and to the increasing market exposure, and to what extent? What are the characteristics of the formal and informal production organization? What are the reasons behind the increasing division of formal-informal production? With reference to some manufacturing industries in West Bengal, this section seeks to analyse the formal-informal division of production organization resulting from the changes in India's economic policy since the early 1990s: essentially a micro-statistical exercise to gain some firsthand experience of the process.

Important policy changes have taken place through the opening-up of trade (reduced the tariffs and interest rates, etc.) and the rise of financial limits of production units in small-scale and cottage industries. In spite of growing competition from large-scale industries and multinational corporations (MNCs), these policies have created, to some extent, favourable conditions for the development of small-scale and rural industries by taking advantage of the added demand from national and overseas markets for crafts and aesthetic value-oriented goods (handmade goods). As a consequence units having access to sufficient capital and marketing outlets expand at a good pace. On the other hand, due to organizational differences and structural backwardness, large sections of

other producing units become linked to the *mahajan*, traders or master enterprises, to channel products to the national and overseas markets.

The division of informal and formal production units arise because of comparative production costs in the formal structure, such as wages, and administrative and transaction costs. As demand grows, specialization in the production process becomes more intensified to match diversified consumer demands. These specialized labourers in the manufacturing activities of a workshop or factory should be paid a formal wage rate and other amenities according to the Factory Act and other laws; otherwise trade union activities become a threat. Thus, these wage costs are saved if the production process among the specialized labour is fragmented to the informal sector.

Current theories of firm organization cannot explain the existence of informal production organization (such as subcontracting at a relatively low scale). They establish the superiority of a firm over the non-firm organization like the putting-out system¹ (Coase 1937; Knight 1946; Alchian and Demsetz 1972; Williamson, Wachter and Harris 1975), but in practice different forms of non-firm organizations have developed for reducing transaction costs or for tackling the constraints of organizational design. Through subcontracting, master enterprises or traders save administrative as well as supervision costs. Moreover, entrepreneurs in rural or remote areas face information gaps regarding markets and technology. Thus to bridge these gaps, some intermediaries have evolved to gather information on market sources, product design, types of product, etc. Artisans with limited capital and traditionally-based skills become dependent on these intermediaries for information in exchange for a part of the profits. The artisans save the opportunity costs of their working capital. Furthermore, the surplus rural masses are forced to search for alternative employment due to the residual factor and thus take up small-scale and cottage industries informally at the household level (Maiti 2004).

As markets increase, the scale of operations has to expand, necessitating investment in capacity building. Small local entrepreneurs are far more capital constrained than businessmen and traders. Therefore, it is natural that the degree of tying-up increases with the expansion of the export market. This is related, in a different context, to a paper by Marjit and Roychowdhury (2004) which suggests that an expansion of market size usually leads to 'buyouts' of existing joint ventures.

4.1 Database and methodology

Due to limitations on secondary data serving this study, a detailed primary survey was needed. The districts of West Bengal have various diverse types of crafts and rural industries in the different cultural blocks, regions and villages. No secondary source is able to prove actual figures on the industries according to a breakdown of the different types at the decentralized level of planning units. Keeping these limitations in mind, the

¹ Firms can be perceived as lumps of butter coagulating in a pail of buttermilk with a long-term transaction, the factory owner having a hierarchical system of monitoring resource direction. With a price mechanism, a series of transactions are required to decide the true price, while these transaction costs are saved within the firm. 'The main reason why it is profitable to establish a firm would seem to be that there is a cost of using the price mechanism' (Coase 1937). 'When a "putting out" system was used ... inputs were organized largely through market negotiation' (Alchian and Demsetz 1972).

present study has tried to create an appropriate sample design, known as multistage stratified random sampling.

4.2 Sample design

The state of West Bengal is chosen purposely because of its significant growth in rural industries, crafts heritage and high population density. We use the multistage stratified random sampling method to select the sample industrial units. In stage I, the method of selection of districts is analysed. In stage II, sample blocks of sample industries from the sample districts are drawn, while in stage III, sample villages or a cluster² of villages from each sample block are drawn. In stage IV, sample artisans/units have been selected mindful of the respective production organization.

Stage I: selection of districts and industries

The districts of West Bengal have different agroclimatic and socioeconomic characteristics, crafts heritage, and share of rural manufacturing workers, etc. Four districts were selected on the basis of stratified random sampling. Districts are divided into two strata, namely by the degree of rural industrial advancement or backwardness on the basis of the percentage share of total workers³ engaged in rural manufacturing, processing and repairing units (households and other than household industries included). A district having more than 8 per cent of its workers in rural industries is considered to be relatively advanced; less than 8 per cent would mean the district is somewhat backward. This cut-off point was arrived at so that an equal number of districts are located above and below this benchmark. Two sample districts are drawn from each stratum based on random sampling without replacement. Nadia and Midnapore form the advanced strata of the sample districts while Bankura and Purulia constitute the backward strata.

With the help of district-level officers and knowledgeable individuals, we prepared a list of units for each district (at the various administrative levels of local governance) consisting of two groups of industries, viz. industries common to all sample districts, and industries that were specific to a certain district. The common set includes industries related to handloom, wood products, iron and grill factories, brass and bell metals, jewellery, etc. On the other hand, industries specific to a particular district include clay making and hat weaving of the Nadia district; hornware, mats, and zari in the Midnapur district; industries related to conchshell, *docra* (the traditional manufacture of utensils and decorative items in iron, copper, tin, etc.), and terracotta in the Bankura district, and lac and *chaw* works (the manufacture of apparel used in traditional *chaw* dances, usually made of cloth, paper, sand, dyes, mat, tin, etc.) in the Purulia district. Two industries from the common group of handicrafts and one district-specific industry from each sample district were randomly selected. Our selection of common handicrafts includes handloom and the brassware industry while the district-specific industries include clay works in Nadia, hornware in Midnapore, conchshells in Bankura and lac works in Purulia.

² Cluster means the combination of a few villages in which a particular type of industrial activity dominated. Selection of one particular village could not provide a sizeable number of sample units.

³ Details from Census (1991).

Stage II: selection of blocks

A list of blocks according to types of industry was prepared for each sample district with the help of the local administrative departments, khadi board and responsible persons at block level, because not all the blocks in the districts are equally important with respect to rural industries. From the list of respective industries, one block is randomly selected. Santipur, Krishnanagar and Krisnagang-I are the sample blocks of the Nadia district; Tamluk, Mahishadal and Panskura II are the sample blocks of the Midnapore district; Bankura districts are represented by Bankura-II and Indpur; while the Purulia district is represented by Puncha, Manbazar-I and Balarampur.

Stage III: selection of village or village cluster

Not all villages within a block have the same importance with respect to rural industries, and one village in our sample lacked the sufficient number of artisans. So, a sample village or cluster of villages was randomly selected to represent each industry. Thus, from the Nadia district, Phulia is selected for handloom, Matiari for the brassware industry and Dhubulia for the clay industry. From the Midnapur district, Panskura is selected for handloom, Mahishadal for brassware and Baishnabchawk for hornware. Kenjakura for handloom, Mogra for brassware and Hatagram for conchshell are included in the sample. Nuagarh is selected for handloom from the Purulia district, as are Gopalnagar for brassware and Balarampur for the lac industry.

Stage IV: selection of unit or artisan

First, a list of production unit organizations from every sample village and cluster of villages was prepared with the aid of a pilot survey, and then 15 units from each production organization were randomly selected, provided they were available. In case sufficient numbers were not available, all units willing to respond were included in the study. If only one production organization exists in a cluster, 30 units are selected.

From the above sample design, 356 units or proprietor households, representing independent (149 units), tied (162 units) and cooperative (45 units) production units, were selected for detailed survey. The reference period for the study was financial year April 2001 to March 2002, that is, one decade after the initiation of the new economic policy by the government of India.

4.3 Method of data collection

A pilot survey was undertaken to determine the exact number of units operating under the different forms of production organization in a sample village or cluster of villages. Then, a separate code was given according to the production organization. Consulting the random number table, the exact sample unit was drawn. Primary data were collected through a survey method or a personal interview with the head of the unit on the basis of a specially designed schedule and questionnaire.

4.4 Production stages and formal-informal division

Among the total surveyed units, the following informal characteristics are observed as dominant: non-registration,⁴ non-maintenance of accounts, male domination of entrepreneurship, backwardness regarding formal education and training, household premises' units, dependence on other subsidiary activities, caste dominance of industrial activities, etc. The survey revealed that several distinct stages are adopted in the production process to produce use-value as well as aesthetic value of the industries, but these stages vary with the types of products and forms of production organization. Due to an extensive division of labour in the production process, specialization increases when artisans perform certain phases of the work in their own households or in workshops tied to master enterprises and *mahajan*. Detailed production stages and activities of the sample manufacturing industries are shown in Tables 8 to 13.

Diverse types of technology and human skill are used in the production process across rural industries along with traditional techniques. A detailed division of labour is established⁵ more intensively with technological development, irrespective of region. Production stages are vertically disintegrated among the producing units. Tied units also become specialized in certain types of work: they are assigned a part or the whole task by the master artisan or *mahajan* on a contractual basis where the instruments/tools of production are owned/possessed by the craftsmen and the merchant capitalist/middleman (located mostly in towns); or the master enterprises may advance capital (wage funds and raw materials). The craftsmen make the product according to the design and order from the merchant capitalist or master enterprises. The artisans may possess the tools and workshops, but they are under tight control from the traders, mainly in two ways: proprietor artisans receive raw material from the shops⁶ of *mahajans* (without any compensation for transport) either in the form of cash or credit. When the artisans supply the finished products to these shops or deliver the goods to a middleman engaged by the *mahajans* they exchange instantly or receive credit for the value of *bani*⁷ and, in some cases, compensation for transport. Second, master enterprises or larger independent units also engage these units to produce a part or the entire finished item. This can be defined as a subcontracting system.

A few of the relatively larger units hire more artisans on a daily rate basis. At the household production level, both male and female are equally involved in the production and household labour, and are unpaid. Workers perform their jobs at the workshop or factory and within the household premises. Rural manufacturing activities do not necessarily operate only on a small scale; rather these work-phases have been transformed to the workshop or factory. But the outsourcing system⁸ is different from the one that existed in Europe during the textile manufacturing phase of capitalist development. Obviously, artisans own the means of production, but also bear the losses

4 Kulsheresstha and Singh (2001).

5 See Jain (1986: 878 and 880-1).

6 See government of West Bengal (1975).

7 *Bani* is the payment received by tied artisans from their master for particular type of manufacturing work where raw materials are supplied by the master.

8 See Singh (1990: 16-25).

for damage to production or raw materials. In very few cases, the *mahajan* or trader bears a proportion of the damage. Thus, these units, although seemingly independent, are in truth reliant on the merchant capitalists for survival and as such are designated as tied units.⁹

On the other hand, cooperative artisans are akin to the tied production units, but they benefit from the production organization or society in terms of loans, bonuses, training, coverage of damages, etc. and enjoy certain democratic rights with regard to the production process concerned, according to rules. Whatever surplus is generated in the tied units is shared by the merchant capitalist and the proprietor artisans. In a cooperative society, a certain ratio of the surplus is expended for administrative, managerial and marketing purposes, as the society takes responsibility for marketing the items produced by its artisans.

Hence, it is evident that different forms of production organizations exist in rural industries, namely units that are independent, tied, or cooperative. Independent units possess their own fixed and working capital, and entrepreneur artisans have control of the production process, types of products and marketing channels. Tied units possess fixed assets for the product but are largely dependent on the *mahajan*, contractor, middleman or master enterprise for the supply of raw materials. Units with a cooperative system also maintain fixed production assets but they are managed by the cooperative society, which supplies the main raw materials. Moreover, independent units are differentiated in terms of the labour used. Overall, of the independent units, 51.7 per cent (77 units) operate with the help of unpaid household labour, while 27.5 per cent (41 units) operate with hired workers in addition to members of the household. The remaining 20.8 per cent (consisting of 31 units) run their production based solely on hired help. These are basically directory manufacturing enterprises (DMEs). Strikingly, 13 per cent of the tied units and 15.6 per cent of the cooperative units utilize hired workers to some extent in their activities to supplement household labour. The remaining 87 per cent of the tied production units and 84.4 per cent of the cooperatives are operated entirely by household members. Looking at all the organizations, 72.0 per cent and 19.3 per cent of the units rely on household labour, and jointly household and hired labour, respectively. The remaining 8.7 per cent of the units, operating as DMEs, are solely reliant on hired labour. One point which should also be noted is that a significant share of production units in rural areas are household-dominated, while a considerable number of independent units have switched over to factory production, which are dependent entirely on hired labour; tied and cooperative units also hire labourers.

4.5 Organizational change

During the last ten years, as the result of liberalization (1991-2001), a significant organizational change has taken place regarding the division of formal and informal production organizations. On the basis of primary information combining all sample industries, it can be observed that, out of a fixed set of 356 sample units, the share of independent units declined from 44.38 per cent in 1991 to 41.85 per cent in 2001. The most significant decline is observed in the case of cooperative units, dropping from

⁹ See also Banerjee (1994: 19).

34.56 per cent to 12.64 per cent during the same period while the share of tied units drastically increased from 21.07 per cent to 45.51 per cent. These units have transformed from independent to tied or cooperative, from tied to independent or cooperative, and from cooperative to independent or tied. Among these transformation processes, the tendency of tiedness or subcontracting or the putting out system is dominant (Table 16).

4.6 Marketing channels

The essential precondition for growth of an industry, however small, is the demand for its products, which in turn is contingent on the behaviour of three types of market: local, national and export. While local demand for rural-industry products is insufficient because of the low purchasing power of the rural masses, demand in the national and export markets is expanding; the markets for products and raw materials have widened. For example, in India, the Minerals and Material Trading Corporation (MMTC) supplied foreign scrap to local artisans, but after the introduction of the Open General License, any individual can import material directly from abroad, and the MMTC discontinued its foreign scrap operations. Earlier, artisans were also able to import material through the *mahajans* or master enterprises, but due to paucity of funds, the import market was eventually captured by the big merchants and traders. Thus, most artisans have become reliant for raw materials on the *mahajans*, who control prices, quality and frequency of supply. The *mahajans'* intervention and the artisans' persistent dependence on them has forced them to work on *bani* (making charge) system. In the conchshell, lac and hornware industries, producers in the remote rural areas are directly linked to important cities and towns through traders or formal producers. For instance, raw material for the conchshell industry comes from the coastal towns of southern India and traders from different towns buy and deliver the final product. Some hornware industry units transact directly with export merchants or marketing agencies who deal with Japan, Germany, etc. Similarly, an upswing in the lac market is totally dependent on export markets. The aesthetic value of the products varies across regions and these region-specific products have established a trade in the national and international markets (for example *tangail sharee*¹⁰ of Phulia; *baluchiri sharee* of Bankura and Bishnupur, lac products from Balarampur; conchshell products from Hatagram; hornware from Bishnabchawk; *tasar sharee* of Nuagarh; musk, particularly for *chaw* dance, from Carida, etc.). Markets are expanding because of the aesthetic appreciation of the products and cheap labour costs. A few artisans in the handloom industries at Phulia are engaged in the production for clothing specifically for the Japanese market. Brassware artisans in Matiari are engaged in the production of regional products. However, traders/*mahajans* or master enterprises, having fairly good marketing channels in the national and export markets, control raw materials and product markets. Earlier, cooperatives functioned by organizing the artisans and marketing their products through different government and nongovernmental agencies (like Manjusha, Tantuja, Bangashree, etc.). Lately, however, these activities have declined in connection with the government's reduction of assistance, grants and incentives to the cooperatives. Furthermore, cooperative administrators used to take advantage of the market by establishing independent marketing arrangements. Artisans within the cooperative unit

¹⁰ *Tangail sharee*, *baluchiri sharee*, and *tasar sharee* are types of cloth intended exclusively for women.

are paid long after the delivery of their products, inducing artisans go to the *mahajans* for loans or master enterprises for work, who subsequently control the artisan producers.

As noted earlier, master enterprises, traders or the *mahajan*-middleman nexus expropriate a large part of the value added. The ultimate surplus to the tied artisans is sufficient to cover their subsistence living only, and they are unable to invest more fixed capital in increasing the size of their manufacturing unit. Although this arrangement/channel at least ensures them subsistence living, they are forced to remain in the grip of the master enterprise or *mahajan* who exploit their skills (see Ray 1991). Independent artisans, on the other hand, purchase raw materials from wholesalers (either within or outside the district). The petty independent artisans also procure raw materials from vendors.

The major marketing channels include: (i) selling door-to-door; (ii) supplying a fixed seller with the final product; (iii) at one's own sales counter; (iv) through contracts with local traders; (v) through trader middlemen; (vi) through contracts with master artisans; (vii) through wholesale traders; (viii) through exporter or exporting agency; (ix) via their own salesman and advertising; (x) through contracts with cooperative societies; (xi) through marketing societies; (xii) at fair or bazaars.

It has been noted that the small-scale independent artisans, who suffer from a lack of working capital and proper marketing knowledge, are restricted to local level markets (vendor and local retailer). The higher the capital, the more diversified the market channel. While small independent artisans who have no retail outlets of their own can sell their products to the wholesalers with better market connections, craftsmen with shops can benefit from the diversified market channels by selling their products directly to the consumer, the local wholesalers, and even to indigenous merchants. Therefore, the formal or directory units have the advantage of diversified marketing channels, whereas the small and petty units are forced to rely on local markets. If the artisans wish to avail themselves of the external markets, they become tied to master enterprises (the formal producers) and traders. Obviously, markets have expanded and consequently the process of fragmentation and tiedness has increased.

5 Concluding remarks

This paper is an attempt to outline the various trends in research on the state of the informal sector in a reforming developing country. We have discussed the issue of reform and informal wages, sequencing of reforms and the vertical relationship between the formal and the informal sectors. We argue that deregulation is likely to improve the condition of the informal workers, provided that capital is allowed to flow to the informal sector and that the informal service sector is supported in the process. As export markets expand, the informal rural industries exhibit increasing dynamics of tying, technology adoption and growth. This is demonstrated through a firsthand field-based survey. Some of our assertions have empirical backup, some are conjectures to be tested in our future work.

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Figures and tables

Figure 1
Movement of formal wage over time with and without capital mobility

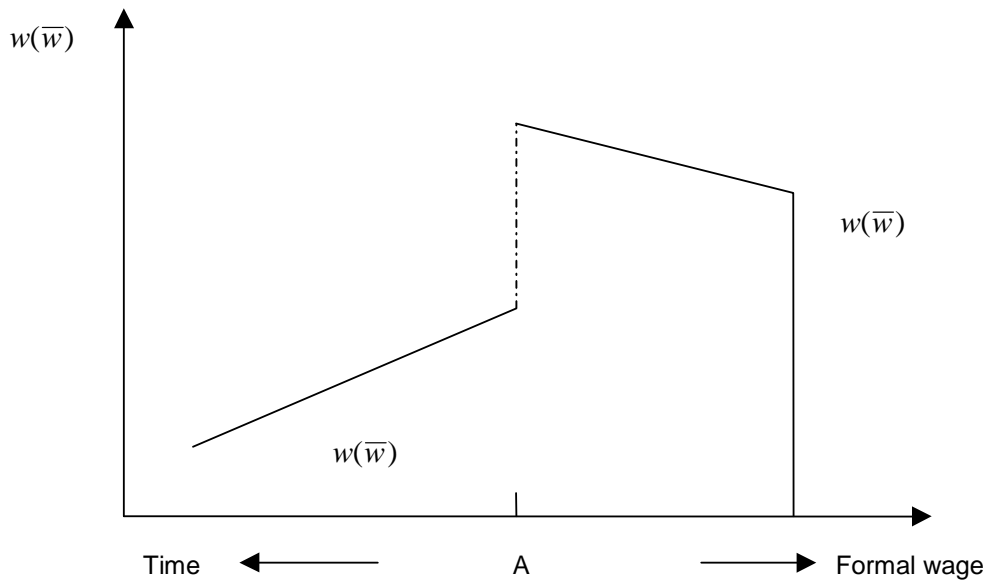


Figure 2
Movement of informal wage rate over time with and without capital mobility in effect of tariff rate

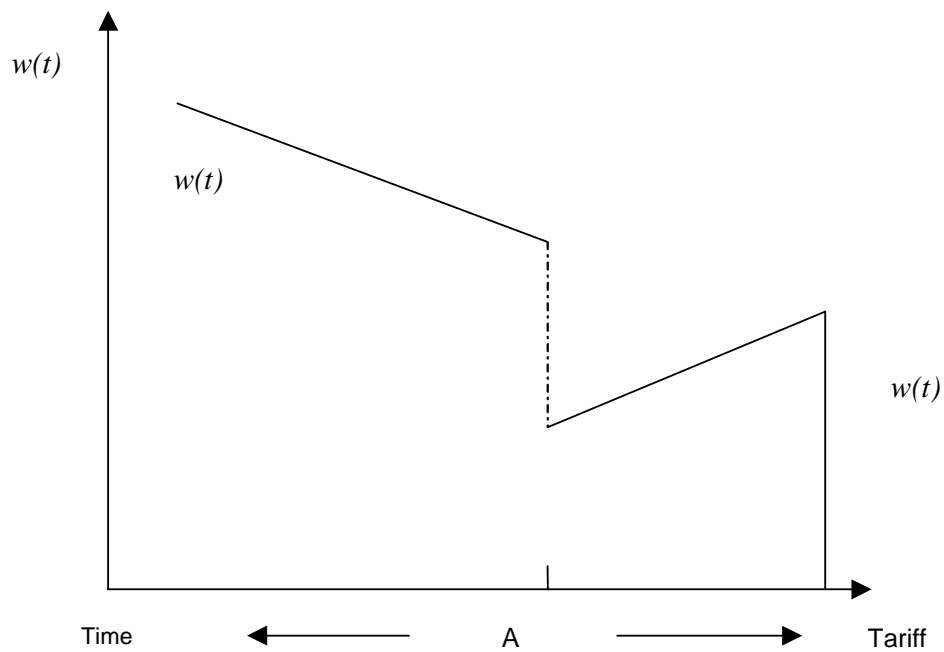


Figure 3
Increase in informal employment resulting from a decline in tariff rates

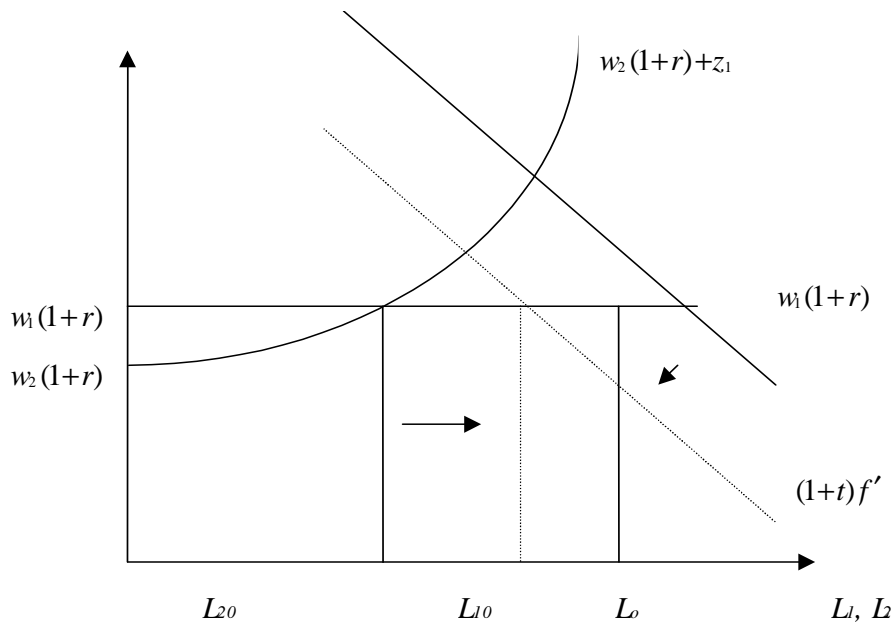


Figure 4
Increase in formal employment as a result of a decline in interest rates

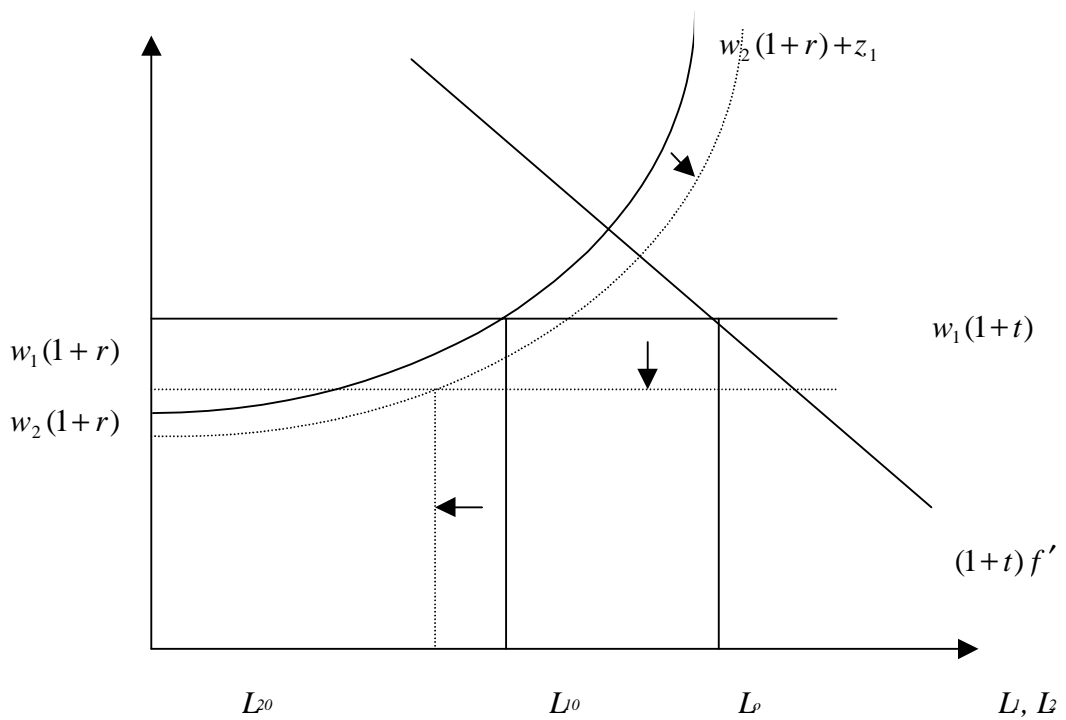


Figure 5
Schematic representation of formal and informal marketing channels of the independent producers for final products

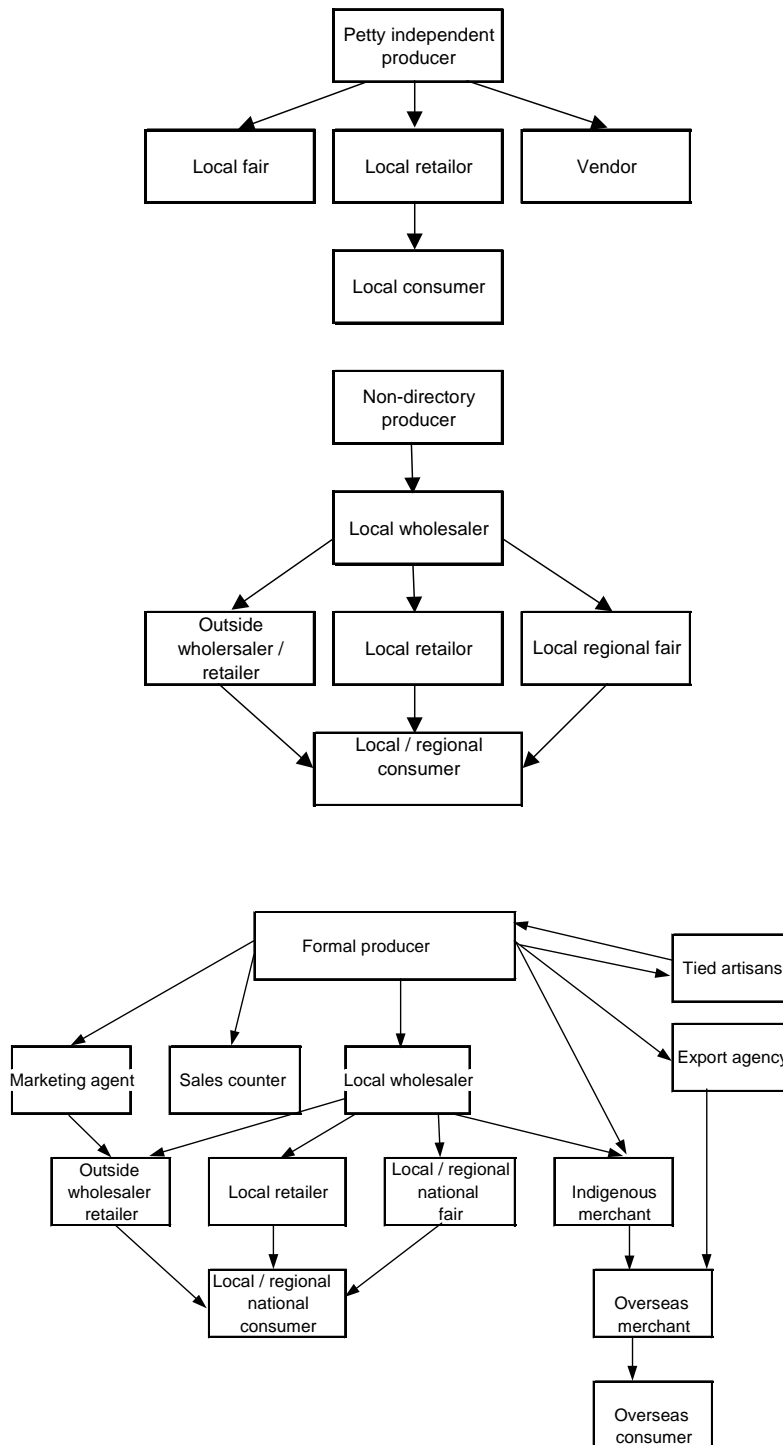
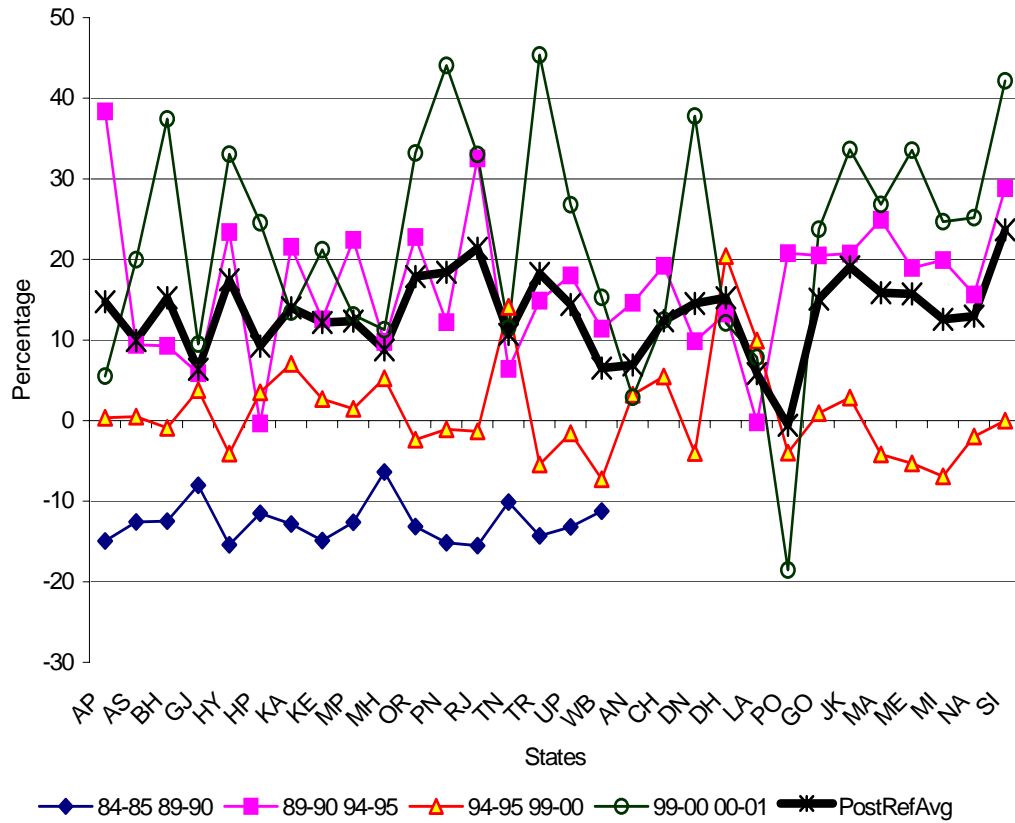


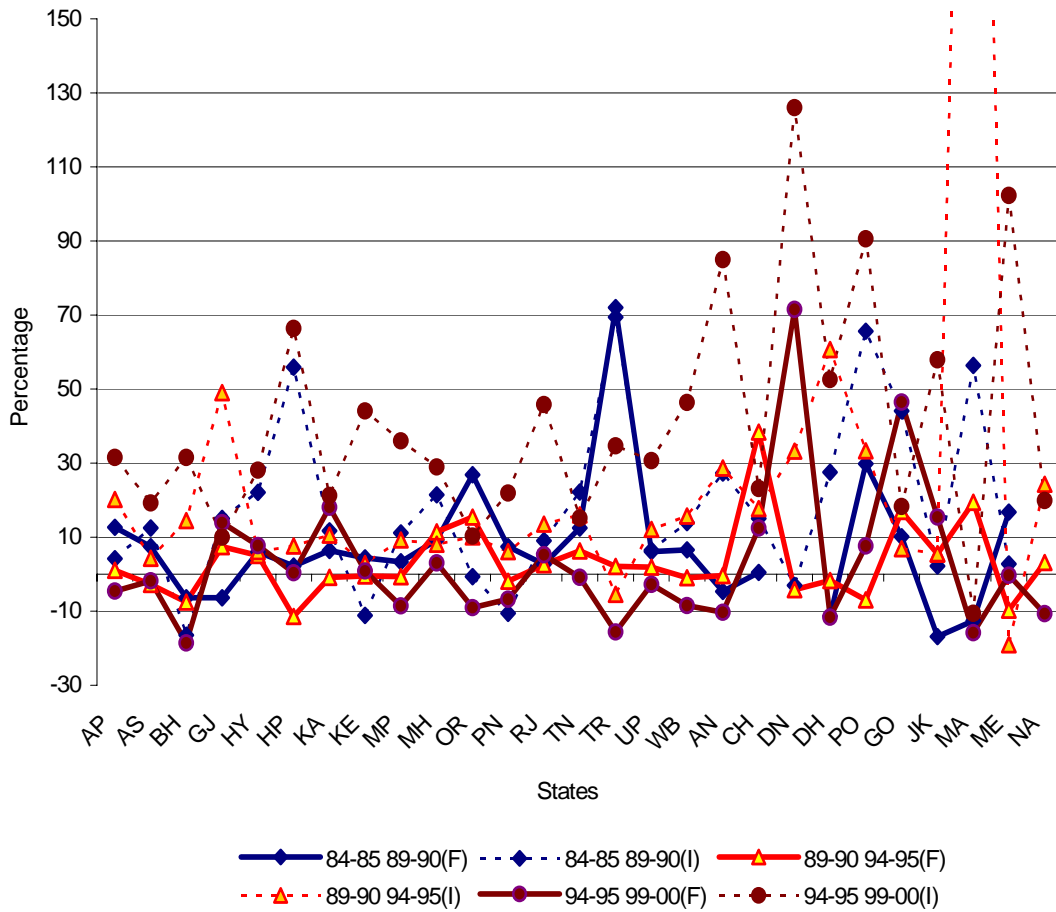
Figure 6
Annual growth rates of informal real wages in India



- Note:
- | | |
|---------------------|----------------------------------|
| AP – Andhra Pradesh | AS – Assam |
| BH – Bihar | GJ – Gujarat |
| HY – Haryana | HP – Himachal Pradesh |
| KA – Karnataka | KE – Kerala |
| MP – Madhya Pradesh | MH – Maharashtra |
| OR – Orissa | PN – Punjab |
| RJ – Rajasthan | TN – Tamil Nadu |
| TR – Tripura | UP – Uttar Pradesh |
| WB – West Bengal | AN – Anadaman & Nichobar Islands |
| CH – Chandigarh | DN – Dadra & Nagar Haveli |
| DH – Delhi | LA – Laska Deep |
| PO – Pondicherry | GO – Goa |
| JK – Jharkhand | MA – Manipur |
| ME – Meghalaya | MI – Mizoram |
| NA – Nagaland | SI – Sikkim |

Source: NSS reports (various years) and own calculations.

Figure 7
Annual growth rates of formal real capital stock and informal real fixed assets



Note: (F) = formal sector; (I) = informal sector.

AP – Andhra Pradesh	AS – Assam
BH – Bihar	GJ – Gujarat
HY – Haryana	HP – Himachal Pradesh
KA – Karnataka	KE – Kerala
MP – Madhya Pradesh	MH – Maharashtra
OR – Orissa	PN – Punjab
RJ – Rajasthan	TN – Tamil Nadu
TR – Tripura	UP – Uttar Pradesh
WB – West Bengal	AN – Anadaman & Nichobar Islands
CH – Chandigarh	DN – Dadra & Nagar Haveli
DH – Delhi	LA – Laska Deep
PO – Pondicherry	GO – Goa
JK – Jharkhand	MA – Manipur
ME – Meghalaya	MI – Mizoram
NA – Nagaland	SI – Sikkim

Table 1
Annual growth rates of real informal wage
for states and union territories in India

States	1984/5 to 1989/90	1989/90 to 1994/5	1994/5 to 1999/00	1999/00 to 2000/1	Post reform average
Andhra Pradesh	-14.9383	38.37914	0.351421	5.54216	14.75757
Assam	-12.5909	9.400387	0.502013	19.94701	9.949804
Bihar	-12.4796	9.259229	-0.91022	37.41843	15.25582
Gujarat	-8.01461	5.856186	3.761828	9.471879	6.363298
Haryana	-15.417	23.39205	-4.11872	33.07289	17.44874
Himachal Pradesh	-11.5206	-0.34082	3.509483	24.55454	9.241068
Karnataka	-12.8237	21.54953	7.021524	13.43834	14.00313
Kerala	-14.8953	12.55645	2.686628	21.20452	12.1492
Madhya Pradesh	-12.6123	22.41174	1.455013	13.11878	12.32851
Maharashtra	-6.4	9.7482	5.247609	11.28708	8.760962
Orissa	-13.1553	22.78583	-2.38878	33.1919	17.86298
Punjab	-15.1443	12.20414	-1.06954	44.061	18.39853
Rajasthan	-15.4959	32.53101	-1.34439	33.03571	21.40744
Tamil Nadu	-10.1074	6.406688	14.13201	11.49062	10.67644
Tripura	-14.3066	14.89337	-5.45877	45.36927	18.26796
Uttar Pradesh	-13.2014	18.00436	-1.58454	26.79013	14.40332
West Bengal	-11.2556	11.41085	-7.25447	15.29931	6.485231
Anadaman & Nichobar Islands		14.62978	3.202789	2.910365	6.914311
Chandigarh		19.21098	5.496664	12.4677	12.39178
Dadra & Nagar Haveli		9.828439	-4.01589	37.7676	14.52672
Delhi		13.26679	20.39249	12.10498	15.25476
Laska Deep		-0.21334	9.929694	7.832409	5.849589
Pondicherry		20.77112	-3.96475	-18.5548	-0.58281
Goa		20.50309	0.947838	23.74566	15.06553
Jharkhand		20.71262	2.838103	33.64066	19.06379
Manipur		24.9116	-4.18481	26.83254	15.85311
Meghalaya		18.91503	-5.28746	33.57459	15.73405
Mizoram		19.93168	-6.92451	24.69716	12.56811
Nagaland		15.62657	-1.96228	25.16228	12.94219
Sikkim		28.81384	-0.01264	42.15758	23.65293

Source: NSS reports on unorganized sector in India (various years) and own calculations.

Table 2
Annual growth rate (%) of real fixed capital stocks of formal and real fixed assets of informal sector

	Formal sector's real capital stocks			Informal sector's real fixed assets		
	1984/5 to 1989/90	1989/90 to 1994/5	1994/5 to 1999/00	1984/5 to 1989/90	1989/90 to 1994/5	1994/5 to 1999/00
Andhra Pradesh	15.77	19.77	-3.37	-7.79733	-0.96041	36.85207
Assam	9.33	2.02	0.46	-6.83476	-4.34561	23.34239
Bihar	-8.0	13.44	-23.06	-16.841	-8.67277	36.85365
Gujarat	-8.0	51.96	22.51	-3.72095	4.870951	13.12233
Haryana	7.46	4.07	13.82	-2.32648	2.705801	33.10962
Himachal Pradesh	2.75	5.78	3.56	16.63802	-12.2059	75.32574
Karnataka	7.92	9.04	28.46	-6.77515	-2.62928	25.51968
Kerala	5.52	0.52	4.19	-18.8533	-2.29589	50.75252
Madhya Pradesh	4.17	7.56	-9.0	-6.14669	-2.45067	41.77107
Maharashtra	11.56	6.26	7.3	0.802123	8.498255	34.05893
Orissa	33.51	8.49	-9.64	-11.3273	12.10914	13.38253
Punjab	9.34	4.02	-6.37	-12.2196	-3.63418	26.20876
Rajasthan	3.31	12.34	10.46	-8.2741	0.421989	52.59911
Tamil Nadu	15.58	15.06	1.91	-4.03562	3.840182	18.82244
Tripura	90.03	-8.77	-18.81	-3.16143	-0.00121	40.31617
Uttar Pradesh	7.59	10.75	-0.79	-7.97152	-0.19041	35.92194
West Bengal	8.21	14.74	-8.9	-4.83186	-2.76687	53.23383
Anadaman & Nichobar Islands		29.23	-11.42		-2.26475	95.83243
Chandigarh		17.0	20.57		32.89912	27.56441
Dadra & Nagar Haveli		34.27	103.3		-5.6518	141.1057
Delhi		64.83	-13.28		-3.47284	60.08716
Pondicherry		34.43	13.71		-15.8524	185.7324
Goa		4.97	68.22		-8.18683	102.0059
Jharkhand		3.47	24.63		13.51388	22.21585
Manipur		408.76	-19.12		3.04875	65.98744
Meghalaya		-23.89	2.68		15.74781	-9.61401
Nagaland		24.34	-11.9		-10.6541	115.0085

Source: Economic and Political Weekly Research Foundation (2000) and NSS (various years).

Table 3a
Comparison of mean tariff for the manufacturing sectors in Brazil and Columbia

Year	Brazil	Columbia
1984	na	49.8
1985	na	na
1986	na	36.6
1987	58.8	na
1988	50.1	33.5
1989	39.1	na
1990	34.1	29.1
1991	25.2	na
1992	19.1	12.9
1993	14.1	na
1994	12.9	12.9
1995	10.9	na
1996	12.5	13.0
1997	12.8	na
1998	15.8	13.1

Source: Goldberg and Pavcnik (2003).

Table 3b
Comparison of real and nominal rates (as an alternative for the market interest rate)
in Brazil and Columbia, 1986-98

Year	Brazil		Columbia	
	Real	Nominal	Real	Nominal
1986	107.2	109.48	31.17	31.4
1987	395.04	401.33	30.52	30.8
1988	845.12	859.43	33.24	33.5
1989	5815.5	5844.98	33.41	33.7
1990	9390.27	9394.98	36.1	36.4
1991	903.59	913.47	36.93	37.2
1992	1533.18	1560.18	36.47	26.7
1993	3273.0	3293.5	25.56	25.8
1994	5174.58	5175.24	29.19	29.4
1995	51.99	52.15	32.1	32.3
1996	26.38	26.45	31.01	31.2
1997	24.32	24.35	23.9	24.1
1998	27.95	28	32.49	32.6

Note: As the nominal lending rates were not available for both Brazil and Colombia, we take the nominal deposit rates and then calculate the real rates by subtracting the inflation rate from the original series. Inflation rate for Colombia has been calculated from the consumer price index (CPI). Inflation rate for Brazil has also been calculated from the CPI, except for the years 1990 and 1991 where the wholesale price index (WPI) is used since CPI was not available.

Source: IMF (2002).

Table 4
Socioeconomic characteristics for sample districts, 2001-02

	Nadia	Midnapore*	Bankura	Purulia
Area (sq. km)	3,927	14,081	6,882	6,259
Inhabited village	1,248	10,474	3,565	2,456
Population (lakh)	46.04	96.39	31.92	25.35
Density (per sq. km)	981	686	464	405
% of total state population	5.74	12.02	3.98	3.16
% of total state land area	4.42	15.87	7.75	7.05
% of SC population, 1991	29.01	16.34	31.37	19.35
% of ST population, 1991	2.35	8.28	10.34	19.23
Net area sown (hectare)**	306.9 (78.6)	859.9 (65.0)	383.3 (55.7)	335.8 (53.9)
Rural literacy rate	62.32	74.42	62.44	53.82
Male literacy	68.70	84.76	76.27	72.82
Female literacy	55.50	63.63	47.92	33.91
Road length/ (sq. kms)	0.25	0.14	0.16	0.13
Road density (sq. km/lakh popu.)	942.82	1,699.24	341.47	783.35
Food-grain productivity (kg/hr.)	2,429	2,305	2,499	1728
Cropping Intensity	242	164	145	104
Agriculture wage rate (Rs., male)	56.00	57.48	55.02	47.48
Rural industrial workers (%), 1991	12.2	9.61	7.23	7.13
Rural poverty (1993/4)	39.38	38.9	49.77	44.01
Per capita income (Rs.)	10,654.68	10,252.62	9,849.34	8,809.96

Note: * Midnapore has recently been divided into East Midnapore and West Midnapore. Our sample is located in East Midnapore, a relatively well developed area. At the time of the study, data for East Midnapore are not available.

** Figures in parentheses indicate the percentage share.

Source: Government of West Bengal (2001-02a; 2001-02b).

Table 5
Number of sample artisans/ units according to sample design

Districts	Stage I Sample industry	Stage II Sample block	Stage III Village selection	Stage IV Sample units/artisans under production organizations			
				Independent	Tied	Cooperative	All
Nadia	Handloom	Santipur	Fulia	12	15	15	72
	Brassware	Krishnagang	Matiari	12	15	0	27
	Clay works	Krishnagar-I	Sadhanpara	20	0	0	20
Midnapur	Handloom	Nilkunthi	Tamluk-I	15	15	0	30
	Brassware	Mahishadal	Ektarpur	3	15	0	18
	Hornware	Panskura-II	Baishnabchawk	12	7	15	34
Bankura	Handloom	Bankura-I	Kenjakura	15	15	15	45
	Brassware	Bankura-I	Mogra	0	30	0	30
	Conchshell	Indpur	Hatagram	15	15	0	30
Purulia	Handloom	Purulia	Nuagarh	15	15	0	30
	Brassware	Manbazar	Gopalnagar	0	20	0	20
	Lac works	Balarampur	Balarampur	30	0	0	30
Total				149 (41.85)	162 (45.51)	45 (12.64)	356 (100)

Source: Field surveys.

Table 6
Number of registered units

Industry	Registered		Not registered		All	
Handloom, advanced region	22	(30.6)	50	(69.4)	72	(100)
Handloom, backward region	15	(20.0)	60	(80.0)	75	(100)
Brassware, advanced region	8	(17.8)	37	(82.2)	45	(100)
Brassware, backward region	0	(0.0)	50	(100.0)	50	(100)
Clay works	5	(25.0)	15	(75.0)	20	(100)
Hornware	7	(20.5)	27	(79.5)	34	(100)
Conchshell	6	(20.0)	24	(80.0)	30	(100)
Lac works	21	(70.0)	9	(30.0)	30	(100)
Total	84	(23.6)	272	(76.4)	356	(100)

Note: Figures given in parentheses represent percentage share.

Source: Field surveys.

Table 7
Number of units maintaining accounts

Industry	Accounts maintained		Not maintained		All	
Handloom, advanced region	20	(27.8)	52	(72.2)	72	(100)
Handloom, backward region	12	(16.0)	63	(84.0)	75	(100)
Brassware, advanced region	8	(17.8)	37	(75.2)	45	(100)
Brassware, backward region	1	(2.0)	49	(98.0)	50	(100)
Clay works	4	(20.0)	16	(80.0)	20	(100)
Hornware	7	(20.6)	27	(79.4)	34	(100)
Conchshell	3	(100.0)	27	(90.0)	30	(100)
Lac works	25	(83.3)	5	(16.7)	30	(100)
Total	80	(22.5)	276	(77.5)	356	(100)

Note: Figures given in parentheses represent percentage share.

Source: Field surveys.

Table 8
Production stages of handlooms industry, and nature of machines and labour used

Stages	Machines & tools used	Nature of work	Types of labour	Mode of payment*
1. Dubbing	Big container	Dubbing the fibre	Unskilled household or hired labour	Daily basis
2. Drying	—	Drying in sunlight	Unskilled household or hired labour	Daily basis
3. Rolling, I	Fibre-rolled wheel	Making the rolled cotton in catims	Unskilled Women household or contract	Piece rate
4. Rolling, II	Weaving wheel	Rolling the cotton on the weaving wheel	Skilled household or hired labour	Piece rate
5. Weaving	Pincers, rolling stick and weaving wheel	Weaving the fibre	Skilled household or hired labour	Piece rate
6. Packing	Scissors	Separation, packing	Unskilled household or hired labour	Piece rate

Note: * Mode of payment represents mainly hired labour; household labour is mostly unpaid.
Source: Field surveys.

Table 9
Production stages of brassware industry, and nature of machines and labour used

Stages	Machines & tools used	Nature of work	Types of labour	Mode of payment
1. Clay preparation	—	Pasting clay	Unskilled household labour	—
2. Container & dice	—	Making & checking the container and the dice	Household skilled female or daily labour	Piece rate
3. Melting	Furnaces	Melting the old metal or new chemical mixture (using copper, zinc or tin)	Skilled household male or hired labour	Piece rate
4. Shaping/casting	Hammer & accessories or press machine	Shaping the melted metal	Skilled household or hired labour	Piece rate
5. Structuring	Hammer & accessories	Structuring the proper shape by removing broken portions	Skilled household or hired labour	Piece rate
6. Engraving/ designing	Hammer & accessories	Designing the proper shape of utensils	Skilled household or hired labour	Piece rate
7. Polishing		Polishing the designed products	Skilled household or hired labour	Piece rate

Source: Field surveys.

Table 10
Production stages of clay works, and nature of machines and labour used

Stages	Machines & tools used	Nature of work	Types of labour	Mode of payment
1. Clay preparation	Spade	Making clay by sand, jute fibre, straw	Unskilled male household or hired labour	Daily basis
2. Shaping	Structure	Shaping by the structure	Skilled male/female household or hired labour	Daily basis
3. Designing	Simple tools of wooden or bamboo blade	Designing doll or structure	Skilled male/female household or hired labour	Daily basis
4. Polishing	Dye, brush	Polishing by brush with the help of dye	Skilled male/female household or hired labour	Daily basis
5. Burning	Furnaces	Burning the product	Unskilled male/ female household or hired labour	Daily basis
6. Designing & polishing	Dye, brush	Dying and polishing the product	Skilled male/female labour	—

Source: Field surveys.

Table 11
Production stages of hornware works, and the nature of machines and labour used

Stages	Machines & tools used	Nature of work	Types of labour	Mode of payment
1. Drawing	Chalk, needle	Drawing on the raw horn to design the product	Skilled male household/ hired labour	Piece rate
2. Cutting	Scissors and pincers	Cutting the horn according to the drawing area	Skilled male household/ hired labour	Piece & daily rates
3. Grinding	Stone or grinder machine	Grinding the raw horn	Skilled male household/ hired labour	Piece & daily rates
4. Bopping	Siris paper, simple accessories	Rubbing the horn	Skilled male household/ hired labour	Piece & daily rates
5. Polishing	Motor	Polishing the horn and designing	Skilled male household/ hired labour	Piece & daily rates
6. Packing	Simple accessories	Packing the final product	Skilled male household/ hired labour	Piece & daily rates

Source: Field surveys.

Table 12
Production stages of conchshell works, and nature of machines and labour used

Stages	Machines & tools used	Nature of work	Types of labour	Mode of payment
1. Cutting	Power-operated cutting machine	Cutting raw conchshell according to size	Male, household/hired labour	Daily rate
2. Rubbing, I	Power-operated grinding machine, or traditional tools, such as pincers, scissors, hammer, saw, chisel, etc.	Rubbing the outer layers of the conchshell	Skilled male/female, household or hired labour	Piece rate
3. Pasting	Resin, hardner, zinc oxide wax	Pasting the rubbed conchshell into required shape	Male/female, household or hired labour	Piece rate
4. Rubbing, II or polishing	Power-operated grinding machine, or the traditional tools	Polishing the pasted area	Male/female, household or hired labour	Piece rate
5. Designing	Grinding machine, saw, plane	Designing the conchshell ring artistically	Male/female, household or hired labour	Piece rate

Source: Field surveys.

Table 13
Productions stages of lac works, and nature of machines and labour used

Stages	Machine & tools used	Nature of work	Types of labour	Mode of payment
1. Grinding and boiling	Crushing machine, soda	Grinding the raw lac	Household/hired male worker	Daily rate or contract
2. Straining	Crushing machine	Straining the raw lac	Skilled hired male worker	Daily rate or contract
3. Washing	By hand or washing machine	Washing the strained lac	Hired male worker	Daily rate or contract
4. Driving	By hand	Separating the lac	Unskilled female hired labour	Daily rate or contract
4. Melting	By hand or rope or ship machine	Melting lac to make bottom	Skilled male contract or hired labour	Daily rate or contract
5. Bottom making	By hand and rope or ship machine	Producing bottom from melted lac	Skilled male contract labour	Daily rate or contract
6. Melting bottom	Furnace and container	Melting the bottom	Unskilled female household labour	—
7. Making and designing	Rope & accessories	Making and designing the product	Skilled male/female household labour	—

Source: Field surveys.

Table 14
Characteristics of production organizations

Production organization	Characteristics
Independent unit	Possesses own fixed capital and working capital; has control over production process, types of products, sources of raw materials and marketing
Tied unit	Possesses own fixed capital, but is controlled by master enterprise or contractor, <i>mahajans</i> , middleman who are supplied raw materials
Unit/artisan under cooperative	Possesses own fixed capital and is controlled by cooperative society

Table 15
Number of units of different production organizations combining all industries

Strata	Organization			
	Independent	Tied	Cooperative	Total
Solely on household workers	31 (20.8)	0 (0.0)	0 (0.0)	31 (8.7)
Both household and hired workers	41 (27.5)	21 (13.0)	7 (15.6)	69 (19.3)
Solely on hired workers	77 (51.7)	141 (87.0)	38 (84.4)	256 (72.0)
All	149 (100.0)	162 (100.0)	45 (100.0)	356 (100.0)

Source: Field surveys.

Table 16
Organizational change of industries during 10 years after economic liberalization (1991-2001)

Organization	1991		2001	
Independent	158	(44.38)	149	(41.85)
Tied	75	(21.07)	162	(45.51)
Cooperative	123	(34.56)	45	(12.64)
Total	356	(100.0)	356	(100.0)

Note: Figure in parenthesis indicates the per cent.

Source: Field surveys.